# APPLICATION FOR TITLE V AIR OPERATING PERMIT

APPENDIX C - VOLUME I ATERIAL SAFETY DATA SHEETS

PREPARED FOR:



CHEMICAL SPECIALTIES

HATTIESBURG, MISSISSIPPI FORREST COUNTY

JANUARY 1996

PREPARED BY:



2675 RIVER RIDGE ROAD JACKSON, MISSISSIPPI 39216

MATERIAL SAFETY DATA SHEET	PAGE: 01 of 06	A
HERCULES INCORPORATED Hercules Plaza	DRESINOL* 42	
Wilmington, DE 19894 ne #: (302) 594-5000 (24 hrs)	MSDS No.: 909 6401 0200-02	
Supersedes MSDS #: 909 6401 0200-01		
I. PRODUCT IDENTIFICATION	,i 	-
CAUTION! MAY CAUSE EY	E AND SKIN IRRITATION.	
DRESINOL* 42 Resin Dispersion	HMIS RATINGS:(1)	6
	Health hazard: 1 Slight Flammability hazard: 0 Minima Reactivity hazard: 0 Minima	1
CHEMICAL & COMMON NAME: Aqueous disper	sion of partially decarboxylated rosin	
APPEARANCE AND ODOR: Cream-colored liq	uid; slight ammonia odor	
* Registered Trademark of Hercules Inco	rporated.	
II. HAZARDOUS INGREDIENTS & EXPOSURE	LIMITS	- -
e ingredients in this product are not Subpart Z, nor do they appear in "Thres Substances in the Work Environment Adop	hold Limit Values for Chemical	-
FOOTNOTES		-
(1)Explanation of acronyms: HMIS: Hazardous Materials Identificatio N/A: Not applicable	n System rating for product as supplied	
Hercules Incorporated has compiled the contained in this Material Safety Data reliable and to represent the most reas when the MSDS was prepared. No Marrant as to the correctness or sufficiency of product must decide what safety measure product, either alone or in combination environmental regulatory compliance obl or state laws.	Sheet from sources believed to be onable current opinion on the subject y, guaranty or representation is made the information. The user of this s are necessary to safely use this with other products, and determine its	-

1

•

**1** 

ý



U

۲.

MSDS No.: 909 6401 0200-02

Date: 06/29/90

\_\_\_\_\_ TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS III. \_\_\_\_\_ BOILING POINT: 100 C (212 F) (2) SOLUBILITY IN WATER: Dispersible in all proportions VAPOR PRESSURE @ 20 C: Similar to water SPECIFIC GRAVITY: 1.02 - 1.04 VAPOR DENSITY: Lighter than air pH: 9.4 EVAPORATION RATE: Similar to water VOLATILE (VOL.), %: Negligible at 20 C (Based on solids) λ FREEZING POINT: 0 C (32 F) (2) Υ. (2) Based on water. IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA \_\_\_\_\_ FLASH POINT: Noncombustible FLAMMABLE LIMITS: N/A AUTOIGNITION TEMPERATURE: N/A EXTINGUISHING MEDIA: Product is dispersed in water and as such will not burn. However, water spray, dry chemical, foam, or carbon dioxide may be used on fires involving this product. SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. UNUSUAL FIRE AND EXPLOSION HAZARDS: None STABILITY CONSIDERATIONS: Stable. Mixing with acids will cause dispersion to separate. INCOMPATIBILITY WITH: None 1 HAZARDOUS DECOMPOSITION PRODUCTS: None HAZARDOUS PRODUCTS OF COMBUSTION: This product is an aqueous dispersion which will not support combustion. If heated to decomposition, it may evolve carbon monoxide, carbon dioxide, and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed. HAZARDOUS POLYMERIZATION: Will not occur.

\_\_\_\_\_

Date: 06/29/90

v.	HEALTH	HAZARD	DATA		

CAUTION! MAY CAUSE EYE AND SKIN IRRITATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: May cause eye irritation.

SKIN: Prolonged and/or repeated contact may cause skin irritation. Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).

INGESTION: May cause gastrointestinal tract irritation.

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Promptly wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.

INGESTION: If conscious, the person should immediately drink large quantities of liquid to dilute this product. Call a physician. NEVER give liquids to an unconscious person.

\_\_\_\_\_

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals under certain non-industrial exposure conditions of repeated and prolonged skin contact. Individuals sensitized to rosin derivatives may also react to this product after skin contact. Hercules is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are NOT regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have NOT been evaluated by the International Agency for Research on Cancer (IARC).

Continued...

		ከአጠአ				
v.	HEALTH HAZARD					
						∎ji
Co	ntinued		· <b>A</b> ,			
	TED HUMAN EFFE					
	rcules Incorpor			ny reports of	E adverse eff	ects fro
WC	orkers handling	this produ	uct.			
	TED ANIMAL EFF					
	rcules Incorpor	cated has	not conducted	any animal te	esting with t	his
-	oduct.		-			
VI.	SPILL PROCEDU	RES & WAST	E DISPOSAL			
			e			
	PROCEDURES:				Targa Coill	a. Dika
Sn	all Spills: Ad contain and pu	ump into d	nt, sweep up, rums for use o	r disposal.	barge spiri	Si Dike
				<b>-</b>		
	DISPOSAL METHO					
	ncineration in a			tate, and fee	deral regulat	lons.
C1	unnlemental fue	l may be r	equired.			
Su	upplemental fue	l may be r	equired.			
Re	efer to Section	VIII for	specific Feder		ntal and Regu	latory
Re		VIII for	specific Feder		ntal and Regu	latory
Re	efer to Section ata regarding us	VIII for se or disp	specific Feder	roduct.		×
Re Da	efer to Section ata regarding us APPLICABLE CO	VIII for se or disp	specific Feder osal of this p 	roduct.		
Re Da	efer to Section ata regarding u	VIII for se or disp	specific Feder osal of this p 	roduct.		
Re Da	efer to Section ata regarding us APPLICABLE CO	VIII for se or disp NTROL MEAS	specific Feder osal of this p  URES	roduct.		
Re Da VII. APPRO	efer to Section ata regarding us APPLICABLE CO	VIII for se or disp NTROL MEAS C PRACTICE	specific Feder osal of this p  URES  S:	roduct.		
Re Da VII. APPRO Do	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing o	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or s	specific Feder osal of this p URES S: ontact. mists.	roduct.		
Re Da VII. APPRO Do Av	APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing a	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or a after hand	specific Feder osal of this p URES S: ontact. mists. ling, and befo	roduct.	rinking or sm	oking.
Re Da VII. APPRO Do Av	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing o	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or a after hand	specific Feder osal of this p URES S: ontact. mists. ling, and befo	roduct.	rinking or sm	oking.
Re Da VII. APPRO Do Ax Wa Re	APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing a	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or after hand ted clothi	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an	roduct.	rinking or sm	oking.
Re Da VII. APPRO Do Av Wa Re PERSO	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly emove contamina ONAL PROTECTIVE apervious glove	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or after hand ted clothi EQUIPMENT	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an	roduct.	rinking or sm	oking.
Re Da VII. APPRO Do Av Wa Re PERSO In Ch	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly a emove contamina ONAL PROTECTIVE apervious gloves memical goggles	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or s after hand ted clothi EQUIPMENT s	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an :	roduct.	rinking or sm	oking.
Re Da VII. APPRO Do Av Wa Re PERSO In Ch	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly emove contamina ONAL PROTECTIVE apervious glove	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or s after hand ted clothi EQUIPMENT s	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an :	roduct.	rinking or sm	oking.
Re Da Da VII. APPRO Do Ax Wa Re PERSO In Ch Ay WORK	APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing ash thoroughly a emove contamina DNAL PROTECTIVE mpervious gloves bemical goggles opropriate protective PRACTICES:	VIII for se or disp NTROL MEAS Or skin cover after hand ted clothi EQUIPMENT s ective clo	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing	re eating, da d clean thore	rinking or sm oughly before	oking. reuse.
Re Da Da VII. APPRO Do Do Na Re PERSO In Ch AF	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly a emove contamina ONAL PROTECTIVE mpervious gloves bemical goggles opropriate protective	VIII for se or disp NTROL MEAS Or skin cover after hand ted clothi EQUIPMENT s ective clo	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing	re eating, da d clean thore	rinking or sm oughly before	oking. reuse.
Re Da VII. APPRO Do Av Wa Re PERSO In Ch Approx Berso In Ch Approx Berso In Ch Approx In Ch Approx Cha In Cha Cha In Cha In Cha In Cha Cha In Cha In Cha In Cha In Cha In Cha In Cha Cha In Cha In Cha In Cha In Cha In Cha In Cha In Cha In Cha In Cha Cha In Cha Cha In Cha Cha Cha Cha Cha Cha Cha Cha Cha Cha	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly emove contamina ONAL PROTECTIVE apervious gloves perical goggles opropriate proto PRACTICES: yewash fountain	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or s after hand ted clothi EQUIPMENT s ective clo s and safe	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho	re eating, da	rinking or sm oughly before	oking. reuse.
Re Da VII. APPRO Do Av Wa Re PERSO In Ch Ap WORK Ey HANDI	APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing ash thoroughly a emove contamina DNAL PROTECTIVE mpervious gloves perical goggles opropriate protective PRACTICES:	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or s after hand ted clothi EQUIPMENT s ective clo s and safe E PRECAUTI	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho	roduct. re eating, d d clean thore uld be easily	rinking or sm oughly before /	oking. reuse.
Re Da Da VII. APPRO Do Ax Wa Re PERSO In Ch Ap WORK Ey HANDI Da	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly emove contamina ONAL PROTECTIVE apervious gloves perical goggles opropriate proto PRACTICES: yewash fountain	VIII for se or disp NTROL MEAS OF SKIN C OF SKIN C VAPORS OF S after hand ted clothi EQUIPMENT S ective clo s and safe E PRECAUTI ing. Stor	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho ONS: e at temperatu	roduct. re eating, d d clean thore uld be easily	rinking or sm oughly before /	oking. reuse.
Re Da Da VII. APPRO Do Ax Wa Re PERSO In Ch Ay WORK Ey HANDI Da	APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing ash thoroughly a emove contamina ONAL PROTECTIVE mpervious glove hemical goggles opropriate prot PRACTICES: yewash fountain LING AND STORAG amaged by freez	VIII for se or disp NTROL MEAS Or skin cover after hand ted clothi EQUIPMENT s ective clo s and safe E PRECAUTI ing. Stor uct stabil	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho ONS: e at temperatu ity.	re eating, da d clean thore uld be easily res of 4-35 (	rinking or sm oughly before /	oking. reuse.
Ree Da Da VII. APPRO Do Av Wa Ree PERSO In Ch Ap WORK Ey HANDI Da to	efer to Section ata regarding us APPLICABLE CO OPRIATE HYGIENIC o not allow eye yoid breathing of ash thoroughly a emove contamina ONAL PROTECTIVE apervious glove bemical goggles opropriate proto PRACTICES: yewash fountain LING AND STORAG amaged by freez o preserve prod NEERING CONTROL	VIII for se or disp NTROL MEAS C PRACTICE or skin covapors or s after hand ted clothi EQUIPMENT s ective clo s and safe E PRECAUTI ing. Stor uct stabil S: Provid	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho ONS: e at temperatu ity. e adequate ven	roduct. re eating, di d clean thore uld be easily res of 4-35 o tilation.	rinking or sm oughly before /	oking. reuse.
Ree Da Da VII. APPRO Do Av Wa Ree PERSO In Ch Ap PERSO In Ch Ap Ev Ch Ap Ch Ap Ch Ap Ch Ap Ch Ap Ch Ap Ch Ap Ch Ap Ch Ap Ch Av Ba Ch Ap Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Av Ch Ch Ch Av Ch Ch Ch Av Ch Ch Ch Ch Ch Ch Ch Ch Ch Ch Ch Ch Ch	APPLICABLE CO OPRIATE HYGIENIC OPRIATE HYGIENIC Onot allow eye yoid breathing ash thoroughly a emove contamina ONAL PROTECTIVE mpervious gloves opropriate proto PRACTICES: yewash fountain LING AND STORAG amaged by freez o preserve prod	VIII for se or disp NTROL MEAS C PRACTICE or skin c vapors or b after hand ted clothi EQUIPMENT s ective clo s and safe E PRECAUTI ing. Stor uct stabil S: Provid DURING RE	specific Feder osal of this p URES S: ontact. mists. ling, and befo ng promptly an : thing ty showers sho ONS: e at temperatu ity. e adequate ven PAIR AND MAINT	roduct. re eating, di d clean thord uld be easily res of 4-35 d tilation. ENANCE:	rinking or sm bughly before / y accessible. C (40-95 F),	oking. reuse.

MSDS No.: 909 6401 0200-02

Date: 06/29/90

Υ.

1

	VIII.	ENVIRONMENTAL & REGULATORY DATA	
1	thi	ollowing Environmental and regulatory data are provided to a is product in defining their regulatory environmental compl	assist users iance
	obilga	ations.	
	A. PF	RODUCT COMPOSITION	

PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CAS NUMBER	WT	. PERCENT
P	DRESINOL* 42	,ì N/A		100

### B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC 313 TOXIC CHEMICAL (YES, NO)
P	N/A ····	N/A	HC-1, NPH	N/A

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

None

-

Continued...

Y

¥ .

Date: 06/29/90 PAGE: 06 of 06 MSDS No.: 909 6401 0200-02 \_\_\_\_\_\_ VIII. ENVIRONMENTAL REGULATORY DATA \_\_\_\_\_ ..Continued FOOTNOTES: ..... SEC. 302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations) N/A: This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ). SEC. 304 - Reportable Quantity for Releases of an EHS (40 CFR 355, 1 Appendix A) Therefore, there is no Reportable N/A: This chemical is not an EHS. Quantity (RQ). Υ. SEC 311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard EC-3 Fire hazard

HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard

NPH Not a physical hazard

SEC 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements

- NO: This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
- YES: This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
- N/A: This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

\_\_\_\_\_

Doc. No. 1885s

•	MATERIAL SAFETY DATA SHEET	λ	PAGE: 01 of 06	5/2/9
	HERCULES INCORPORATED Hercules Plaza	DRESINOL* 210B		Η
• (	Wilmington, DE 19894 One #: (302) 594-5000 (24 hrs)	MSDS No.: 909 6403	1200-02	
	Supersedes MSDS #: 909 6401 1200-01	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
	I. PRODUCT IDENTIFICATION			
	CAUTION! MAY CAUSE EYE	AND SKIN IRRITATION.		
	DRESINOL* 210B Resin Dispersion	.: HMIS RATINGS:(1)	£ a	
		Health hazard: Flammability hazard Reactivity hazard:		
	CHEMICAL & COMMON NAME: Aqueous dispersi	on of plasticized hy	drogenated rosin	
	APPEARANCE AND ODOR: Cream-colored liqui	d; slight ammonia od	or -	
	* Registered Trademark of Hercules Incorr			
	II. HAZARDOUS INGREDIENTS & EXPOSURE LI		<i>a</i>	
	ne ingredients in this product are not Subpart Z, nor do they appear in "Thresho Substances in the Work Environment Adopte	isted in 29 CFR 1910 old Limit Values for (	, Chemical	5 &
	FOOTNOTES			22
	<ul> <li>(1)Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification</li> <li>OSHA: Occupational Safety and Health Admi</li> <li>TLV: Registered trademark of American Construction</li> <li>Hygienists for Threshold Limit Value</li> </ul>	System rating for pr inistration. onference of Governme		
	TWA: Time Weighted Average STEL: Short term exposure limit (See 29 ( N/A: Not applicable	CFR 1910.1000, March	, 1, 1989, revision)	
	Hercules Incorporated has compiled the in contained in this Material Safety Data SI reliable and to represent the move, reason when the MSDS was prepared. No warranty as to the correctness or sufficiency of product must decide what safety measures product, either alone or in combination environmental regulatory compliance oblight	neet from sources bel hable current opinion , guaranty or represe the information. The are necessary to saf with other products,	ieved to be on the subject ntation is made user of this ely use this and determine its	

1

۲.

MSDS No.: 909 6401 1200-02			PAGE: 02 of 06
III. TYPICAL PHYSICAL & CHEMICAL C			
BOILING POINT: 100 C (212 F) (2) VAPOR PRESSURE @ 20 C: Similar to			all proportion
VAPOR DENSITY: Lighter than air	-	I: 9.4 ··	
VOLATILE (VOL.),%: Negligible at 2 (Based on sol	20 C EV Lids)	APORATION RAT	E: Similar to water
FREEZING POINT: 0 C (32 F) (2)			385
(2) Based on water.	λ		
IV. FIRE, EXPLOSION, & REACTIVITY		DATA	
FLASH POINT: Noncombustible			
FLAMMABLE LIMITS: N/A			
AUTOIGNITION TEMPERATURE: N/A			
EXTINGUISHING MEDIA: Product is dispersed in water an spray, dry chemical, foam, or ca this product.	nd as su arbon di	ch will not bu oxide may be u	arn. However, water ased on fires involving
SPECIAL FIREFIGHTING PROCEDURES:	Use self	-contained bre	eathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS	: None		
STABILITY CONSIDERATIONS: Stable. Mixing with acids will	cause d	ispersion to s	separate.
INCOMPATIBILITY WITH: None			
HAZARDOUS DECOMPOSITION PRODUCTS:	None		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
HAZARDOUS PRODUCTS OF COMBUSTION: This product is an aqueous disp If heated to decomposition, it and smoke. Depending on condit carboxylic acids also may be fo	may evol ions, so	ve carbon mone	oxide, carbon dioxide,
HAZARDOUS POLYMERIZATION: Will no	t occur.		D. F. C. D. C. M.
- c	ontinued		DEQ-OPC

\*

+

**a**15

3

.

8

	AZARD DATA
	CAUTION! MAY CAUSE EYE AND SKIN IRRITATION.
	Υ.
	TOMS OF OVEREXPOSURE IN THE WORKPLACE:
EYES: SKIN:	May cause eye irritation. Prolonged and/or repeated contact may cause skin irritation. Prolonged and repeated contact may cause a skin sensitizatio reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).
INHALATION: INGESTION:	Mist may cause irritation of the upper respiratory tract. May cause gastrointestinal tract irritation.
EYES: In a water for a	RST AID PROCEDURES: case of contact, immediately flush with plenty of low-pressure at least 15 minutes. Remove any contact lenses to ensure lushing. Call a physician.
SKIN: Pro clothing.	nptly wash with soap and running water. Remove contaminated Wash clothing before reuse.
INHALATION Call a phy	: Remove to fresh air. Treat any irritation symptomatically. sician.
guantities	If conscious, the person should immediately drink large of liquid to dilute this product. Call a physician. NEVER giv an unconscious person.
This produ derivative (sensitiza exposure c sensitized contact. industrial search of sensitizat	TIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: ct contains rosin or a rosin derivative. Rosin and some of its s have been reported to cause an allergic skin reaction tion) in susceptible individuals under certain non-industrial onditions of repeated and prolonged skin contact. Individuals to rosin derivatives may also react to this product after skin Hercules is unaware of any allergic skin reactions caused by exposure to this product or similar materials. A thorough Hercules medical records has disclosed no case of skin ion to rosin or its derivatives from industrial exposure in our None have been reported by our customers.
PRIMARY ROUTE	S OF ENTRY: Eyes, skin
CANCER INFORM	MATION: Ments of this product are NOT listed as carcinogens by the Moxicology Program (NTP). They are NOT regulated as carcinogens Supational Safety and Health Administration (OSHA) and have NOT

λ

HEALTH HAZARD DATA V. \_\_\_\_\_ ...Continued **REPORTED HUMAN EFFECTS:** Hercules Incorporated has not received any reports of adverse effects from workers handling this product. REPORTED ANIMAL EFFECTS Hercules Incorporated has not conducted any animal testing with this product. . این این جو این هو این بین این ها که این ها ها ها ها چه به این به بین این این ها ما این ها ما ها ها ها ها بین می این VI. SPILL PROCEDURES & WASTE DEPOSAL \_\_\_\_\_ SPILL PROCEDURES: Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dike to contain and pump into drums for use or disposal. WASTE DISPOSAL METHOD: Incineration in accordance with local, state, and federal regulations. Supplemental fuel may be required. - 17 s Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product. به زمه هم وه رف سر هر زمه زم وم وه سر زم هم زم سر زم هم رم هم زم هم زم من زم هم وه هم هم من هم هم هم هم هم هم سر سر و VII. APPLICABLE CONTROL MEASURES APPROPRIATE HYGIENIC PRACTICES: Do not allow eye or skin contact. Avoid breathing vapors or mists. Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse. PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves 1 Chemical goggles Appropriate protective clothing WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. HANDLING AND STORAGE PRECAUTIONS: Damaged by freezing. Store at temperatures of 4-35 C (40-95 F), in order to preserve product stability. ENGINEERING CONTROLS: Provide adequate ventilation. PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.

MSDS No.: 909 6401 1200-02

1

VII	I. ENVIRONMENTAL & H	REGULATORY DATA	ان منا حا جر جر جر عر میں میں جر حر مر حر می می ہے ہیں ہے۔	میں جد حد در در بن عر میں عن ور حر مر مر مر مر م
		ntal and regulatory dat ning their regulatory e		
A.	PRODUCT COMPOSITION	2		
	PRODUCT (P) or COMPONENT NO.	TRADE NAME Or CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT
	P	DRESINOL* 210B	N/A	100
в.	SARA TITLE III (See	footnotes)		.**

SARA TITLE III (See footnotes) CEC

204-

COMPONENT	EHS	EHS	SEC. 311/312	SEC 313 TOXIC
NO.	RQ (lbs)	TPQ (lbs)	HAZARD CATEGORY	CHEMICAL (YES, NO)
P	, N/A .	ana N/A	HC-1, NPH	N/A

CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES) c.

CEC 202

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### RCRA INFORMATION D.

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation. 1

OTHER Ε.

None

Continued...

MSDS No.: 909 6401 1200-02

1

VIII. EN	NVIRONMENTAL REGULATORY DATA
.Contin	nued A
FOOTNOTES	S: Y,
SEC. (EHS) N/A:	302 - Threshold Planning Quantity, Extremely Hazardous Substance ) (40 CFR 355 Emergency Planning and Notification regulations) This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, ndix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazar gories"
	HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard NPH Not a physical hazard
SEC 3	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Ac of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.

N/A: This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

\_\_\_\_\_

10

Doc. No. 1888s

PAGE: 01 of 07

HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)

DRESINOL\* 215A Resin dispersion

MSDS No.: 909 6401 1600-01

Date: 07/29/94

I. PRODUCT IDENTIFICATION

CAUTION! MAY CAUSE EYE AND SKIN IRRITATION.

DRESINOL\* 215A Resin dispersion HMIS RATINGS: (1)

CASRN: Mixture I Slight Reactivity hazard: O Minimal Reactivity hazard: O Minimal

CHEMICAL & COMMON NAME: Aqueous dispersion of polymerized rosin

APPEARANCE AND ODOR: Cream-colored liquid; slight ammonia odor

\* Registered Trademark of Hercules Incorporated

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

The ingredients in this product are not listed in 29 CFR 1910, Subpart Z, nor do they appear in "Threshold Limit Values for Chemical Substances in the Work Environment Adopted by ACGIH".

(1) Explanation of acronyms:

HMIS: Hazardous Materials Identification System rating for product as supplied. CASRN: Chemical Abstracts Service Registry Number

AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level.

OSHA: Occupational Safety and Health Administration.

TLV: Registered trademark of American Conference of Governmental Industrial Hygienists for Threshold Limit Values.

TWA: Time Weighted Average

STEL: Short term exposure limit (See 29 CFR 1910.1048, March 1, 1989, revision) C: Ceiling exposure concentration (See 29 CFR 1910.1000, March 1, 1989, rev.) SKIN: May be absorbed through skin (See 29 CFR 1910.1048, March 1, 1989, rev.) N/A: Not applicable

•

V. HEALTH	HAZARD DAT#
	CAUTION! MAY CAUSE EYE AND SKIN IRRITATION.
SIGNS AND SYM	PTOMS OF OVEREXPOSURE IN THE WORKPLACE:
EYES: SKIN:	May cause eye irritation. Prolonged and/or repeated contact may cause skin irritation. Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).
INHALATION INGESTION:	: Mist may cause irritation of the upper respiratory tract.
EYES: In water for thorough f	IRST AID PROCEDURES: case of contact, immediately flush with plenty of low-pressure at least 15 minutes. Remove any contact lenses to ensure lushing. Call a physician. mptly wash with soap and running water. Remove contaminated
	Wash clothing before reuse.
INHALATION Call a phy	: Remove to fresh air. Treat any irritation symptomatically. sician.
quantities	If conscious, the person should immediately drink large of liquid to dilute this product. Call a physician. NEVER give an unconscious person.
This produ derivative (sensitiza exposure c sensitized contact. industrial	TIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: ct contains rosin or a rosin derivative. Rosin and some of its s have been reported to cause an allergic skin reaction tion) in susceptible individuals under certain non-industrial onditions of repeated and prolonged skin contact. Individuals to rosin derivatives may also react to this product after skin Hercules is unaware of any allergic skin reactions caused by exposure to this product or similar materials. A thorough

search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers. 432

PRIMARY ROUTES OF ENTRY: Eyes, skin

**7**0

Continued...

· @,

À

Υ.

VII. APPLICABLE CONTROL MEASURES
...Continued
WORK PRACTICES:
Eyewash fountains and safety showers should be easily accessible.
HANDLING AND STORAGE PRECAUTIONS:
Damaged by freezing. Store at temperatures of 4-35 C (40-95 F), in order to preserve product stability.
ENGINEERING CONTROLS:
Provide adequate ventilation.
PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:
Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.

1

. · ·

Contir	nued
OOTNOTES	
	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements ard Categories"
	HC-l Immediate (acute) health hazard
	HC-2 Delayed (chronic) health hazard
	HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard
	NPH Not a physical hazard
	, i
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of
	Section 313 of Title III of the Superfund Amendments and
	Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical
	Reporting requirements.
YES:	This component is subject to the reporting requirements of Section
	313 of Title III of the Superfund Amendments and Reauthorization Act
	of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
_	Percent composition (or estimated range) is listed above.
N/A:	This product is a mixture. As such, it is not listed as a Toxic
	Chemical under 40 CFR 372, Sect. 313 reporting requirements.
	Reportable constituents are listed individually where they exceed
	threshold concentration limits.
	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS
	D IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE
	AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT
	MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE
	E CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS

AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. dr215a.wpf

MATERIAL SAFETY DATA SHEET	PAGE: 01 c	DE 06
HERCULES INCORPORATED	DRESINOL* 215	
Hercules Plaza	Υ.	
Wilmington, DE 19894	MSDS NO.: 909 6401 1500-02	
hone #: (302) 594-5000 (24 hrs)		
Supersedes MSDS #: 909 6401 1500-01		
I. PRODUCT IDENTIFICATION	· · · · · · · · · · · · · · · · · · ·	
CAUTIONI MAY CAUSE EYE		
DRESINOL* 215 Resin Dispersion	HMIS RATINGS: (1)	*
	Health hazard: 1 S	light
		inimal
	Reactivity hazard: 0 M	inimal
CHEMICAL & COMMON NAME: Aqueous dispers	ion of polymerized rosin	8
APPEARANCE AND ODOR: Cream-colored ligu	id; slight ammonia odor 👘	
145		
* Registered Trademark of Hercules Incorp	porated.	
1. HAZARDOUS INGREDIENTS & EXPOSURE L	MITS	
		نوہ ہے جا سا س
e ingredients in this product are not ]	isted in 29 CFR 1910,	
ubpart Z, nor do they appear in "Thresho	ld Limit Values for Chemical	
Substances in the Work Environment Adopte	d by ACGIH" for 1989-90.	
***************************************		
OOTNOTES		
(1)Explanation of acronyms:		****
IMIS: Hazardous Materials Identification	System rating for product as supr	lied.
/A: Not applicable	-1 entry cor product as oupp	
ž.	a) B	
	· · · · · · · · · · · · · · · · · · ·	
lercules Incorporated has compiled the in contained in this Material Safety Data Sh	Lormation and recommendations	
eliable and to represent the most reason	eet from sources believed to be able surfact opinion on the subia	
hen the MSDS was prepared. No warranty,	quaranty or representation is me	CC do
s to the correctness or sufficiency of t	he information. The user of this	ue
roduct must decide what safety measures	are necessary to safely use this	
roduct, either alone or in combination w	ith other products, and determine	its
nvironmental regulatory compliance oblig	ations under any applicable feder	al
r state laws.	• ••	
,		

.

C

Y

Ŷ.

. HEALTH HAZARD DATA

CAUTIONI MAY CAUSE EYE AND SKIN IRRITATION. SIGNS AND SYMPTOME OF OVEREXPOSURE IN THE WORKPLACE: May cause eye irritation. EYES: Prolonged and/or repeated contact may cause skin irritation. SKIN: Prolonged and remcated contact may cause a skin sensitization reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). Mist may cause irritation of the upper respiratory tract. INHALATION: May cause gastrointestinal tract irritation. INGESTION: EMERGENCY & FIRST AID PROCEDURES: RGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flugh with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician. SKIN: Promptly wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse. INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician. INGESTION: If conscious, the person should immediately drink large quantities of liquid to dilute this product. Call a physician. NEVER give liquids to an unconscious person. MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals under certain non-industrial exposure conditions of repeated and prolonged skin contact. Individuals sensitized to rosin derivatives may also react to this product after skin contact. Hercules is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers. PRIMARY ROUTES OF ENTRY: Eyes, skin CANCER INFORMATION: The components of this product are NOT listed as carcinogens by the National Toxicology Prögram (NTP). They are NOT regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have NOT

Continued...

been evaluated by the International Agency for Research on Cancer (IARC).

Date: 06/29/90 PAGE: US OF US VIII. ENVIRONMENTAL & REGULATORY DATA The Following Environmental and regulatory bata are provided to assist users f this product in defining their regulatory environmental compliance obligations. Α. PRODUCT COMPOSITION PRODUCT (P) or TRADE NAME or COMPONENT NO. CHEMICAL COMPONENT CAS NUMBER WT. PERCENT Ρ DRESINOL\* 215  $N/\Lambda$ 100 .1 в. SARA TITLE III (See footnotes) SEC. 304 SEC. 302 COMPONENT EHS EHS SEC. 311/312 SEC 313 TOXIC NO. RQ (1bs) TPQ (1bs) HAZARD CATEGORY CHEMICAL (YES, NO) Ρ N/A N/A

HC-1, NPH

N/A

1

CERCLA (40 CFR 302.4 HAZARDOUG SUBSTANCE & REPORTABLE QUANTITIES) c.

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

Ε. OTHER

None

Montinued...

A

ATERIAL SAFETY DATA SHEET	PAGE: 01 of 06
ERCULES INCORPORATED ercules Plaza	DRESINOL* 205
ilmington, DE 19894	MSDS No.: 909 6401 1000-02
one #: (302) 594-5000 (24 hrs)	
upersedes MSDS <b>#: 909 6401 1000-01</b>	Date: 06/29/90
• PRODUCT IDENTIFICATION	· · ·
CAUTION! MAY CAUSE P	EYE AND SKIN IRRITATION.
RESINOL* 205 Resin Dispersion	HMIS RATINGS:(1)
	Health hazard: 1 Slight
	Flammability hazard: 0 Minima Reactivity hazard: 0 Minima
CHEMICAL & COMMON NAME: Aqueous disp	الا ersion of hydrogenated rosin
PPEARANCE AND ODOR: Cream-colored 1:	iquid; slight ammonia odor
Registered Trademark of Hercules Ind	corporated.
Acgrotter reasonable reasonable	-
II. HAZARDOUS INGREDIENTS & EXPOSUR	E LIMITS
he ingredients in this product are n Subpart Z, nor do they appear in "Thr Substances in the Work Environment Ad	ot listed in 29 CFR 1910, eshold Limit Values for Chemical
he ingredients in this product are n Subpart Z, nor do they appear in "Thr Substances in the Work Environment Ad	ot listed in 29 CFR 1910, reshold Limit Values for Chemical lopted by ACGIH" for 1989-90.
The ingredients in this product are not subpart 2, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health	ot listed in 29 CFR 1910, eshold Limit Values for Chemical lopted by ACGIH" for 1989-90. 
The ingredients in this product are not subpart 2, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health	ot listed in 29 CFR 1910, Teshold Limit Values for Chemical Hopted by ACGIH" for 1989-90. Tion System rating for product as supplied Administration. An Conference of Governmental Industrial
The ingredients in this product are monoport Z, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health TLV: Registered trademark of America Hygienists for Threshold Limit	ot listed in 29 CFR 1910, eshold Limit Values for Chemical lopted by ACGIH" for 1989-90. ion System rating for product as supplied Administration. an Conference of Governmental Industrial Values.
he ingredients in this product are n Subpart Z, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health TLV: Registered trademark of America Hygienists for Threshold Limit TWA: Time Weighted Average STEL: Short term exposure limit (See	ot listed in 29 CFR 1910, eshold Limit Values for Chemical lopted by ACGIH" for 1989-90. 
The ingredients in this product are monoport Z, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health TLV: Registered trademark of America Hygienists for Threshold Limit	ot listed in 29 CFR 1910, eshold Limit Values for Chemical lopted by ACGIH" for 1989-90. ion System rating for product as supplied Administration. an Conference of Governmental Industrial Values.
he ingredients in this product are n Subpart Z, nor do they appear in "Thr Substances in the Work Environment Ad FOOTNOTES (1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health TLV: Registered trademark of America Hygienists for Threshold Limit TWA: Time Weighted Average STEL: Short term exposure limit (See N/A: Not applicable	ot listed in 29 CFR 1910, eshold Limit Values for Chemical lopted by ACGIH" for 1989-90. ion System rating for product as supplied Administration. an Conference of Governmental Industrial Values.

8 2 10

an an earlier and earlier and a second and a s

•

MSDS No.: 909 6401 1000-02

1

.

s tamén e sa

. .

·	HAZARD DATA	<u> </u>		
	CAUTION	MAY CAUSE EYE AND SKIN	IRRITATION.	
- Figns and sy	MPTOMS OF OVERF	EXPOSURE IN THE WORKPLAC	E:	
EYES: SKIN: INHALATIO INGESTION	Prolonged Prolonged reaction i CONDITIONS EXPOSURE) DN: Mist may c	eye irritation. and/or repeated contact and repeated contact ma in susceptible individua S GENERALLY RECOGNIZED A cause irritation of the gastrointestinal tract	y cause a skin sensitiz ls (See below: MEDICAL S BEING AGGRAVATED BY upper respiratory tract	ation ,
EYES: In water for	FIRST AID PROCE a case of contact at least 15 mi flushing. Call	ct, immediately flush wi inutes. Remove any cont	th plenty of low-pressu act lenses to ensure	ıre
SKIN: P clothing	comptly wash with . Wash clothing	th soap and running wate g before reuse.	r. Remove contaminated	đ
	DN: Remove to : hysician.	fresh air. Treat any ir	ritation symptomatical.	ly.
quantiti	N: If consciou es of liquid to to an unconscio	s, the person should imm dilute this product. C ous person.	actively drink large Call a physician. NEVE	R giv
•			×	•
This pro derivati (sensiti exposure sensitiz contact. industri search o sensitiz	duct contains r ves have been r zation) in susc conditions of ed to rosin der Hercules is u al exposure to f Hercules medi ation to rosin	LY RECOGNIZED AS BEING A cosin or a rosin derivation reported to cause an alle repeated and prolonged s rivatives may also react anaware of any allergic s this product or similar ical records has disclose or its derivatives from en reported by our custor	ive. Rosin and some of ergic skin reaction er certain non-industri skin contact. Individu to this product after skin reactions caused b materials. A thorough ed no case of skin industrial exposure in	its al als skin Y
workers.				
	TES OF ENTRY:	Eyes, skin		- 7 17
PRIMARY ROU CANCER INFO The comp National by the O	RMATION: conents of this Toxicology Pro Occupational Saf	Eyes, skin product are NOT listed ogram (NTP). They are N fety and Health Administ International Agency for	OT regulated as carcino ration (OSHA) and have	NOT
PRIMARY ROU CANCER INFO The comp National by the O	RMATION: conents of this Toxicology Pro Occupational Saf	product are NOT listed ogram (NTP). They are N fety and Health Administ	OT regulated as carcino ration (OSHA) and have	NOT

λ

a construction of the second sec

MSDS No.: 909 6401 1000-02

a k n (133

VIII. ENVIRONMENTAL & REGULATORY DATA

this product in defining their regulatory data are provided to assist users obligations.

### A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME OF CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT
Р	DRESINOL* 205	N/A	100

### B. SARA TITLE III (See footnotes)

	COMPONENT NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC 313 TOXIC CHEMICAL (YES, NO)
•	P *	.N/A	N/A	HC-1, NPH	N/A

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

Continued...

#### E. OTHER

None

CIIEMICAL & SUPPLY 4025 AIR IYARK STR MEMIFIIS, IN 381	EET 18	M			SAFETY
801-363-7720 • 800-23 FAX 901-366-086	2-6776 4		À	DAL	<b>A SHEET</b>
MSDS CODE NO	5B05, 5B06,	5809, 5822 & 58	23 ORIGI	NAL ISSUE DATE:	5/80 REVISED:2/94
I. IDENTIFICATI	ΘN		24 HC	OUR EMERGENCY TE CHEMTREC 800	
RODUCT NAME: Aqui OMMON NAMES: Aqui HIPPING NAME: Am	ua Ammonia ua, Ammonium Hyd	roxide, Ammonia , 8	Solution		ND/OR DISTRIBUTOR: nc. load N.E. 491-7987 after hours
II. INGREDIENT	S AND RECOM	MENDED O	CCUPATION	IAL EXPOSURE L	IMITS
MATERIAL	FORMULA	CAS. NO.:	%WT.	EXP	OSURE LIMITS
				OSHA-STEL	ACGIH
Ammonia Water Aqua Ammonia	NH₃ H₂O NH₄OH	7664-41-7 7732-18-5 1336-21-6	19-30 81-70 100	50 ppm (NH₃) None Established —	TWA STEL 25 ppm 35 ppm None Established 5mg/M <sup>3</sup> —
III. PHYSICAL D	ATA				
OILING POINT (°F)	33° (30% Soln.)		SPECIF	IC GRAVITY (H <sub>2</sub> O = 1)	0.896 @ 60°F (30% Soln.)
FLTING POINT (°F)			PERCE	NT VOLATILE BY VOLU	JME (%) 100
******	m Hg.) 720 @ 809	°F (30% Soln.)	рН Аррі	roximately 11.6 for 1 N S	olution
APOR DENSITY (AIR				ILITY IN WATER Comp	olete
PPEARANCE AND OI	and the state of a design of the state of the state				
IV. FIRE AND E	<b>KPLOSION HA</b>	ZARD DATA			
LASH POINT (method LAMMABLE LIMITS				FOR I	HEALTH 2 (Moderate) FIRE 1 (Slight) REACTIVITY 0 (Least)
XTINGUISHING MED	IA: Water fog or sp	oray for escaping	ammonia gas.	1989	3
PECIAL FIRE FIGHTIN (car full protective clot	NG PROCEDURES hing and self-conta	The mixture will ined breathing ap	not burn but esc paratus in the pr	aping ammonia gas can essure demand mode.	burn in the range of 16-25% in a
V REACTIVITY	DATA				
	Unstable	CONDI	FIONS TO AVOID	): Heating above ambie	ent temperatures causes the vap
STABILITY	Stable	X pressur	e of ammonia to i	increase rapidly.	, ,
ICOMPATIBILITY (ma pochlorite (bleach) to	iterials to avoid): S form explosive con	strong acids. Aqua npounds. Avoid us	a ammonia reacts se ol metals cont	s with chlorine, bromine, aining copper or zinc.	mercury, silver, silver solder, a
AZARDOUS DECOMP	POSITION PRODUC	CTS: Heating and at as low as 575°F	contact of vapors	s with very hot surfaces m	nay lorm hydrogen. Certain meta
AZABDOUS May Occur					
AZARDOUS	iviay Occur		FIONS TO AVOID		

# LAROCHE INDUSTRIES INC.

THE APASSAN CONCERNMENT OF A STREET OF A S			
		The first and a series of the states	Si Sun Shiney
/ [신문기 그 ] [더 뜨레 0 ] = 셴 년 드/ 시 ]			5-00-091-0-0
			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
/I.SPILL OR LEA	a second to a the farmers	·····································	1446 56

TRANSPORTATION EMERGENCIES Call CHEMTREC 800-424-9300

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED: Releases will liberate irritating vapors. Spilled liquids should be contained and not washed into sewers or ground water. Prevent large quantities from contact with vegetation or waterways. Aqua ammonia is a regulated material

se of 1,000 lbs. or more of aqua ammonia (NH₄OH) within 24 hours must be reported to the National Response Center at 800-424-8802, as well as appropriate local and state agencies. Immediate (within minutes) reporting is required.

### WASTE DISPOSAL METHOD:

Consult local, state or federal regulatory agencies for acceptable disposal procedures and disposal locations. EPA Waste Identification No.

MAJOR EXPOSURE HAZARD

X INHALATION X SKIN CONTACT X EYE CONTACT

Not Applicable

INGESTION

Disposal in streams or sewers may be contrary to federal, state and local regulations.

For hazardous waste regulations call 800-424-9346, the RCRA Hotline.

# VII. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

Oral LD<sub>50</sub>=350 mg NH<sub>3</sub>/Kg (Rats)

Inhal. LC<sub>50</sub>=4230 ppm NH<sub>3</sub> (Mice)

IDLH Level=500 ppm NH3

Ammonia is very alkaline and reacts corrosively with all body tissues. Inhalation: The gas can be suffocating and is irritating to the mucous membranes and lung tissues. Skin Contact: High concentrations can cause severe irritation and burns. Eye Contact: May be severely irritating upon liquid exposure, with mild irritation from fumes. Ingestion: Can cause vomiting, nausea and corrosive burns to the esophagus and stomach. The exact nature and intensity of toxic effects following ingestion of varying amounts of strong aqua ammonia solution (e.g. 28%) is unpredictable. The most accepted view is that any amount from one teaspoon or greater can be dangerous if ingested. Ammonia is not a listed carcinogen

# EMERGENCY AND FIRST AID PROCEDURES:

nhalation: Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as needed. Seek medical id. Skin Contact: Immediately flush with large quantities of water while removing contaminated clothing. Eye Contact: Flush with large amounts of water for at least 15 minutes. Seek medical aid. Ingestion: Do not induce vomiting. Rinse mouth with water and give plenty of milk or water

# SPECIAL PROTECTION INFORMATION

### **IESPIRATORY:**

respiratory protection approved by NIOSH/MSHA for ammonia must be used when exposure limits are exceeded. Appropriate protection epends on the type and magnitude of exposure. (See Section IX).

### KIN:

lubber gloves and rubber or PVC/Nylon/PVC laminate protective clothing should be used to prevent skin contact. A face shield should be used 1 hen appropriate to prevent contact with splashed liquid.

YF

mployees should be required to wear chemical safety goggles to prevent eye contact.

### ENTILATION:

ocal exhaust ventilation should be used to control release of air contaminants in the work place. General dilution ventilation may assist with

# THER PROTECTIVE EQUIPMENT:

mergency eye wash stations and deluge showers should be available in the work area.

# SPECIAL PRECAUTIONS

# RECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

ore in vented containers or pressure vessels away from heat. Open containers cautiously in case of pressure build up. Zinc, copper and copper oys such as brass are rapidly corroded by aqua ammonia.

# **HER COMMENTS:**

olonged inhalation of high concentrations may cause bronchitis and/or pneumonia, with some residual reduction in pulmonary functions. mptoms of lung edema are often latent (usually a few hours), and are aggravated by physical effort. (Handling Chemicals Safely, Dutch Assoc.

Experts et al. 1980). Rare allergic manifestations (urticaria) may occur from inhalation (Occupational Diseases: A Guide to Their

n, U.S. Dept. H.E.W., 1977). Contact lenses should not be worn when working with ammonia. Whether a chemical cartridge respirator

-contained breathing apparatus is sufficient for effective respiratory protection depends upon the type and magnitude of exposure.

is information is taken from sources or based upon data believed to be reliable. However, LaRoche Industries Inc. makes no warranty as to the solute correctness or sulficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.

MININCIS Sub. jo Bioculic AMA-35D Intermediate For Manufacturing Use Intermediate For Manufacturing Use

v

Vinings' AMA-35D is a nearly odorless, dustless, free flowing crystalline solid. It is an excellent Fungicide and is intended only for use in the formulating and/or compounding of Pesticides only.

Vinings markets AMA-35D solely as an industrial technical grade organic intermediate. As such, formulators are responsible for providing data to support the registration for their formulated products.

Each of the components in the above product have been cleared for use in the manufacture of paper and paperboard that contact' food. See FDA Food Additive Regulation, 121.2505 and 121.2529.

### COMPOSITION:

Active Ingredients: Tetrahydro-3,5-Dimethyl-2H-1,3,5-Thiadiazine-2-Thione.\* 99.0%

### PHYSICAL PROPERTIES:

Color:	White	
Odor:	Nearly Odorless	
Physical Form:	Crystalline Solid	
Melting Point:	102–105 degrees C	
Solubility:	Water – 0.12%; Acetone – 19.5%; Trichloroethylene – 26	%;
•	Ethylene Chloride – 21%	

### **STABILITY:**

Stable in alkaline systems, pH8 and above. Decreased stability as pH decreases. However, the breakdown of AMA-35D in water solutions is necessary for its biological action. The handling and storage characteristics of AMA-35D are superior to those of its active decomposition products. Therefore, the instability of AMA-35D in water solutions is desirable. The presence of heavy metal salts accelerates the breakdown of AMA-35D. Chlorine in excess of 10 ppm in water solutions, also accelerates the breakdown but in addition reduces the biological activity of the decomposition products.

100 Lbs. of Tetrahydro-3,5-Dimethyl-2H-1,3,5-Thiadiazine-2-Thione (DMTT)-99% material can be put into solution by the following manner.

Add 86<sup>#</sup> of 50% caustic to 20 gallons of water - making sure that the temperature does not go above 80° F or bedrew 70° F. Then add DMTT (100 lbs.) slowly stirring. NOTE: TEMPERATURE CONTROL IS IMPORTANT WHEN ADDING DMTT.

e 1 1 J

\*(DMTT)

1

# VININGS

Sub. jo Biocili

Intermediate For Manufacturing Use TetraHydro-3, 5-Dimethyl-2H-1, 3, 5-Thiadiazine-2-Thione\*

AMA-35D

Vinings' AMA-35D is a nearly odorless, dustless, free flowing crystalline solid. It is an excellent Fungicide and is intended only for use in the formulating and/or compounding of Pesticides only.

Vinings markets AMA-35D solely as an industrial technical grade organic intermediate. As such, formulators are responsible for providing data to support the registration for their formulated products.

Each of the components in the above product have been cleared for use in the manufacture of paper and paperboard that contact food. See FDA Food Additive Regulation, 121.2505 and 121.2529.

### COMPOSITION:

Active Ingredients: Tetrahydro-3,5-Dimethyl-2H-1,3,5-Thiadiazine-2-Thione.\* 99.0%

λ

### PHYSICAL PROPERTIES:

Color:	White		11 in	
Odor:	Nearly Odorless			
Physical Form:	Crystalline Solid	-	4	
Melting Point:	102–105 degrees C		6 T	
Solubility:	Water - 0.12%; Acetone -	- 19.5%;	Trichloroethylene	- 26%;
2 2 2 4 1	Ethylene Chloride – 21%	÷.		

### STABILITY:

Stable in alkaline systems, pH8 and above. Decreased stability as pH decreases. However, the breakdown of AMA-35D in water solutions is necessary for its biological action. The handling and storage characteristics of AMA-35D are superior to those of its active decomposition products. Therefore, the instability of AMA-35D in water solutions is desirable. The presence of heavy metal salts accelerates the breakdown of AMA-35D. Chlorine in excess of 10 ppm in water solutions, also accelerates the breakdown but in addition reduces the biological activity of the decomposition products.

100 Lbs. of Tetrahydro-3,5-Dimethyl-2H-1,3,5-Thiadiazine-2-Thione (DMTT)-99% material can be put into solution by the following manner.

Add 86<sup>#</sup> of 50% caustic to 20 gallons of water - making sure that the temperature does not go above 80° F or below 70° F. Then add DMTT (100 lbs.) slowly stirring. NOTE: TEMPERATURE CONTROL IS IMPORTANT WHEN ADDING DMTT.

\*(DMTT)

MATERIAL SAFETY DATA SHEET

SECTION 1	(4)	
Manufacturer's Name & Address Erie Foods International, Inc.	. ì	Telephone Number 800-447-1887
401 - 7th Avenue Erie, IL 61250	ν,	Date of Preparation: <u>09/15/94</u>
Chemical Name/Synonyms Casein	Trace Name/Synon Acid Casein	yms Chemical Family CAS # 9000-71-9

SECTION II

Paints. Preservatives, & Solvents % TLV (Units) Alloys & Metallic Coatings % TLV (Units)

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY OSHA 1910.1200\*

"Hazardous chemical" means any chemical which is a physical hazard to health hazard.

A.

"Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes or mucous membranes.

"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive or water reactive.

\*See also Section X, Special Precautions.

<u>SECTION III - PHYSICAL</u>	DATA	0	
Boiling Point (F)	N/A	Specific Gravity (H2O=	=1) N/A
Vapor Pressure (mmHg)	N/A	Percent Volatile by Vo	lume (%) 10-12
Vapor Density (AIR=1)	N/A	Evaporation Rate	N/A
Solubility in Water	YES. MEDIUM		<u></u>
Appearance and Odor	FREE FLOWING	POWDER WITH A BLAND ODOR	
SECTION IV - FIRE & EX	PLOSION HAZARD	DATA	
Flash Point (Method Us		Flammable Limits Le1	N/A Uel N/A
Extinguishing Media	N/A	<u></u>	
Special Fire Fighting	Procedures 1	N/A	

	LARC	OSHA	OTHER	
SECTION VI -	HEALTH HAZARD DAT	···	······································	
Threshold Li		NONE LIMITED		
Permissible	Exposure Limit	N/A		
Other		N/A		<u> </u>
Effects of Ov	verexposure	N/A	······································	9 9
Emergency Fin	rst Aid Procedures	s N/A	••••••••••••••••••••••••••••••••••••••	
Primary Route	es of Entry - AIRB	BORNE DUST FROM POWE	DER DURING FURTHER PRO	DCESSING
SECTION VII	- REACTIVITY DATA			
STABILITY - U	Jnstable Stable X	Conditions to	Avoid N/A	
[ncompatibili	ity (Materials to	Avoid) N/A		- 141
lazardous Dec	composition Produc	ets <sub>v</sub> , N/A	·····	
Hazardous Pol	lymerization - May Wil	VOCCUR C I Not Occur X	Conditions to Avoid	N/A
SECTION VIII			8	
Steps To Be 1	<u>- SPILL OR LEAK P</u> Taken In Case Mate	PROCEDURES erial Is Released Or	· Spilled CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be 1	<u>– SPILL OR LEAK P</u> Taken In Case Mate , IE VACUUM, SWEEPI	PROCEDURES erial Is Released Or	CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa	<u>- SPILL OR LEAK P</u> Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE	PROCEDURES Frial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS	CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa SECTION IX -	<u>– SPILL OR LEAK P</u> Taken In Case Mate , IE VACUUM, SWEEPI	PROCEDURES Frial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS	CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa SECTION IX -	- SPILL OR LEAK P Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus	PROCEDURES erial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS ON INFORMATION Y type) et N/A	CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa SECTION IX - Respiratory H	<u>- SPILL OR LEAK P</u> Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus Mechanical (	PROCEDURES Frial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS ON INFORMATION Ty type) t N/A general) N/A	CAUSTIC SODA FOR WET	CLEAN-UP
Steps To Be T DRY CLEAN-UP, Waste Disposa SECTION IX - Respiratory H Ventilation Protective G	- SPILL OR LEAK P Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus <u>Mechanical (</u> loves N/A	PROCEDURES Frial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS ON INFORMATION Ty type) t N/A general) N/A	CAUSTIC SODA FOR WET STE FOOD INGREDIENT Special Other	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa SECTION IX - Respiratory H Ventilation Protective G Other Protect	- SPILL OR LEAK P Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus <u>Mechanical (</u> loves N/A tive Equipment	PROCEDURES prial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS <u>ON INFORMATION</u> y type) it N/A general) N/A E N/A	CAUSTIC SODA FOR WET STE FOOD INGREDIENT Special Other	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Maste Disposa SECTION IX - Respiratory H Mentilation Protective G Other Protect SECTION X - S	- SPILL OR LEAK P Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus <u>Mechanical (</u> loves N/A tive Equipment <u>SPECIAL PRECAUTION</u>	PROCEDURES prial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS <u>ON INFORMATION</u> y type) t N/A <u>general) N/A</u> E N/A	CAUSTIC SODA FOR WET STE FOOD INGREDIENT Special Other	CLEAN-UP
Steps To Be 7 DRY CLEAN-UP, Waste Disposa SECTION IX - Respiratory H Ventilation Protective G Other Protect SECTION X - S Precautions 7	- SPILL OR LEAK P Taken In Case Mate , IE VACUUM, SWEEPI al Method MAY BE <u>SPECIAL PROTECTIO</u> Protection (specif Local Exhaus <u>Mechanical (</u> loves N/A tive Equipment <u>SPECIAL PRECAUTION</u> Fo Be Taken In Han	PROCEDURES PROCEDURES Prial Is Released Or ING ETC. USE DILUTE E DISPOSED OF AS WAS ON INFORMATION y type) It N/A general) N/A H N/A	CAUSTIC SODA FOR WET STE FOOD INGREDIENT Special Other	CLEAN-UP

. •	MATERIAL CASETY RATA CUSET	111
	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 09
	HERCULES INCORPORATED 'A, Hercules Plaza Wilmington, DE 19894	HERCULES* GUM 42 ROSIN Molten or solid
	Phone #: (302) 594~5000 (24 hrs)	MSDS No.: 999 0210 3001-02
	Supersedes MSDS No.: 999 0210 3001-01	Date: 06/30/93
	I. PRODUCT IDENTIFICATION	
	A. HERCULES* GUM 42 ROSIN, MOLTEN	
	DANGER! MOLTEN RESIN. CAUSES PRODUCT MAY BURN IF I	SEVERE BURNS ON CONTACT. GNITED.
	APPEARANCE AND ODOR: Amber, viscous liqu rosin odor	id at 120-180 C (248-356 F); terpene
	B. HERCULES* GUM 42 ROSIN, SOLID	æ
	FLAMMABLE VAPORS MAY CA May form flammable dust-a	
$\langle \bigcirc$	APPEARANCE AND ODOR: Amber semi-solid; t	erpene rosin odor
	CASRN: 8050-18-8	HMIS RATINGS: (1)
		Health hazard: O Minimal Flammability hazard: l Slight Reactivity hazard: O Minimal
	CHEMICAL & COMMON NAME: Decarboxylated r	osin
	* Registered Trademark of Hercules Incorp	orated
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification</li> <li>CASRN: Chemical Abstracts Service Regist</li> <li>AIHA WEEL: American Industrial Hygienists</li> <li>Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Adminit</li> <li>TLV: Registered trademark of American Construction</li> <li>Hygienists for Threshold Limit Value</li> <li>TWA: Time Weighted Average</li> </ul>	ry Number Association - Workplace nistration. nference of Governmental Industrial es.
$\langle \bigcirc$	STEL: Short term exposure limit (See 29 C C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 29 N/A: Not applicable	CFR 1910.1000, March 1, 1989, rev.)

4

.

\*

MSDS No.: 999 0210 3001-02

Date: 06/30/93

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

A. MOLTEN product

CAUTION! PRODUCT MAY BURN IF IGNITED.

\_\_\_\_\_\_

B. SOLID product

WARNINGI STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITION HAZARDS).

FLASH POINT: Above 204 C (400 F) COC

FLAMMABLE LIMITS: Not determined

AUTOIGNITION TEMPERATURE: Not determined

EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon

SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. Apply water to MOLTEN RESIN fires from a safe, protected location to avoid body contact with hot resin.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: None

HAZARDOUS DECOMPOSITION PRODUCTS: None expected

HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed.

1

HAZARDOUS POLYMERIZATION: Will not occur.

\_\_\_\_\_

MSDS No.: 999 0210 3001-02

۷.	HEALTH HAZARD DATA

### ...Continued

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

### CANCER INFORMATION:

Not listed as a carcinogen by NTP (National Toxicology Program); not regulated as a carcinogen by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).

### **REPORTED HUMAN EFFECTS:**

See above: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

### **REPORTED ANIMAL EFFECTS:**

Oral LD50, rats - 7.6 g/kg Oral LD50, mice - 4.6 g/kg Oral LD50, guinea pig - 4.1 kg/kg Dermal LD50, rabbits - greater than 2.5 g/kg.

Two-year feeding studies have been conducted in dogs and rats with gum, wood, and tall oil rosins. At a dietary level of 1% rosin, the rats showed a slight decrease in body weight gain and both species showed increased liver sizes. Microscopic examination of the liver and other tissues did not reveal any abnormalities that could be attributed to the test material. At dietary levels of 0.2% or less, the rats and dogs did not have any abnormalities that could be related to the resin (rosin) acids. Tumor incidence was equal to, or less than, that in control animals.

### OTHER:

The following resin acid components of rosin were all negative in the Ames IN VITRO bioassay: Abietic, dehydroabietic, levopimaric, pimaric, isopimaric, and sandaracopimaric. Abietic acid was also negative in the DNA assay with E. COL1.

n I	-C-E1-₩	E-11
M	JAN 2 3 1996	
L		

MSDS No.: 999 0210 3001-02

## VII. APPLICABLE CONTROL MEASURES

...Continued

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

A. MOLTEN product - HANDLING AND STORAGE PRECAUTIONS:

If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake rosin, and may form flammable dust-air mixtures. See HANDLING AND STORAGE PRECAUTIONS for solid product below. Water contact with hot molten resin may result in foaming or spattering which can cause burns upon skin or eye contact.

\_\_\_\_\_\_

B. SOLID product - HANDLING AND STORAGE PRECAUTIONS: For small packages, the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In addition, when emptying bags where flammable vapors may be present, blanket vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.

For large bags (1,000 lbs. or greater), the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION!

Flaked forms are prone to gradual oxidation. Control inventory. Use oldest material first.

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep dust or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.

\_\_\_\_\_\_

### PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

Eliminate ignition sources.

Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.

\_\_\_\_\_

Keep area clean. Product will burn.

• • • •	MSDS No.: 999 0210 3001-02 Date: 06/30/93 PAGE: 09 of 09
	VIII. ENVIRONMENTAL REGULATORY DATA
	Continued 'a,
	FOOTNOTES:
	SEC. 302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
	N/A: This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
	SEC. 304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
	N/A: This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	SEC. 311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
	SEC. 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
	NO: This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	YES: This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
	N/A: This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
	HERCULES INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE RELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS

ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

.

Doc. No. 5026s

OR STATE LAWS.

MATERIAL SAFET	Y DATA	SHEET
----------------	--------	-------

HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	POLY-PALE* Partially polymerized rosin MOLTEN or SOLID
Supersedes MSDS #: 853 2171 0100-04	MSDS No.: 853 2171 0100-05 Date: 04/23/93
I. PRODUCT IDENTIFICATION	
A. POLY-PALE* Partially polymerized ros	, T
DANGER! MOLTEN RESIN. CAUSES PRODUCT MAY BURN IF D	S SEVERE BURNS ON CONTACT. IGNITED.
APPEARANCE AND ODOR: Straw-colored viso rosin odor	cous liquid at 100-175 C (212-347 F);
B. POLY-PALE* Partially polymerized ros	sin, SOLID
VAPORS MAY CAUSE FLASH FI MAY FORM FLAMMABLE DUST-AIR	
APPEARANCE AND ODOR: Amber solid or fla	ake; low odor
CASRN: 65997-05-9	HMIS RATINGS:(1)
	Health hazard: 0 Minimal Flammability hazard: 1 Slight Reactivity hazard: 0 Minimal
CHEMICAL & COMMON NAME: Partially poly	merized (dimerized) rosin
* Registered Trademark of Hercules Inco	rporated /
<ul> <li>(1)Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification CASRN: Chemical Abstracts Service Regins AIHA WEEL: American Industrial Hygieniss Environmental Exposure Level</li> <li>OSHA: Occupational Safety and Health Add TLV: Registered trademark of American of Hygienists for Threshold Limit Val</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29 C: Ceiling exposure concentration (See SKIN: May be absorbed through skin (See N/A: Not applicable</li> </ul>	n System rating for product as supplied. stry Number ts Association - Workplace ministration. Conference of Governmental Industrial lues. CFR 1910.1048, March 1, 1989, revision) 29 CFR 1910.1000, March 1, 1989, rev.)

\*

MSDS No.: 853 2171 0100-05 Date: 04/23/93

-

.

5

As Hercules interprets the U.S. Occupat Regulations, including the Hazard Commu dated August 24, 1987, this product sho	nication Standard 29 CFR	1910.1200
If this product is used in a manner tha Hercules recommends that the dust be tr (Particulates Not Otherwise Classified) of Governmental Industrial Hygienists ( Regulated) as defined by OSHA.	eated as a NUISANCE PARTI as defined by the Americ	CULATE an Conference
	RECOMMENDED AIRBORN	
	1992-199 OSHA TWA	J TLV-TWA
Particulates not	15 mg/m3 total	
	mg/m3 respirable fraction	L
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for pyrolysis products should be observed.	es sufficient to produce maldehyde), for rosin cor	smoke or e solder
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for	es sufficient to produce maldehyde), for rosin cor CTERISTICS	smoke or e solder
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for pyrolysis products should be observed. III. TYPICAL PHYSICAL & CHEMICAL CHARF	es sufficient to produce maldehyde), for rosin cor CTERISTICS	smoke or e solder
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for pyrolysis products should be observed. III. TYPICAL PHYSICAL & CHEMICAL CHARF BOILING POINT: N/A	es sufficient to produce maldehyde), for rosin cor CTERISTICS SOLUBILITY IN WATE	smoke or e solder 
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for pyrolysis products should be observed. III. TYPICAL PHYSICAL & CHEMICAL CHARF BOILING POINT: N/A VAPOR PRESSURE AT 20 C: Not determined	es sufficient to produce maldehyde), for rosin cor CTERISTICS SOLUBILITY IN WATE	smoke or e solder 
Otherwise classified/regulated       5         If this product is heated to temperatur         fumes, the TLV-TWA of 0.1 mg/m3 (as for         pyrolysis products should be observed.         III.         TYPICAL PHYSICAL & CHEMICAL CHARF         BOILING POINT:         N/A         VAPOR PRESSURE AT 20 C:         NOT DENSITY:         N/A	es sufficient to produce maldehyde), for rosin cor CTERISTICS SOLUBILITY IN WATE SPECIFIC GRAVITY:	smoke or e solder CR: Negligibl 1.07 Slower than
Otherwise classified/regulated 5 If this product is heated to temperatur fumes, the TLV-TWA of 0.1 mg/m3 (as for pyrolysis products should be observed. III. TYPICAL PHYSICAL & CHEMICAL CHARF	es sufficient to produce maldehyde), for rosin cor CTERISTICS SOLUBILITY IN WATE SPECIFIC GRAVITY: pH: N/A	smoke or e solder  CR: Negligible 1.07

\_\_\_\_\_ IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA A. MOLTEN product CAUTION! PRODUCT MAY BURN IF IGNITED. \_\_\_\_\_ B. SOLID product STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE WARNING! VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS). FLASH POINT: 218 C (424 F) Cleveland Open Cup FLAMMABLE LIMITS: Not determ AUTOIGNITION TEMPERATURE: Not determined EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. Apply water to MOLTEN RESIN fires from a safe, protected location to avoid body contact with hot resin.  $\mathbb{C}_{\mathcal{A}}$ UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures. STABILITY CONSIDERATIONS: ... Stable INCOMPATIBILITY WITH: None HAZARDOUS DECOMPOSITION PRODUCTS: None 1 HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed. HAZARDOUS POLYMERIZATION: Will not occur. 

-

\*

/. HEALTH HAS	ZARD DATA
A. MOLTEN produ	uct
DAN	GER! MOLTEN RESIN. CAUSES SEVERE BURNS ON CONTACT.
SIGNS AND SYMPT EYES:	OMS OF OVEREXPOSURE IN THE WORKPLACE: Burns can cause irreversible eye injury and blindness. Smoke or fumes from rosin products may cause eye irritation with redness, tearing and discomfort.
SKIN:	Serious burns will result from contact with molten product. Repeated or prolonged contact may cause an allergic skin reaction (sensitization) in susceptible individuals. See MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.
INHALATION:	Breathing smoke or fumes from molten rosin products may produce breathing discomfort, coughing and sore throat. None known
EMERGENCY & FIR EYES: Cool immediately.	ST AID PROCEDURES: burns with plenty of low-pressure water. Get medical attention
least 15 min	iately cool burn area with cold water and cold packs for at utes. Do NOT put ice directly on the skin. Do NOT attempt to ified resin from the skin as severe tissue damage may result. attention.
INHALATION: Call a physi	Remove to fresh air. Treat any irritation symptomatically. cian.
NOTE TO PHYS Mineral oil	ICIAN: Material should not be forcibly pulled from the skin. may be used to loosen and soften the material.
B. SOLID produ	uct
SIGNS AND SYMPT EYES: SKIN:	COMS OF OVEREXPOSURE IN THE WORKPLACE: Dust may cause irritation by mechanical abrasion. Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).
INHALATION: INGESTION:	None known. None expected. None known.

Continued...

Date: 04/23/93

v.	HEALTH	HAZARD	DATA

#### B. SOLID product...Continued

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen the material.

\_\_\_\_\_

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

#### **REPORTED HUMAN EFFECTS:**

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

#### **REPORTED ANIMAL EFFECTS:**

Two-year chronic feeding studies were conducted with rats and dogs fed diets containing 1% and 0.05% of each of the partially and fully polymerized rosins. At the 1% dietary levels, food consumption of the rats was approximately 10% less than the control animals, and the growth of the rats was slightly depressed. Liver enlargement was noted in both species at the 1% dietary levels with both rosins but not at the 0.05% level. Microscopic examination of the tissues, including the livers, revealed no tissue changes that could be attributed to ingestion of the test diets. Tumor incidence was not statistically different from that of the control animals.

\*\*\*\*

VI.	SPILL PROCEDURES & WASTE DISPOSAL
	LL PROCEDURES: If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal.
•	TE DISPOSAL METHOD: Incineration of waste material in a permitted facility in accordance to local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility is a suitable alternative.
1	Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.
 VII	. APPLICABLE CONTROL MEASURES γ,
	ROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Avoid breathing dust or vapor. Wash thoroughly after handling, and before eating, drinking or smoking.
	MOLTEN product - PERSONAL PROTECTIVE EQUIPMENT: Face shield, safety glasses and hard hat Long-sleeve protective shirt, long pants and work shoes Long-cuff lined gloves Lined rain suit with protective hood or shoulder shroud or full aluminized or thermal suit with hood Protective clothing should be made of six-ounce (6 oz) or greater fabric; polyester should be avoided. Appropriate respiratory protection required when exposure to airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA Subpart I (29 CFR 1910.134) and manufacturer's recommendations.
	SOLID product - PERSONAL PROTECTIVE EQUIPMENT: / Impervious gloves Safety glasses Appropriate respiratory protection is required when exposure to an airborn contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations. Personnel exposed to hot molten material should wear protective clothing

÷

5

Continued...

Эř

\_\_\_\_\_ VII. APPLICABLE CONTROL MEASURES 

...Continued

WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible.

A. MOLTEN product - HANDLING AND STORAGE PRECAUTIONS:

If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake resin, and may form flammable dust-air mixtures. See HANDLING AND STORAGE PRECAUTIONS for solid product below. Water contact with hot molten resin may result in foaming or spattering which can cause burns upon skin or eye contact.

\_\_\_\_\_\_\_\_\_\_\_\_

B. SOLID product - HANDLING AND STORAGE PRECAUTIONS: For small packages, the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In addition, when emptying bags where flammable vapors may be present, blanket vessel with inert gas, groged operator, and pour material slowly into conductive, grounded chute.

For large bags (1,000 lbs. or greater, the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION!

Flaked forms are prone to gradual oxidation. Control inventory. Use oldest material first.

\_\_\_\_\_

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep dust or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Eliminate sources of ignition. Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs. Keep area clean. Product will burn.

\_\_\_\_\_\_

 VII 	I. ENVIRONMENTAL &	REGULATORY DATA		
of	following environme this product in defi igations.			
Α.	PRODUCT COMPOSITION	I		
	PRODUCT (P) or COMPONENT NO.	TRADE AME OF CHEMICAL COMPONEN	T CASRN	WT. PERCENT
	P	POLY-PALE* Parti polymerized ros	_	-9 100
в.	SARA TITLE III (See	(		
ь.	SULVE III (266	-		
	SEC. 3 COMPONENT EHS NO. RQ (15	04 SEC. 302 EHS	Y. SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)

P N/A N/A NHH, HC-3 (dust) NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. TSCA STATUS

-

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

.

VIII. EN	VIRONMENTAL REGULATORY DATA
Contin	ued
FOOTNOTES	54 1 •
200100100	•
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements
"Haza	ard Categories" HC-l Immediate (acute) health hazard
	$HC-2$ Delayed (chroń $R_{0}$ ) health hazard
	HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard
	HC-5 Reactive hazard
	NHH NOT a health hazard
	NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemidal Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of
	Section 313 of Title III of the Superfund Amendments and
	Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical
	Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Ac of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	Percent composition (or estimated range) is listed above.
N/A:	
	Chemical under 40 CFR 372, Sect. 313 reporting requirements.
	Reportable constituents are listed individually where they exceed
	threshold concentration limits.
CONTAINED RELIABLE WHEN THE AS TO THE	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS D IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE E CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS
PRODUCT,	EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE IT ENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

Doc. No. 2304s

	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 06					
$\bigcirc$	HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	HERCOLYN* D Methyl ester of rosin, partially hydrogenated					
7	Supersedes MSDS # 844 3520 0200~02						
.,	HERCOLYN* D Methyl ester of rosin, partially hydrogenated	HMIS RATINGS:(1) Health hazard: 0 Minimal					
	CASRN: 8050-15-5	Flammability hazard: 1 Slight Reactivity hazard: 0 Minimal					
	CHEMICAL & COMMON NAME: Food grade methyl ester of rosin, partially hydrogenated; hydrogenated methyl ester of rosin						
	APPEARANCE AND ODOR: Light amber viscous liquid; resinous odor						
	* Registered Trademark of Hercules Incorporated II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS						
2	As Hercules interprets the U.S. Occupation Regulations, including the Hazard Communic dated August 24, 1987, this product should	nal Safety and Health Act and cation Standard 29 CFR 1910.1200					
•	If this product is heated to temperatures fumes, the TLV-TWA of 0.1 mg/m3 (as forma pyrolysis products should be observed.	sufficient to produce smoke or ldehyde), for rosin core solder					
	(1)Explanation of acronyms:	8 8 78 5 2					
	<ul> <li>HMIS: Hazardous Materials Identification</li> <li>CASRN: Chemical Abstracts Service Regist</li> <li>AIHA WEEL: American Industrial Hygienists Environmental Exposure Lexel.</li> <li>OSHA: Occupational Safety and Health Admi</li> <li>TLV: Registered trademark of American Co Hygienists for Threshold Limit Valu</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29 C</li> <li>C: Cailing exposure concentration (See 29)</li> </ul>	ry Number Association - Workplace nistration. nference of Governmental Industrial es. FR 1910.1048, March 1, 1989, revision) CFR 1910.1000, March 1, 1989, rev.)					
$\bigcirc$	SKIN: May be absorbed through skin (See 2 N/A: Not applicable	5 CFR 1510.1040, Malou 1, 1909, 2009,					

\*

.

	HYSICAL & CHEMICAL CHA	RACTERISTICS	
BOILING POINT:	360-364 C (680-687 F)	SOLUBILITY IN WAT	ER: Negligible
VAPOR PRESSURE A	AT 20 C: < 0.1 mm Hg	SPECIFIC GRAVITY:	1.02
VAPOR DENSITY:	Heavier than air	`pH: N/A	
VOLATILE (WT.),	Negligible at 20 C	EVAPORATION RATE:	Slower than butyl acetate
FREEZING POINT:	Not determined		1
IV. FIRE, EXP	LOSION, & REACTIVITY H	AZARD DATA	
FLASH POINT: 19	98 C (388 F)		
FLAMMABLE LIMIT	S: Not determined		
AUTOIGNITION TEN	MPERATURE: Not determ	ined	- 3
EXTINGUISHING M	- EDIA: Water <u>sp</u> ray, dr	y chemical, foam, carb	on dioxide, or halon
	HTING PROCEDURES: Non		
UNUSUAL FIRE ANI	D EXPLOSION HAZARDS:	None	a.
STABILITY CONSI	DERATIONS: Stable		а м
1	e p		3 K N 25
INCOMPATIBILITY	e p	one <sub>i</sub> ,	ा स ः स ः सा सू सा स
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox	WITH: None POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an	<b>\</b>	conditions, some
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox aliphatic alo HAZARDOUS POLYM	WITH: None POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an dehydes and carboxylic ERIZATION: Will not c	one nd smoke. Depending on c acids also may be for occur.	conditions, some med.
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox aliphatic alo HAZARDOUS POLYM	WITH: None POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an dehydes and carboxylic ERIZATION: Will not c ZARD DATA	one nd smoke. Depending on c acids also may be for occur.	conditions, some med.
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox aliphatic alo HAZARDOUS POLYM	WITH: None POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an dehydes and carboxylic ERIZATION: Will not c ZARD DATA	one nd smoke. Depending on c acids also may be for occur.	conditions, some med.
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox aliphatic alo HAZARDOUS POLYM V. HEALTH HA SIGNS AND SYMPT	WITH: NONE POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an dehydes and carboxylic ERIZATION: Will not c ZARD DATA OMS OF OVEREXPOSURE IN	one nd smoke. Depending on c acids also may be for occur.	conditions, some med.
INCOMPATIBILITY HAZARDOUS DECOM HAZARDOUS PRODUC Carbon monox aliphatic alc HAZARDOUS POLYM V. HEALTH HA SIGNS AND SYMPTO EYES:	WITH: NONE POSITION PRODUCTS: No CTS OF COMBUSTION: ide, carbon dioxide an dehydes and carboxylic ERIZATION: Will not c ZARD DATA	one nd smoke. Depending on c acids also may be for occur.	conditions, some med.

•

•

ĺ

Continued...

vi.	SPILL PROCEDURES & WASTE DISPOSAL
SPILL	PROCEDURES:
Sma	all Spills: Add absorbent, sweep up, and discard. Large Spills: Dike contain and pump into drums for use or disposal.
Inc	DISPOSAL METHOD: ineration of combustible wastes in permitted facilities is the preferred posal method.
	er to Section VIII for specific Federal Environmental and Regulatory a regarding use or disposal of this product.
VII.	APPLICABLE CONTROL MEASURES
APPRO	PRIATE HYGIENIC PRACTICES:
Do	not allow eye or skin contact.
Ren	sh thoroughly after handling, and before eating, drinking or smoking. Nove contaminated clothing promptly and clean thoroughly before reuse. Scard contaminated shoes and other leather articles.
	IAL PROTECTIVE EQUIPMENT:
_	pervious gloves
	emical goggles propriate protective clothing
Apr cor sel	propriate protective clothing propriate respiratory protection is required when exposure to an airborne ntaminant is likely to exceed acceptable limits. Respirators should be lected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and nufacturer's recommendations.
Per tha su	sonnel exposed to hot molten material should wear protective clothing at provides protection from thermal burns. Full face shield, lined rain at (or other heat resistant material), and lined impervious gloves are commended.
	PRACTICES: wash fountains and safety showers should be easily accessible.
HANDL	NG AND STORAGE PRECAUT
ENGINE	CERING CONTROLS:
	equate ventilation should be provided to keep fumes or vapor
	centrations below acceptable exposure limits. Discharge from the
	ntilation system should comply with applicable air pollution control
reç	gulations.
PROTEC	TIVE MEASURES DURING REPAIR AND MAINTENANCE:
El	minate ignition sources.
	piletely isolate and thoroughly clean all equipment, piping or vessels
	fore beginning maintenance or repairs. Op area clean. Product will burn.
	id area crean. Product will burn.

VI. SPILL PROCEDURES & WASTE DISPOSAL	
SPILL PROCEDURES:	
Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dil to contain and pump into drums for use or disposal.	ke
WASTE DISPOSAL METHOD: Incineration of combustible wastes in permitted facilities is the prefe disposal method.	rred
Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.	Ϋ́.
VII. APPLICABLE CONTROL MEASURES	
APPROPRIATE HYGIENIC PRACTICES:	
Do not allow eye or skin contact.	
Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse Discard contaminated shoes and other leather articles.	
PERSONAL PROTECTIVE EQUIPMENT:	
Impervious gloves	
Chemical goggles	
Appropriate protective clothing Appropriate respiratory protection is required when exposure to an airb contaminant is likely to exceed acceptable limits. Respirators should selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) manufacturer's recommendations.	be
Personnel exposed to hot molten material should wear protective clothin that provides protection from thermal burns. Full face shield, lined r suit (or other heat resistant material), and lined impervious gloves ar recommended.	ain
WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible.	
HANDLING AND STORAGE PRECAUTIONS: None	
ENGINEERING CONTROLS:	
Adequate ventilation should be provided to keep fumes or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.	
PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Eliminate ignition sources. Completely isolate and thoroughly clean all equipment, piping or vessel	.5
before beginning maintenance or repairs. Keep area clean. Product will burn.	

VI.					
	SPILL PROCEDURES & WASTE				
Sm	, PROCEDURES: Mall Spills: Add absorbent contain and pump into dru			Large Spills	: Dike
In	E DISPOSAL METHOD: ncineration of combustible isposal method.	wastes in pe	, <sup>i</sup> rmitted facil	ities is the	preferre
	efer to Section VIII for sp ata regarding use or dispos			tal and Regul	atory
VII.	APPLICABLE CONTROL MEASUR	RES			
Wa Re Di PERSO Im Ch Ap Ap co se ma Pe th su	o not allow eye or skin com ash thoroughly after handli move contaminated clothing scard contaminated shoes a DNAL PROTECTIVE EQUIPMENT: apervious gloves bemical goggles opropriate protective cloth opropriate respiratory protochtaminant is likely to exce elected and used in accordation resonnel exposed to hot mol- hat provides protection fro- tit (or other heat resistant ecommended.	ing, and befo g promptly and and other lea ection is re- ceed acceptab ance with OSE ons. Iten material om thermal bu	d clean thoro ther articles quired when e le limits. R A, Subpart I should wear rns. Full fa	ughly before • xposure to ar espirators sh (29 CFR 1910. protective cl ce shield, li	reuse. a airborn ould be 134) and othing .ned rain
WORK	PRACTICES:				
•	vewash fountains and safety		uru be easily	accessible.	*
	EERING CONTROLS: lequate ventilation should be accepted by the second se	able exposure	limits. Dis	charge from t	he
co. ve	entilation system should congulations.	omply with ap	plicable air	pollution cor	

NO

\_\_\_\_\_ VIII. ENVIRONMENTAL & REGULATORY DATA The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations. A. PRODUCT COMPOSITION PRODUCT (P) or TRADE NAME or COMPONENT NO. CHEMICAL COMPONENT CASRN WT. PERCENT Ρ HERCOLYN\* D 8050-15-5 100 Methyl ester of rosin, partially hydrogenated Β. SARA TITLE III (See footnotes) SEC. 304 SEC. 302 COMPONENT EHS EHS SEC. 311/312 SEC. 313 TOXIC NO. RQ (lbs) TPQ (1bs) HAZARD CATEGORY CHEMICAL (YES, NO)

> N∕A ′**∕?**,

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

NHH, NPH

) y

D. RCRA INFORMATION

N/A

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

÷.

E. TSCA STATUS

Ρ

The components of this product are included on the EPA TSCA Chemical Substance Inventory.



Continued...

MSDS No.: 844 3520 0200-03

Contin	aued
FOOTNOTES	3:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. ThereÉore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements and Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO :	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

HERCULES INCORPORATED HAS CONDILED THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE RELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 2325s

STAYBELITE<sup>®</sup> Resin

HMIS\*

Health hazard:

Flammability hazard:

Reactivity hazard:

Hydrogenated rosin

MSDS No.: ~853 2155 0100-1

Rating

Minimal

Slight

Minimal

Date: 06/27/86 Page: 1 of 3

HERCULES INCORPORATED Hercules Plaza Wilmington, Delaware, 19894 Phone Number: (302) 594-5000 (all hours)

I. PRODUCT IDENTIFICATION

CAUTION! MAY FORM FLAMMABLE DUST - AIR MIXTURES.

关行中的资料量是<br/>
目的中的人们。

Hydrogenated rosin

CAS #: [65997-06-0]

Appearance and odor: Light yellow solid; rosin odor

TI. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

None of the components of this product are listed in 29CFR1910 Subpart Z and they do not appear in the current Threshold Limit Values for Chemical Substances in the Work Environment adopted by the American Conference of Governmental Industrial Hygienists (ACGIH).

If these materials are used in a manner that could generate particulates (dust), Hercules recommends that the resin dust be treated as a nuisance particulate according to the American Conference of Governmental Industrial Hygienists (ACGIH).

III. TYPICAL PHYSICAL &	CHEMICAL CHARACTERISTICS	
Boiling point:	N/A	Solubility in water: Negligible
Vapor pressure @ 20°C:	NZA 🦚 👘	Specific gravity: 1.05
Vapor density:	N/A	pH: N/A
% volatile (vol.):	Negligible at 20°C	Evaporation rate: Slower than butyl acetate
Softening point:	75°C (167°F)	

#### IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

CAUTION! MAY FORM FLAMMABLE DUST - AIR MIXTURES.

Flash point: 203°C (397°F) COC Flammable limits: N/A Autoignition temperature: Not determined.

Continued...

\*HMIS (Hazardous Materials Indentification System) Rating for the product as it is supplied. N/A = N of applicable

We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combination for their own purposes. Unless otherwise agreed in writing, we sell the products without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of our products, whether used alone or in combination with other products. MSDS No. 853 2155 0100-1

#### Date: 06/27/86

IV. FIRE, EXPLOSION, & REACTIVIT	Y HAZARD DATA		
Continued			
Special fire-fighting procedures:	None		•
Unusual fire & explosion hazards:	May form flammable dust - air mixtures.		
Stability considerations: Stable			
Incompatibility with: None	.1	۰. ب	
Hazardous decomposition products:		5	
Hazardous products of combustion:	Carbon monoxide, carbon dioxide and smoke. I some aliphatic aldehydes and carboxylic acids	epending on conc s also may be for	iitions, mmed.

Hazardous polymerization: Will not occur.

V. HEALTH HAZARD DATA

Signs & symptoms of overexposure in the workplace:

Eyes: Dust may cause irritation by mechanical abrasion. Skin: Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (see below - "Medical conditions generally recognized as being aggravated by exposure"). Inhalation: None known. None expected. Ingestion: None known.

## EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water.

MOLTEN RESINS: If molten material comes in contact with the skin, cool under a running stream of water. Do NOT attempt to remove the resin from the skin. Removal could result in severe tissue damage. Get medical attention.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.

INGESTION: If swallowed, do NOT induce vomiting. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

<u>Medical conditions generally recognized as being aggravated by exposure</u>: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause skin sensitization in susceptible individuals. Individuals sensitized to other rosin derivatives may also react when exposed to this product.

Primary Routes of Entry: Eyes, sking,

None of the components of this product are listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

Ϋ.

page 3 of 3

#### VI. SPILL & LEAK PROCEDURES

VII. APPLICABLE CONTROL MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal.

Waste Disposal Method: Incineration of waste material in a permitted facility in accordance to local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility is a suitable alternative.

This product is not listed in federal hazardous waste regulations 40CFR261.33 paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40CFR261 Subpart C: State or local hazardous waste regulations may apply if different from the federal.

Appropriate hygienic practices:	Do not allow eye or skin contact. Avoid breathing dust. Wash thoroughly after handling, and before eating, drinking or smoking.	
Personal protective equipment:	Impervious gloves Safety glasses Appropriate respirator selected and used in accordance with OSHA Subpart I (29CFR1910.134) required when exposure to airborne contaminant is likely to exceed acceptable limits. Appropriate protective clothing when handling molten product.	

Work practices: Eyewash fountains and safety showers should be easily accessible.

Handling and storage precautions: Keep away from sparks and open flame.

Engineering controls: Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits.

۴.

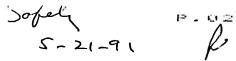
1

Protective measures during repair & maintenance: Eliminate sources of ignition.

- 53

fnc 2308s

/MAX-21-91 TUE 14:53	
- <u> </u>	°4 J. L. L. L. I I I



A

WILLMUT 2AS AND DIL COMPANY

 $\aleph$ 

÷

)

1<sup>1</sup> •

MATERIAL SAFETY DATA SHEET

Section 1. Identity of Material

	Section 1. (Sentiny of	12 12
Product Name or Numbe	r	
Natural Sag	·········	الله جه بينا أنها أنها أنها أنها أنها أنها أنها أن
Synonyms	a.	
Synonyms_are_methans	and Marsh gas.	
Formula	CAS Number	Chemical rawily
<u>CH4</u>	UN 1971/1972	hydrocarbon
	DOT Proper Shipping Name	
Regulated	Natural Bas	
Identification	Shipping ID Number	EPA Hazardous Waste Id Number
Idauru reactou	NA	NA
······································	<u>Hazardous Ingredients</u>	- <u>CU2 NAMPAC</u>
Methane (95%), with 1	lesser amounts of Ethans 9%,	UN 1371/1373
Propang (3%), Nitroge	en (2%), and Butane (1%)	

# Section 2. Hazard Specifications

		المرجع ومعتبه الشبية الدراجيج وترجد ومناهدته فترقد بتدوير والمرجع والمرجع
Known Hazards Und	er 23 CFR 1910.1228	TLV = No Federal #g/#
<u>st_listed. listed_are_Methan</u>	e. Butane and Propane	Limitg
Permissive Exposu	re Limits in Air (PEL)	mg/at
ot listed, suggest using the	_PEL_for_Propage1.800_mg/m3_	
ombustible Liquid Yes		NEPA HAZARD BIGNAL
lammable Material Yes	Eye Hazard Yes	Health Flammabili
Yrophoric Material No	Toxic Agent No	Stability Special
xplogive Material Yes	Highly Toxic Agent No	DOT Hazard Haste Class
nstable Material No	Sensitizer No	
ater Reactive Material No	Carcinogen NO	No DOT Listing
xidizer No	Reproductive Toxin No	
rganic Peroxide No	Blood Toxin No	المسلوف و با با الله والاسر المسلوفين المسلوب و الموال المسلوف و المراكب المسلوف و المراكبة المسلوف و
orrosive Material No	Nervous System Toxin No /	EPA Hazard Waste Class
ompressed Gas Yes	Lung Toxin No	
rritant No	Liver Toxin No	No EPA Listing
مېرېرې د د اه اهم اسم معمده ور به خبر او به بې زې برسي دليانا که بن که يز <sub>ا</sub> خ	Kidney Toxin No	

## Section 3. Safe Usage Data

Protective Equipment	Eyes: Hear eye protection when exposed to blowing Bas. Respiratory: Maintain oxygen level above 18x by volume or , mear a self contained breathing apparatus. Gloves: Hear gloves when exposed to blowing gas
م مواد است الماء بالمار الذي الذي يؤرك وإن المراجع بين المراجع في عنه الماء علم المراحلة على إلى في ا	Maintain oxygen concentration above 18% by volume, use
Ventilation	mechanical ventilation devises when necessary.
Precautions when	Interrupt gas supply before working on gas operated equipmen
<u>Handling and Storage</u>	Only use approved fittings and components for Natural Gas.

γ.

	Section 4. Emergency Response Data
	If fire must be extinguished before supply of gas can be
Fire	interrupted, utilize a fire extinguishing agent with a
	BC rating. If fire is extinguished before gas supply can be
ه چه دی تخصیری پر چې چې که دې چې په چې کې کې د	shut off, reignition or explosion may be possible. Simple asphyxiant. Maintain oxygen concentration above
_	18% by volume.
Exposure	Evacuate, eliminate ignition sources, shut off supply,
Caille	ventilate, repair cause of release or spillage.
Waste Dispose	
Method	
	Section 5. Physical Hazard Data
ه چه هم سه اما اس به به به به به به اس اس اس به به به	LFL 5% Flashpoint 1100 - 1200 degre
51 saas bilit.	
<u>Elammability</u>	
Incompatibi	lity Open flame.
	and the third Courses
<u>Stability</u>	Stable Conditions to Avoid: Ignition Sources
	Section 6 Health Hazard Data
	Section o nearth nadie of a
ffects of Exposure	
Simple asphyxia	nt.
Honnoppy Treatmon	÷
if exposed move	victim to gas free atmosphere and apply artificial
respiration/mou	th to mouth techniques.
	Section 7. Physical and Chemical Properties
	9 F Vapor Density (Air = 1): 0.5539 Volatile Components_
<u>oiling Pt: -259.</u>	
SBOL FLEEP 46	61.5 degrees CE 708 Slightly soluble 24mg/L Specific Gravity (H2O = 1);
kalubility in H Øt	0.5549
folubility in H Ø: 2	0. 3373

.

	ى يې دې چې خو هم وي وي دي دي دي دي دي وي وي وي وي دي دي دي دي وي وي وي وي دي دي دي وي وي وي وي دي دي دي دي دي وي وي وي وي دي دي دي وي
Firm's Name & Mailing Address	Name: THE COMPANY
1 Thu P Mana a classing crassing	Engineering Department
~	Address
-	City, State, Zip Code
	و من هو به هو به و به و به و به و به و به و

LIQUID AIR CORPORATION

y.

### ADDITIONAL DATA

flage 4

## TRADE NAME AND SYNONYMS: (Continued)

Liquid Nitrogen; LIN; Nitrogen, refrigerated liquid (cryogenic liquid)

HEALTH HAZARD DATA: (Continued)

Note: Except where specified, the health hazard data and most of the other data in this material safety data sheet are for <u>gaseous</u> nitrogen. <u>One volume of liquid</u> <u>nitrogen.at its boiling point and atmospheric pressure will vaporize into approximately 695 volumes of gaseous nitrogen at 70°F (21.1°C) and 1 atmosphere.</u>

SYMPTOMS OF EXPOSURE: (Continued)

o Weakened speech leading to the inability to utter sounds;

- o Rapid reduction in the ability to perform movements;
- o Reduced consciousness of the surroundings;
- o Loss of tactile sensations;
- o Heightened mental activity.

It should be recognized that it is possible that none of the above symptoms may occur in nitrogen asphyxia so that there are no <u>definite</u> warning symptoms.

Contact with the cryogenic liquid or cold piping containing the liquid can cause tissue freezing or frostbite on dermal contact or if splashed into the eyes.

\* For additional information, refer to L'Air Liquide's Encyclopedie des Gaz.

NOTE re SPILL OR LEAK PROCEDURES:

Liquid nitrogen is delivered to a customer into stationary vacuum-jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid" cylinders.

Stationary customer-site vessels should be operated in accordance with the manufacturer's and Liquid Air Corporation's instructions. Do not attempt to repair, adjust, or in any other way modify the operation of these vessels. If there is a malfunction or other type of operational problem with the vessel, contact the closest Liquid Air Corporation location immediately.

Liquid nitrogen cylinders should be used only in well-ventilated areas and in accordance with the manufacturer's and Liquid Air Corporation's instructions. These cylinders must <u>always</u> be kept in an upright position. Specialized hand trucks are needed for their movement. A "first in-first out" inventory system should be used with these cylinders.

LOCAL EXHAUST: (Continued) 🐄

To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

· None

## PHYSICAL DATA

3

7

1

BOILING POINT	LIQUID DENSITY AT BOILING POINT
<u>-320.445°F (-195.803°C)</u>	$50.48 \text{ lb/ft}^3$ (808.607 kg/m <sup>3</sup> )
VAPOR PRESSURE @ 70°F (21.1°C) above the	GAS DENSITY AT 70'F 1 atm
<u>critical temp. of -232.51°F (-146.95°C)</u>	<u>.07245 lb/ft<sup>3</sup> (1.1605 kg/m<sup>3</sup>)</u>
SOLUBILITY IN WATER @ 68°F (20°C) Bunsen	FREEZING POINT
<u>coefficient = .01557</u>	-346.004°F (-210.002°C)
APPEARANCE AND ODOR Clear, colorless, odorless liquid	

# FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	AUTO IGNITION TEMPERATURE	FLAMMA	ABLE LIMITS % BY VO	LUME	
Extinguishing Media Nonflammable, inert	1111 19	Re.E.	ELECTRICAL CL	ASSIFICATION ardous	
SPECIAL FIRE FIGHTING PROCEDURES	8 • 116 · 11				
N/A			•	." 12 10	i.
UNUSUAL FIRE AND EXPLOSION HAZARDS	3 7				. (.s

		REACTIVITY DATA	
STABILITY Unstable		CONDITIONS TO AVOID	
Stable	X		
NONE	(Materials to avoid)		
HAZARDOUS DEC	OMPOSITION PRODUCTS		
HAZARDOUS POL	MERIZATION	CONDITIONETO AVOID	an a
Will Not Occur	X	5.9	
2	a. 100 12	SPILL OR LEAK PROCEDURES	

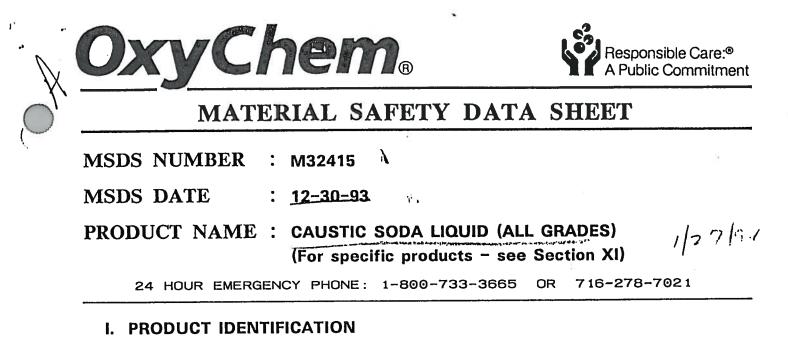
		8 <b>4</b> 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
STEPS TO BE TAKEN IN CASE MATERIAL IS RE	LEASED OR SPILLED	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
See note on last page.	a a la cala de cala de la cala de	. 1
16.4. of 1	en to Phi Box N ≤ π R concer th a R	, i a i i
a star		an a
WASTE DISPOSAL METHOD		20
Seé note on last page.		andraa Soly byn Soly byn

EMERGENCY RESPONSE INFORMATION IN CASE OF EMERGENCY INVOLVING THIS MATERIAL. CALL DAY OR NIGHT (800) 231-1366

.1

.

6 N.



HMIS HAZARD RATINGS

HEALTH HAZARD 3 FIRE HAZARD 0 REACTIVITY 2 Based on the National Paint & Coatings Association HMIS rating system.

SARA/TITLE III HAZARD CATEGORIES (See Section X)

Immediate (ACUTE) Health: YES Reactive Hazard: YES Delayed (Chronic) Health: NO Sudden Release of Pressure: NO Fire Hazard: NO

MANUFACTURER'S: Occidental Chemical Corporation NAME AND : Customer Service, Occidental Tower, Telephone ADDRESS : P O Box 809050, Dallas, Texas 75380 (1-800-752-5151)

CHEMICAL NAME: Sodium Hydroxide CAS NUMBER: 1310-73-2

SYNONYMS/COMMON NAMES: Sodium Hydroxide; NaOH

CHEMICAL FORMULA: NaOH

PRODUCT USE: Metal Finishing; Industrial Cleaners: Chemical Processing; Petroleum Industry

DOT PROPER SHIPPING NAME: Sodium Hydroxide, Solution DOT HAZARD CLASS: 8 DOT IDENTIFICATION NUMBER: UN1824 DOT PACKING GROUP: II DOT HAZAROUS SUBSTANCE: RQ 1000 lbs. (Sodium Hydroxide) DOT MARINE POLLUTANT: NA ADDITIONAL DESCRIPTION REQUIREMENT: NA



CAS \* Chemical Abstract Service Number? ND \* No relevant information found or not available PEL \* OSHA Permissible Exposure Limit TLV \* ACGIH Threshold Limit Value, Current \* See Chronic Effects Information NA \* Not applicable IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY, OR GUARANTY, EXPRESS OR IMPLIED IS MADE RECARDING PERFORMANCE, STABILITY, OR OTHERWISE. This information is not intended to be all-inclusive as to the menner and conditions of use, handling and storage. Other factors may involve other or additional safety or performance considerations, While our technical personnal will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. Ne suggestions for use are intended as, and nothing herein shall be construed as a recommendation to infringe any existing patents or violate any federal, State or local laws. OCCIDENTAL CHEMICAL MSDS NUMBER : M32415 CAUSTIC SODA LIQUID (ALL GRADES) PRODUCT NAME :

Page 3 of 11 12-30-93

ir

## **II. HEALTH HAZARD INFORMATION (Continued)**

### EFFECTS OF OVEREXPOSURE

### ACUTE:

Corrosive to all body tissues by all routes of exposure. The Corrosive to all body tissues by all routes of exposure. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

#### CHRONIC:

No known chronic effects.

TOXICOLOGY DATA:

Caustic soda is a corrosive material.

<u>Sodium Hydroxide:</u> Acute dermai LD50 1350 mg/kg (rabbit)

Y

ή.

### Human Dermal Exposure

man vermal exposure Regardless of concentrations, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with sodium hydroxide solutions of =>1% can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4 - 4% solution to 3 minutes with concentrations of 25% or greater.

SYNERGISTIC MATERIALS:

None known.

33

:-

# IV. FIRE AND EXPLOSION DATA

AUTOIGNITION TEMPERATURE: Nonflammable Not applicable FLASH POINT:

FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: Not applicable Not applicable LOWER:

EXTINGUISHING MEDIA: This product is not combustible. Foam, carbon dioxide or dry chemical may be used where this product is stored.

 $X \sim$ 

# SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing. Avoid direct contact of this product with water as this can cause a violent exothermic reaction.

UNUSUAL FIRE AND EXPLOSION HAZARD: Direct contact with water can cause a violent exothermic See Reactivity Section. reaction.

SENSITIVITY TO MECHANICAL IMPACT:

Not sensitive.

SENSITIVITY TO STATIC DISCHARGE: Not sensitive.

## **V. SPECIAL PROTECTION**

## VENTILATION REQUIREMENTS:

Special ventilation is not required under normal use. Use local exhaust ventilation where dust, mist, or spray may be generated.

Where carbon monoxide or other reaction products may be generated, special ventilation may be required. NOTE :

# SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

### **RESPIRATORY:**

Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respirators where dust, mist, or spray may be generated.

#### EYE:

Wear chemical safety goggles plus full face shield to protect against splashing (ANSI Z87.1).

#### GLOVES:

Wear chemical resistant gloves such as natural or butyl rubber. Gloves may be decontaminated by washing with mild soap and water,

# OTHER CLOTHING AND EQUIPMENT:

Impervious protective clothing and chemically resistant safety shoes should be worn to minimize contact. Wash contaminated clothing with soap and water and dry before reuse. Emergency shower and eyewash facility should be in close proximity. (ANSI Z358.1).

2

OCCIDENTAL CHEMICAL MSDS NUMBER: M324 M32415 CAUSTIC SODA LIQUID (ALL GRADES) PRODUCT NAME :

Page 7 of 11 12-30-93

# VIII. HANDLING AND STORAGE

## HANDLING AND STORAGE PRECAUTIONS:

Do not get into eyes, on skin, on clothing. Avoid breathing dust, mists, or spray. Do not take internally.

; <sup>:</sup>

Use with adequate ventilation and wear respiratory protection when exposure to dust, mist or spray is possible.

When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.

Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.

Keep container closed. Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using.

Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follo appropriate tank entry procedures (ANSI Z117.1). Follow

## SPECIAL MIXING AND HANDLING INSTRUCTIONS

Product can react violently with water. Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring -slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and and product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

OCCIDENTAL CHEMICAL MSDS NUMBER: M32415 PRODUCT NAME: CAUSTIC GDA LIQUID (ALL GRADES) Page 9 of 11 12-30-93

## **XI. PREPARATION INFORMATION**

For additional Non-Emergency health, safety, or environmental information telephone (716) 286-3081, or write to: Occidental Chemical Corporation Product Stewardship Department 360 Rainbow Boulevard South Niagara Falls, NY 14302

For Emergencies: 24 HOUR EMERGENCY PHONE: 1-800-733-3665

To request an MSDS:

716-286-3400

This Material Safety Data Sheet (MSDS) covers the following materials

j.

DIAPHRAGM 50% RAYON 18% DIAPHRAGM\_73% -\_ ----PURIFIED 50% RAYON 10% DIAPHRAGM 30% ----\_ RAYON 20% DIAPHRAGM 18% \_ DIAPHRAGM 45% \_ DIAPHRAGM 28% -LIQUID \_ DIAPHRAGM 24%

*;*<sup>2</sup>

RAYON 25%
SOLUTION 50%
MEMBRANE 50%
RAYON 50%
RAYON 30%
DIAPHRAGM 25%
DIAPHRAGM 20%
DIAPHRAGM 35%
DIAPHRAGM 10%
MEMBRANE 30%
MEMBRANE 10%

1

## WARNING LABEL INFORMATION (Continued)

#### HANDLING AND STORAGE:

Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL prescribed protective clothing. NEVER add water to product. ALWAYS add product - with constant stirring slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product <u>very</u> gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

#### DISPOSAL:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

## INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:

This product contalins:

CAS# 7732185	NAME Water
1310732	Sodium hydroxide (Na(OH))
7647145	Sodium chioride (NaCi)
	Chloric adid, sodium salt

HMIS RATING SYSTEM: HEALTH 3 " FLAMMABILITY 0 REACTIVITY 2

FOR INDUSTRIAL USE ONLY

LABEL 113M32415

R
EXON
EMICAL

EXXON CHEMICAL AMERICAS

.

A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

					PAGE	•	1
TOLUENE		· • • • •			DATE	PREPARED:	MAR 1, 1995 92931650
SECTION	CHEMICAL	PRODUCT	AND	COMPANY	IDENTI	FICATION	
CHEMICAL Toluene CHEMICAL Aromatic PRODUCT D Aromatic	FAMILY: Hydrocarbon ESCRIPTION:		<b>م</b> ۳.			CAS	108-88-3
CONTACT ADDRES		ERICAS	(AS 7	7253-3272	2		
			4 Hou				
⊧* EMERGENCY ⊧* chemtre	TELEPHONE NU	MBEK3: (2*	(800)	424-9300	) **	ĸ	
** EXXON C	HEMICAL AMER		(800)	726-2015	5 *1	×	
END HEALT	NCY TELEPHON H and safety Ieral product	INFORMAT	ION C	ALL : '	-F) (713) 870 (713) 870	)-6884 )-6000	
The composition medical emergen This product	cy, compositio is hazardous	re may be p nal informa as defined	ION/	etary info	rmation.	In the eve a physicia	nt of a n or nurse.
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable OSHA PEL;ACGIH	of this mixtu cy, compositio is hazardous il information: <u>RD</u>	re may be p nal informa as defined <u>COMPONENT</u> Toluene Toluene	ION/ propriation in 29	etary info	rmation.	In the eve a physicia	nt of a n or nurse.
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable	of this mixtu cy, compositio is hazardous il information: <u>RD</u>	re may be p nal informa as defined <u>COMPONENT</u> Toluene	TON/ propri ation in 29	etary info will be pr CFR1910.1	rmation. ovided to 200, based	In the eve a physicia	nt of a n or nurse.
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable OSHA PEL;ACGIH Eye Irritant POTENTIAL HEAL EYE CONTA Irritat SKIN CON Frequent	of this mixtu bcy, compositio is hazardous il information: <u>RD</u> i TLV SECTION 3 LTH EFFECTS ACT: ing, but does r FACT: t or prolonged bal brief conta	re may be p nal informa as defined <u>COMPONENT</u> Toluene Toluene <b>HAZARDS</b> not injure e contact may	ION/ propriation in 29 IDEN eye ti y irri	etary info will be pr CFR1910.1 ITIFICAT issue.	rmation. ovided to 200, based ION	In the eve a physicia d on the fo i atitis.	nt of a n or nurse. llowing
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable OSHA PEL;ACGIH Eye Irritant POTENTIAL HEAN EYE CONTA Irritat SKIN CON Frequen Occasion irritat Skin con INHALATI	of this mixtu cy, compositio is hazardous i information: <u>RD</u> i TLV SECTION 3 LTH EFFECTS ACT: ing, but does r FACT: t or prolonged hal brief conta ion unless evap ntact may aggra ON:	re may be p nal informa as defined <u>COMPONENT</u> Toluene Toluene HAZARDS Not injure e contact may act with the poration is avate an ex	ION/ propri- in 29 IDEN eye the impediating	etary info will be pr CFR1910.1 ITIFICAT issue. itate and c uid will no ded. g dermatit	rmation. ovided to 200, based ION cause derm ot result is conditi	In the eve a physicia d on the fo atitis. in signific on. ately 1000 p	cant
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable OSHA PEL;ACGIH Eye Irritant <b>POTENTIAL HEAN</b> EYE CONTA Irritat SKIN CON Frequen Occasion irritat Skin con INHALATI High va are irr dizzine system	of this mixtu by, compositio is hazardous i information: <u>RD</u> i TLV SECTION 3 LTH EFFECTS ACT: ing, but does r FACT: t or prolonged hal brief conta ion unless evan htact may aggra ON: por/aerosol cor itating to the ss, anesthesia effects, brain	re may be p nal informa as defined <u>COMPONENT</u> Toluene Toluene <b>HAZARDS</b> not injure e contact may act with the poration is avate an ex ncentration eyes and t , drowsines damage and	IDEN in 29 IDEN eye the imped isting s (gro he res s, und poss	etary info will be pr CFR1910.1 ITIFICAT issue. itate and c uid will no ded. g dermatit eater than spiratory consciousno ibly death	rmation. ovided to 200, based ION ION is conditi approxima tract, may ess, centr	In the eve a physicia d on the fo hatitis. in signific on. ately 1000 for cause heave al nervous	cant ppm) daches,
The composition medical emergen This product compositiona <u>OSHA HAZA</u> Flammable OSHA PEL;ACGIH Eye Irritant <b>POTENTIAL HEAL</b> EYE CONTA Irritat SKIN CON Frequen Occasion irritat Skin con INHALATI High va are irr dizzine system INGESTIO Small a ingesti progres	of this mixtu by, compositio is hazardous i information: <u>RD</u> i TLV SECTION 3 LTH EFFECTS ACT: ing, but does r FACT: t or prolonged hal brief conta ion unless evan htact may aggra ON: por/aerosol con itating to the ss, anesthesia effects, brain N: mounts of this on or vomiting sing to death.	re may be p nal informa as defined <u>COMPONENT</u> Toluene Toluene <b>HAZARDS</b> not injure e contact may act with the boration is avate an ex ncentration eyes and t , drowsines damage and product as may cause	IDEN in 29 IDEN eye the impediating s (grown he reading s, und poss pirate mild	etary info will be pr CFR1910.1 ITIFICAT issue. itate and o uid will no ded. g dermatit eater than spiratory consciousno ibly death ed into the to severe	rmation. ovided to 200, based ION is conditi approxima tract, may ess, centr e respirat pulmonary	In the eve a physicia d on the fo d on the fo hatitis. in signific on. tely 1000 for cause head al nervous tory system injury, po	cant ppm) daches,



EXXON CHEMICAL AMERICAS

٩.

A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

TOLUENE

PAGE:		З		
DATE	PREPARED:	MAR	1,	1995
MSDS	NO.:	9293	165	iO

# SECTION 6 ACCIDENTAL RELEASE MEASURES

# LAND SPILL

-	<pre>LAND SPILL Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 15 REGULATORY INFORMATION) notify the National Response Center. Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust. Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbent. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations. WATER SPILL Eliminate sources of ignition. Warn occupants and shipping in surrounding and downwind areas of fire and explosion hazard and request all to stay clear. Remove from surface with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.</pre>
në) e	SECTION 7 STORAGE AND HANDLING
	ELECTROSTATIC ACCUMULATION HAZARD: Yes, use proper grounding procedure STORAGE TEMPERATURE, °F: Ambient STORAGE/TRANSPORT PRESSURE, mmHg: Atmospheric STORAGE AND HANDLING: Keep container closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. Do NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight. Material will accumulate static charges which may cause an electrical spark (ignition source). Use proper grounding procedures. Do NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. Do NOT reuse empty containers without commercial cleaning or reconditioning.
	SECTION 8 EXAMOSURE CONTROLS/PERSONAL PROTECTION
	EXPOSURE CONTROLS The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be stored and handled in a lab hood. Provide mechanical ventilation of confined spaces. See respiratory protection recommendations. Use explosion-proof ventilation equipment. Continues on page 4 T.



EXXON CHEMICAL AMERICAS

A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

TOLUENE

PAGE:	5
DATE PREPARED:	MAR 1, 1995
MSDS NO.:	92931650

# SECTION 12 ECOLOGICAL INFORMATION

No specific ecological data are available for this product. Please refer to Section 6 for information regarding accidental releases and Section 15 for regulatory reporting information.

SECTION 13 DISPOSAL CONSIDERATIONS

Please refer to Sections 5, 6, and 15 for disposal and regulatory information.

## SECTION 14 TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT): 1, DOT SHIPPING DESCRIPTION: TOLUENE, 3, UN 1294, II

## SECTION 15 REGULATORY INFORMATION

TSCA:

This product is listed on the TSCA Inventory as a UVCB (Unknown, Variable Composition or Biological) Chemical at CAS Registry Number 108-88-3 CERCLA: If the reportable quantity of this product is accidentally spilled, the incident

is subject to the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and must be reported to the National Response Center by calling 800-424-8802. The reportable spill quantity of this product is 1,000 pounds.

This product contains:

Toluene. SARA TITLE III:

Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories: Immediate health, Delayed Health, Fire. This information may be subject to the provisions of the Community Right-to-Know

Reporting Requirements (40 CFR 370) if threshold quantity criteria are met.

This product contains the following Section 313 Reportable Ingredients:

Toluene			<u>CAS NO.</u> 108-88-3 100.0	
SECT	ON 16	OTHER INFORMAT	ION	
National Paint Hazardous National Fire Identifica	on is for & Coating Materials Protection	people trained in: gs Association's (NF Identification Syst n Association (NFPA he Fire Hazards of M NFPA 704	IPCA) stem (HMIS) A 704) Materials KEY	
HEALTH	2	2	4 = Severe	
FLAMMABILITY	3	3	3 = Serious	
REACTIVITY	0	0	2 = Moderate 1 = Slight	

O = Minimal

# Georgia-Pacific



# \_MATERIAL SAFETY DATA SHEET

# SECTION I - PRODUCT IDENTIFICATION

<u>PRODUCT NAME AND SYNONYMS:</u> LYTOR® 80, LYTOR® 100, LYTOR® 101, LYTOR® 302 Tall Oil Rosin Acids, Tall Oil Rosin.

CAS NO. AND NAME: Mixture. See Section X.

CHEMICAL FAMILY: Organic Acids.

<u>CHEMICAL FORMULA:</u> C<sub>20</sub> cyclic organic acids.

<u>MANUFACTURER'S NAME AND ADDRESS:</u> Georgia-Pacific Resins, Inc. P. O. Box 520 Crossett, AR 71635 (501) 567-7200

EMERGENCY TELEPHONE NO.: (800) 424-9300 CHEMTREC

## SECTION II - HAZARDOUS COMPONENTS

COMPONENT	WT. %	ACGIH	OSHA
<u>(CAS Registry No.)</u>		_ <u>TLV®</u>	PEL
None established			

# SECTION III - PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Amber solid with a bland odor.

MOLECULAR WEIGHT: Approximately 302.

BOILING POINT (DEGREES FAHRENHEIT): >500.

MELTING POINT (DEGREES FAHRENHEIT): 130-165.

VAPOR PRESSURE (mm OF MERCURY): Not available.

SPECIFIC GRAVITY (WATER = 1)<sup>2</sup> 1.03.

## SECTION VI - HEALTH HAZARD INFORMATION

EXPOSURE FROM ROUTINE USE: This product is not hazardous under normal conditions of use. Hot material can cause thermal burns on contact with skin or eyes.

<u>EFFECTS OF OVEREXPOSURE:</u> Prolonged exposure to liquid, vapor or mist may cause irritation in eyes, nose, mouth and/or throat.

PROBABLE ROUTES OF EXPOSURE: Skin, eyes.

## EMERGENCY AND FIRST AID PROCEDURES:

<u>EYE CONTACT:</u> Rinse immediately with water. Remove contact lenses; then flush eyes with water for at least 15 minutes, including under eyelids. Consult a physician, if necessary.

<u>SKIN CONTACT:</u> Wash skin with soap and water. Seek medical attention if irritation persists. Launder contaminated clothing before reuse.

<u>INHALATION:</u> Remove to fresh air. Rest in half upright position. Seek medical attention, if necessary.

<u>INGESTION:</u> Rinse mouth. Immediately dilute by drinking large quantities of water. After dilution, induce vomiting. Seek immediate medical attention. Never give anything by mouth to an unconscious person.

## SECTION VII - TOXICITY DATA

1

ORAL: Not found.

DERMAL: Not found.

INHALATION: Not found.

CARCINOGENICITY: Not listed as a carcinogen by IARC, NTP, ACGIH or OSHA.

OTHER PERIINENT DATA: Not found.

STE DISPOSAL METHODS: Dispose of contaminated material in accordance with all federal, state and local regulations.

CLEAN WATER ACT REQUIREMENTS: Not applicable.

۲ <sup>י</sup>

# RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) REQUIREMENTS: Not applicable.

## SECTION X - REGULATORY INFORMATION

<u>FDA:</u> Tall oil rosins as defined in Section 178.3870 (Rosin and Rosin Derivatives) is cleared by FDA for the following uses (all references are to <u>21 CFR</u>):

- 175.105 (Adhesives).
- 175.300 (Resinous and Polymeric Coatings).
- 175.380 (Xylene-Formaldehyde Resins Condensed with 4,4' Isopropylidenephenol Epichlorohydrin Epoxy Resins).
  - 175.390 (Zinc-Silicon Dioxide Matrix Coatings).
  - 176.170 (Components of Paper and Paperboard in Contact with Aqueous and Fatty Foods).
  - 176.180 (Components of Paper and Paperboard in Contact with Dry Food).
  - 176.200 (Defoaming Agents Used in Coatings).
  - 176.210 (Defoaming Agents Used in the Manufacture of Paper and Paperboard).
  - 177.1200 (Cellophane).
  - 177.1400 (Water-Insoluble Hydroxyethyl Cellulose Film).
  - 178.3120 (Animal Glue).
  - . 179.45 (Packaging Materials for Use During Radiation of Prepackaged Foods).



Y

## SECTION XI - SPECIAL PRECAUTIONS AND COMMENTS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Avoid skin and eye contact with molten material. Store under inert gas blanket at temperatures above 300°F. Do not swallow.

OTHER PRECAUTIONS: Not applicable.

<u>REGISTRATIONS/CERTIFICATIONS:</u> Not applicable.

EFFECTIVE DATE: May 20, 1992 This symbol "@" indicates revision from previous issue.

IMPORTANT: The information and data berein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. GEORGIA-PACIFIC MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA HEREIN. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY EXCLUDED. Georgia-Pacific will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.

Υ.,

			MATERIAL SAFET	V DATA SUCET		
A						
$\mathcal{A}$			EM SCI	ENCE		
	PRODUCT AND	OMPANY TOP	NTIFICATION			
			PREPARATION DA	TE 03/03/94	4	
MANUFACTURER		• •	DATE MSDS PRIN			
	OF EM INDUS	TRIES	INFORMATION PH		609-354-92	00
P∙O∙ BOX 70 480 DEMOCRA GIBBSTOWN,			HOURS: MON. TO CHEMTREC EMERG HOURS: 24 HRS	ENCY NUMBER:	800-424-93	00
CATALOG NUMB	ER(S):					
714 SX1244I	732 SX1244PC		SX1242 SX1244T	SX1242U SX1244TP	SX1244 SX1244Y	
CHEMICAL NAME						
SULFURIC A	CID					
TRADE NAME	RIOL					
CHEMICAL FAM		AL ACID	í.			
H2SO4						
MOLECULAR WE	IGHT.: 98.08					
COMPOSITI	ON / INFORMA	TION ON IN	GREDI ENT S			
COMPO	NENT		CAS #	AP	PR %	
SULFURIC ACI	 D					
	0		7/// 07-0	•	<u>በብ</u> ሦ	57
	5		7664-93-9	9 1	00%	12.00 12.00
		NDICATES T			00%	17.B
APPROXIMAT Concentrat	E PER CENT I	NDICATES T FURIC ACID	7664-93-9 HAT THIS PRODUC IS APPROXIMATE	CT IS A	00%	8
CONCENTRAT	E PER CENT I ED ACID. SUL	FURIC ACID	HAT THIS PRODUC	CT IS A	00%	8
CONCENTRAT 3. HAZARDS I	E PER CENT I ED ACID. SUL DENTIFICATIO	FURIC ACID	HAT THIS PRODUC	CT IS A	00%	а -
CONCENTRAT 3. HAZARDS I EMERGENCY OV CAUSES SEV MAY BE FAT MAY CAUSE REACTS VIO	E PER CENT I ED ACID. SUL DENTIFICATIO YERVIEW YERE BURNS. TAL IF INHALE DAMAGE TO RE DLENTLY WITH	FURIC ACID IN ED OR SWALL ESPIRATORY	HAT THIS PRODUC IS APPROXIMATE	CT IS A Ely 95-98%• 1	00%	
CONCENTRAT 3. HAZARDS I EMERGENCY OV CAUSES SEV MAY BE FAT MAY CAUSE	E PER CENT I ED ACID. SUL DENTIFICATIO YERVIEW YERE BURNS. TAL IF INHALE DAMAGE TO RE DLENTLY WITH	FURIC ACID IN ED OR SWALL ESPIRATORY	HAT THIS PRODUC IS APPROXIMATE	CT IS A Ely 95-98%• 1	00%	8
CONCENTRAT 3. HAZARDS I EMERGENCY OV CAUSES SEV MAY BE FAT MAY CAUSE REACTS VIO STRONG OXI	E PER CENT I ED ACID. SUL DENTIFICATIO YERVIEW YERE BURNS. TAL IF INHALE DAMAGE TO RE DLENTLY WITH	FURIC ACID DN ED OR SWALL ESPIRATORY WATER.	HAT THIS PRODUC IS APPROXIMATE	CT IS A ELY 95-98%• /	00% AGE # 1	
CONCENTRAT 3. HAZARDS I EMERGENCY OV CAUSES SEV MAY BE FAT MAY CAUSE REACTS VIO STRONG OXI	E PER CENT I ED ACID. SUL DENTIFICATIO VERVIEW VERE BURNS. TAL IF INHALE DAMAGE TO RE DLENTLY WITH IDIZER.	FURIC ACID DN ED OR SWALL ESPIRATORY WATER.	HAT THIS PRODUC IS APPROXIMATE OWED. PASSAGES AND L	CT IS A ELY 95-98%• /		

-

CLEAR, COLORLESS VISCOUS LIQUID; SHARP ODOR

TENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE: CAUSES SEVERE BURNS ON CONTACT WITH ANY BODY TISSUE. POSSIBLY FATAL BY INHALATION OR INGESTION. INHALATION OF MIST MAY DAMAGE RESPIRATORY TRACT AND LUNGS.

MEDICAL COND. AGGRAVATED BY EXPOSURE: RESPIRATORY CONDITIONS

4. FIRST AID MEASURES

EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE. INGESTION: DO NOT INDUCE VOMITING; DILUTE BY GIVING MILK OR WATER IF CONSCIOUS; GET MEDICAL ATTENTION, IMMEDIATELY SKIN: FLUSH THOROUGHLY WITH WATER; REMOVE ALL CONTAMINATED CLOTHING AND SHOES; GET IMMEDIATE MEDICAL ATTENTION

EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES, LIFTING UPPER & LOWER LIDS OCCASIONALLY; CONTINUE FLUSHING WHILE WAITING FOR MEDICAL HELP INHALATION: REMOVE TO FRESH AIR; GET IMMEDIATE MEDICAL ASSISTANCE

5. FIRE FIGHTING MEASURES

FIRE FIGHTING PROCEDURES. WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

FIRE & EXPLOSION HAZARDS.:

REACTS WITH MOST METALS TO FORM EXPLOSIVE HYDROGEN GAS WHICH CAN FORM EXPLOSIVE MIXTURES WITH AIR. MAY IGNITE COMBUSTIBLE MATERIAL ON CONTACT.

6. ACCIDENTAL RELEASE MEASURES

MSDS (CONTINUED) - SX1242 PAGE # 2

1

SPILL RESPONSE: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE / ERSONAL PROTECTION. LIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE FREE FROM EXPLOSION OR FIRE HAZARDS. CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE. IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL. COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA. EM SCIENCE RECOMMENDS SPILL-X NEUTRALIZERS AND ABSORBENT AGENTS FOR VARIOUS TYPES OF SPILLS. ADDITIONAL INFORMATION ON THE SPILL-X PRODUCTS CAN BE PROVIDED THROUGH THE EM SCIENCE TECHNICAL SERVICE DEPARTMENT (609) 354-9200. THE FOLLOWING EM SCIENCE SPILL-X NEUTRALIZER AND ABSORBENT IS RECOMMENDED FOR THIS PRODUCT:

SX0861 ACID SPILL TREATMENT KIT

1

7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER CLOSED AND PROTECTED AGAINST PHYSICAL DAMAGE. EEP UPRIGHT; SEPARATE FROM ALL INCOMPATIBLE MATERIALS, COMBUSTIBLE MATERIALS AND DXIDIZING AGENTS. WHEN DILUTING: ADD ACID TO WATER; NEVER ADD WATER TO ACID. DO NOT BREATHE VAPOR. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. RETAINED RESIDUE MAY MAKE EMPTY CONTAINERS HAZARDOUS; USE CAUTION!

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE TLV/PEL), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE. MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD

MSDS (CONTINUED) - SX1242 PAGE # 3

 $\frown$ 

OR WITH EQUIVA PROTECTIVE GLO WORN TO PREVEN ROTECTIVE CLO E WORN WHEN H SAFETY GLASSES	DVES (NA NT SKIN DTHING ( HANDLING	TURAL RU CONTACT. NATURAL THIS MA	BBER, NE RUBBER, TERIAL.	NEOPRENE OR	R EQUIVA	LENT)		
WORK / HYGENIC I Wash Thorough Do Not Take II Eye Wash and S	LY AFTER NTERNALL	HANDLIN Y•		BE READILY	AVAILAB	LE.		
EXPOSURE GUIDEL	INES	· A,						
OSHA - PEL: Component	ррм	TWA MG/M	13 PPM	STEL MG/M3	P P M	CL M	IG/M3	SKIN
SULFURIC ACID		1	/					
ACGIH - TLV: COMPONENT		TWA MG/N	13 PPM	STEL MG/M3		CL M	IG/M3	SKIN
SULFURIC ACID	CHEMIC	1 AL PROPE	RTIES	3				
BOILING POINT ( MELTING POINT ( SPECIFIC GRAVIT VAPOR PRESSURE PERCENT VOLATIL VAPOR DENSITY ( EVAPORATION RAT SOLUBILITY IN & APPEARANCE CLEAR, COLORL SHARP ODOR	C) Y (H2O (MM HG) E BY VO AIR = 1 E (BUAC ATER (%	= 1) :: 1 = 1) :: 1 L (%) :: N = 1) :: < }: M	-10C •844 60/ 146C /A /A I ISCIBLE	, 60F	1			
10. STABILITY	AND REAC	TIVITY						
STABILITY		••: YES						
HAZARDOUS POLYM DOES NOT OCCU			DS LCONT	(NUED) - SX	(1242	ΡΑ	GE # 4	÷
$\bigcirc$								

HAZARDOUS DECOMPOSITION.: SOX, HYDROGEN (IN PRESENCE OF METALS) CONDITIONS TO AVOID .....: ADDING WATER TO ACID CAN CAUSE VIOLENT, EXOTHERMIC REACTION, POSSIBLY CAUSING FIRE. CAN REACT VIDLENTLY WITH ALKALIES. MATERIALS TO AVOID ..... (X) WATER ACIDS (X) BASES () CORROSIVES (X) OXIDIZERS (X) DTHER : REDUCING AGENTS, METAL POWDERS, CARBIDES, ACETIC ACID. COMBUSTIBLE MATERIAL **11. TOXICOLOGICAL INFORMATION** TOXICITY DATA: ORL-RAT LD50: 2140 MG/KG IHL-GPG LC50: 18 MG/CU.M. TOXICOLOGICAL FINDINGS: NONE CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS) DISPOSAL CONSIDERATIONS EPA WASTE NUMBERS: DOO2 TREATMENT: SPECIFIED TECHNOLOGY - NEUTRALIZE TO PH 6-9. CONTACT YOUR LOCAL PERMITTED WASTE DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT SITES. ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCALY STATE AND FEDERAL REGULATIONS. Υ. 1 **13. TRANSPORT INFORMATION** DOT PROPER SHIPPING NAME ....: SULFURIC ACID DOT ID NUMBER..... UN1830 14. REGULATORY INFORMATION MSDS (CONTINUED) - SX1242 PAGE # 5 TSCA INVENTORY

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

COMPONENT EHS (302)			SARA EHS TPQ (LBS)		CERCLA RQ {LBS}
SULFURIC ACID	Y		1000		1000
COMPONENT	OSHA FLOOR LIST		SARA 313		EMINIMIS SARA 313 (%)
SULFURIC ACID	Υ Υ		Y		1.0
15. OTHER INFORMAT	LION				
COMMENTS: NONE		λ			
NFPA HAZARD RATING HEALTH FLAMMABILITY REACTIVITY SPECIAL HAZARDS VISION HISTORY:	SS: : 3 : 0 : 2 : W	Ϋ,			9
09/26/88 03/01/ - = REVISED SU N/A = NOT AVAIL/ N/E = NONE ESTAN	/91 05/31/91 ECTION ABLE	12/06/86 11/26/91	06/19/87 05/11/93	10/27/87	01/26/88

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DESCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

PORTIONS COPYRIGHT ARIEL RESEARCH CORPORATION, 1991. RESTRICTED USE CONDITIONS APPLY. SELECTED REGULATORY INFORMATION IN THIS MSDS HAS BEEN DERIVED FROM ARIEL RESEARCH CORPORATION'S INTERNATIONAL CHEMICAL REGULATORY MONITORING SYSTEM (ICRMS). USE OF THIS DATA IS PROVIDED SUBJECT TO THE TERMS OF THE LICENSE AGREEMENT BETWEEN EM-INDUSTRIES AND ARIEL RESEARCH CORPORATION. FURTHER DISTRIBUTION IS PROHIBITED WITHOUT AUTHORIZATION.

MSDS - SX1242 PAGE # 6

"ISSUED BY VWR 07/01/95"

. J.	Keep even after updates con inter
$\dot{\cdot}$	
	MATERIAL SAFETY DATA SHEET
<b>•</b>	Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400
	Product Code: 25576 Page: 1 PRODUCT NAME: DOWTHERM (R) A HEAT TRANSEER FLUID
	Effective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412
	•
	1. INGREDIENTS: (% w/w, unless otherwise noted)
	Diphenyl oxide (phenyl ether) CAS# 000101-84-8 73% . Diphenyl (biphenyl) CAS# 000092-52-4 27%
	This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.
	2. PHYSICAL DATA:
	BOILING POINT: 495F, 257C VAP. PRESS: 0.025 mmHg @ 25C VAP. DENSITY: Greater than 1 SOL. IN WATER: 13.8ppm @ 60F SP. GRAVITY: 1.050-1.075 @ 25/25C APPEARANCE: Straw-colored liquid. ODOR: Aromatic odor.
	3. FIRE AND EXPLOSION HAZARD DATA:
	FLASH POINT: 232F, 111C Method Used: TCC
Ĩ.	FLAMMABLE LIMITS LFL: 0.8% (347F. 175C) UFL: 7.0% (347F, 175C)
	EXTINGUISHING MEDIA: Water fog, foam, CO2, dry chemical
	FIRE & EXPLOSION HAZARDS: When burning, may produce dense, black smoke. Some foaming will occur if water is applied to hot liquid.
	(Continued on Page 2) (R) Indicates a Trademark of The Dow Chemical Company
	* An Operating Unit of The Dow Chemical Company
)	
$\bigcirc$	
с. С.	

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576 Page: 2

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

1

FIRE-FIGHTING EQUIPMENT: Positive-pressure, self-contained breathing apparatus may be needed in enclosed spaces.

# 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Excellent thermal stability characteristics at typical use temperatures.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: As with all commercially available aromatic heat transfer fluids, the potential exists for trace amounts of benzene to form when used at elevated temperatures. Similarly, with this product, small amounts of phenol may form. Both components are likely to concentrate in the vent pipe header.

HAZARDOUS POLYMERIZATION: Will not occur.

# 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Dike to contain spill. Recover if possible. Small spills can be covered with absorbent material.

DISPOSAL METHOD: Incineration in approved equipment in accordance with applicable federal, state and local regulations.

(Continued on Page 3) (R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576

Page: 3

1 =

## PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412

# 6. HEALTH HAZARD DATA:

EYE: May cause pain. May cause slight transient eye irritation. Vapors may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin

irritation, even a burn. Caution required when maintaining vent piping due to potential presence of phenol.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is >2000 mg/kg. Amounts ingested incidental to industrial handling are not likely to cause injury; however, ingestion of larger amounts may cause injury. Observations in animals, include liver and kidney injury. Ingestion of large amounts may cause headache, vomiting and diarrhea.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract and lungs. Signs and symptoms of excessive exposure may be nausea and/or vomiting.

SYSTEMIC & OTHER EFFECTS: Excessive exposures may cause liver, kidney and gastrointestinal effects, and possibly central and peripheral nervous system disorders. Available data are inadequate to evaluate carcinogenicity. Biphenyl did not cause birth defects in laboratory animals; however, at excessive doses, there were other toxic effects on the mother and fetus. Results of in vitro ("test tube") mutagenicity tests have been negative. Results of mutagenicity tests on biphenyl in animals have been negative.

Ϋ.

(Continued on Page 4) (R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576 Page: 4

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION: Remove the fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

# 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Diphenyl oxide (phenyl ether): ACGIH TLV is 1 ppm TWA, 2 ppm STEL. OSHA PEL is 1 ppm. 1,1-biphenyl (diphenyl): ACGIH TLV and OSHA PEL are 0.2 ppm.

Υ.,

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxilliary self-contained air supply.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur, such as during vent header maintenance. Remove contami-

(Continued on Page 5)

(R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 25576 Page: 5

PRODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID

Effective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412

# 8. HANDLING PRECAUTIONS: (CONTINUED)

nated clothing no later than the end of the work period and clean before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

EYE PROTECTION: Use safety glasses. If vapor exposure causes eye discomfort, use a full-face respirator.

# 9. ADDITIONAL INFORMATION:

**REGULATORY REQUIREMENTS:** 

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and

Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard A delayed health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Practice reasonable care and caution. Avoid breathing vapors if generated. Avoid direct contamination of water because of fish toxicity.

MSDS STATUS: Revised Sections 7 and 8.

1

SARA 313 INFORMATION:

This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

γ.

.1

(Continued on Page 6) (R) Indicates a Trademark of The Dow Chemical Company

	ATERIAL SAFETY DATA SHEET
Ň	ow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400
)	Product Code: 25576 Page: 6
	RODUCT NAME: DOWTHERM (R) A HEAT TRANSFER FLUID
	ffective Date: 07/27/89 Date Printed: 01/03/90 MSDS:000412

# 9. ADDITIONAL INFORMATION: (CONTINUED)

.

CHEMICAL NAME	CAS NUMBER	CONCENTRATION	
BIPHENYL	000092-52-4	27	*

·P.

X

۷.

۰,

1 .

21

8.8

(R) Indicates a Trademark of The Dow Chemical Company The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

$\sim$	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 09					
X	HERCULES INCORPORATED	MELHI* Dark resin					
$\frown$	Hercules Plaza	MOLTEN or SOLID					
$\bigcirc$	Wilmington, DE 19894 Phone Number: (302) 594-5000 (24 hrs)	MSDS No.: 860 2165 0100-03					
	Supersedes MSDS No.: 860 2165 0100-02	Date: 09/24/93					
	I. PRODUCT IDENTIFICATION	<u>O</u> 23 [5] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					
		C S					
	A. MELHI* Dark resin, MOLTEN						
	DANGER! MOLTEN RESIN. CAUS PRODUCT MAY BURN IF						
	APPEARANCE AND ODOR: Dark brown liquid rosin odor	at 100-170 C (212-338 F); typical					
	B. MELHI* Dark resin, SOLID						
	WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARD INFORMATION).						
$\bigcirc$	APPEARANCE AND ODOR: Dark brown solid or flake; typical rosin odor						
	CASRN: Mixture	HMIS RATINGS: (1)					
		Health hazard: O Minimal Flammability hazard: l Slight Reactivity hazard: O Minimal					
	CHEMICAL & COMMON NAME: Thermoplastic d	ark resin obtained from modified rosin					
	Registered Trademark of Hercules Incorpo	rated					
	<ul> <li>Hygienists for Threshold Limit Val</li> <li>TWA: Time Weighted Average</li> </ul>	try Number s Association - Workplace inistration. onference of Governmental Industrial ues.					
	STEL: Short term exposure limit (See 29 C: Ceiling exposure concentration (See 2 SKIN: May be absorbed through skin (See N/A: Not applicable	9 CFR 1910.1000, March 1, 1989, rev.)					
	·						

\*

Α.	10LTEN produc	t			
		CAUTION!	PRODUCT MAY	BURN IF IGNITED	۱.
в.	SOLID product				
	WARNING! ST MA (F	ATIC CHARGES FLAMMABLE VA Y FORM FLAMM OR BAGS 1000	PORS MAY CAUS ABLE DUST-AIR	MIXTURES. TER, SEE SECTIO	
FLAS	I POINT: Abo	ve 150靍 (30	00 F)		
FLAM	ABLE LIMITS:	Not determ	nined		
AUTO	IGNITION TEMP	ERATURE: No	ot determined		
ΕΧΤΙ	IGUISHING MED	IA: Water s	pray, dry cher	nical, foam, or	carbon dioxide
U		ined breathi	ng apparatus.		o molten resin fi with hot resin.
UNUS	JAL FIRE & EX	PLOSION HAZA	RDS: May for	n flammable dus	t-air mixtures.
STAB	ILITY CONSIDE	RATIONS: St	able		
INCO	APATIBILITY W	ITH: None			
HAZA	RDOUS DECOMPO	SITION PRODU	ICTS: None		
		e, carbon di	oxide and smol	ke. Depending s also may be f	on conditions, so

 $( \bigcirc$ 

 $(\bigcirc$ 

10



MSDS No.: 860 2165 0100-03	Date:	09/24/93	PAGE:	05 of 09
V. HEALTH HAZARD DATA				
V. NEALIN NAZARU DATA	•1			

### B. SOLID product...Continued

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water. MOLTEN RESINS: If molten material comes in contact with the skin, cool under a running stream of water. Do NOT attempt to remove the resin from the skin. Removal could result in severe tissue damage. Get medical attention.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.

INGESTION: If swallowed, do NOT induce vomiting. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

None of the components of this product are listed as carcinogens by the National Toxicology Program (NTP). They have not been regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

N.

**REPORTED HUMAN EFFECTS:** 

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

,i

MSDS	No.:	860	2165	0100-03

 $(\bigcirc$ 

.

VII	. APPLICABLE CONTROL MEASURES
(	Continued
	<pre>{ PRACTICES: Eyewash fountains and safety showers should be easily accessible.</pre>
o n V	MOLTEN product - HANDLING AND STORAGE PRECAUTIONS: If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake resin, and may form flammable dust-air nixtures. See HANDLING AND STORAGE PRECUATIONS for solid product below. Water contact with hot molten resinmay result in foaming or spattering which can cause burns upon skin or eye contact.
F V i a	OLID product - HANDLING AND STORAGE PRECUATIONS: or small packages, the following warning applies: VARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid gnition sources such as sparks and flame. Ground all equipment. In addition when emptying bags where flammable vapors may be present, blanket vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.
v i E F	For large bags (1,000 lbs. or greater), the following warning applies: MARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE MAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid gnition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE STTACHED TO THE BAG GROUND CONNECTION! storid dust accumulations and suspending dust in air.
A C V	NEERING CONTROLS: dequate ventilation should be provided to keep dust or vapor oncentrations below acceptable exposure limits. Discharge from the entilation system should comply with applicable air pollution control egulations.
E C b	ECTIVE MEASURES DURING REPAIR AND MAINTENANCE liminate sources of ignition. ompletely isolate and thoroughly clean all equipment, piping or vessels efore beginning maintenance or repairs. eep area clean. Product will burn.

MSDS No.: 860 2165 0100-03 Date: 09/24/93 PAGE: 09 of 09

Conti	nued · ·
FOOTNOTE	S:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	
SEC. "Haza	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements ard Categories"
	HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard
	NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements
N/A:	Percent composition (or estimated range) is listed above. This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
ELIABLE HEN THE S TO THE	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS UST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS

Doc. No. 2852s

TH-rule - - - -

対応対応法

(Approved by U.S. Depertment of Labor "Espectially Strallar" to Form US3-208-4)

Section 1 GALA'S NAME Glidden-Durkee Division of SCM Corporation P. 0. Box 389 Jackson ille, Florida 32201 AERSCHEY TALESHOLE CEILS- 904-764-1719 - Emergency calls- 904-227-2631 TEMICAL NAME AND SYNGNYMS MIRTURE OF TOSIN ACLAS. THESE NAME Mostly abeitic and dehydroabetic acidd. Sylvaros 20 Tall Oil Rosin. IEMICAL FATTLY FORMULA <sup>C</sup>20<sup>H</sup>28<sup>O</sup>2 and <sup>C</sup>20<sup>H</sup>30<sup>O</sup>2. Mostly Sesquiterpene acids. Fill of the area and the second PAINTS, PRESERVATIVES, & SOLVENTS TLV (Units). TLV (Urit GMENTS SOLVENTS 94 % None None JALYST ADDITIVES 12 None None OTHERE . None None TL\ (Unit HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES % No hazardous mixtures. Ϋ., Su citur ILING FOINT ("F.) 9 mm about SPECIFIC GRAVITY (H,O -1) 480°F. 1.03 about PERCENT VOLATILE BY VOLUME (%) POR PRESSURE (mm Hg.) unknown unknown EVAPORATION RATE POR DENSITY (AIR=1) about 10.8 unknown LUBILITY IN WATER i Clear solid at room temperature with light rosin odor. PEARANCE AND ODOR 1211 201 1 the second start of the se the POINT METHOD USEDI alant 424" P. (U.D.C.) FLAMMABLE LIMITS unknown Sproy, Scam, dry powdar, CO2 . Avoid liquid water if possible. CONTRACTOR CONTENTS

	S +		
<u>othiowy</u>	· · · · · ·	• 8	Y
			n should be avoid. Liquid rosin traserts
douters from	4 h a 100 m m		
	jurns 10	TTOM50 0	y solidifying on, and adhering to skin.
TRACT AND FRAT AID	PROCEDURES rn inturiou. Do	not atte	ort to remove rosin from 2nd or 3rd
degree burns		10 00 000	rosin from minor 1st degree burns.
			***************************************
		6x 34	
ABILITY	UNSTABLE	ייבאיניס   בייייי	ICNS TO AVOID
	STABLE		
COMPATERILITY (Concertail	t to avoid)		
Avoid strong	N PRODUCTS		
Hone	÷	•	
••••••••••••••••••••••••••••••••••••••	NAY OCCUR		CONDITIONS TO AVEID
ZARDOUS LYMERIZATION	WILL NOT OCCUR		
		A	<u> </u>
			na ann ann ann ann ann ann ann ann ann
SUGAD UD SOL	10 LOSIN. ALLOW	liquid "	osin to solidify and then scrape up.
		······································	······································
	5	·	
			3
BUTH OT 1	oury.		2 · ·
		······································	- <sup>- 8</sup>
	·	15 72	
			12 :
PIRATORY FROTECTION	Athing dust from		
HILATION REMOVE		•	SPECIAL
apors from he	XECHARICAL (General)		OTHER
ionid rosin.			
DECHVE GLOVIS O DECVENC DU		$\frac{1}{1}$	Mass, Especially with hot liquid rosin
وترجيب والمراجع والمراجع والمتنا المتحال والمتنا فالمتحا والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع	ومحاذ السبابات الترجيد سنبيس وغربي كالترجي فالمتعاولين والمتعالين	and the second secon	ace shield to provent injuries when
ransfering t	he hot liquid ros:	in.	·
· 6170 · · · · · · · · · · · · · · · · · · ·	······································		
	a : a		• •••• <u>•</u> ••••••••••••••••••••••••••••••
1, 11 Sto	ne Handira And Sicond red Liquid, hust	be kart	hot and usually is under an inert sas
			s and may be near ignition temperature.
N CARAN I LI MATRUNS	والمراجع والم		
or to water			

		•			
	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 08			
R	HERCULES INCORPORATED	DYMEREX* Dimerized rosin			
$( \bigcirc$	Hercules Plaza Wilmington, DE 19894				
	Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 853 2175 0100-02			
	Supersedes MSDS #: 853 2175 0100-01	Date: 09/24/93			
	I. PRODUCT IDENTIFICATION				
	FLAMMABLE VAPORS MAY May form flammable dus	T-AIR MIXTURES. GREATER, SEE SECTION VII FOR			
	DYMEREX* Dimerized rosin	HMIS RATINGS: (1)			
	CASRN: 65997-05-9	Health hazard: O Minimal Flammability hazard: I Slight Reactivity hazard: O Minimal			
	CHEMICAL & COMMON NAMES: Polymerized rosin; dimerized rosin				
	APPEARANCE AND ODOR: Amber solid or flake; low odor				
	* Registered Trademark of Hercules Inc	orporated			
	}				
	(1) Explanation of acronyms: HMIS: Hazardous Materials Identificati CASRN: Chemical Abstracts Service Reg AIHA WEEL: American Industrial Hygieni Environmental Exposure Leve	sts Association - Workplace			
	OSHA: Occupational Safety and Health A TLV: Registered trademark of American Hygienists for Threshold Limit V TWA: Time Weighted Average	dministration. Conference of Governmental Industrial			
	STEL: Short term exposure limit (See 2) C: Ceiling exposure concentration (See	9 CFR 1910.1048, March 1, 1989, revision) 29 CFR 1910.1000, March 1, 1989, rev.) 29 CFR 1910.1048, March 1, 1989, rev.)			
$\bigcirc$					

•

MSDS No.: 853 2175 0100-02

a.

(

.

ý

Continue	d
AUTOIGNITIO	N TEMPERATURE: Not determined
EXTINGUISHI	NG MEDIA: Water spray, dry chemical, foam, or carbon dioxide
SPECIAL FIR	EFIGHTING PROCEDURES: Use self-contained breathing apparatus.
UNUSUAL FIR	E AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.
STABILITY C	ONSIDERATIONS: Stable
INCOMPATIBI	LITY WITH: None
HAZARDOUS D	ECOMPOSITION PRODUCTS: None
Carbon m	RODUCTS OF COMBUSTION: onoxide, carbon dioxide and smoke. Depending on conditions, som c aldehydes and carboxylic acids also may be formed.
HAZARDOUS P	OLYMERIZATION: Will not occur.
	YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:
SIGNS AND S EYES SKIN: INHALATI	<pre>H HAZARD DATA YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:    Dust may cause irritation by mechanical abrasion.    None known. (see below - MEDICAL CONDITIONS GENERALLY    RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). ON: None known.</pre>
SIGNS AND S EYES SKIN: INHALATI INGESTIC	<pre>H HAZARD DATA YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Dust may cause irritation by mechanical abrasion. None known. (see below - MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). ON: None known. N: None known.</pre>
SIGNS AND S EYES SKIN: INHALATI INGESTIC EMERGENCY A EYES: I water fo	<pre>H HAZARD DATA YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:    Dust may cause irritation by mechanical abrasion.    None known. (see below - MEDICAL CONDITIONS GENERALLY    RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). ON: None known.</pre>
SIGNS AND S EYES SKIN: INHALATI INGESTIC EMERGENCY A EYES: I water fo thorough SKIN: W material water.	<pre>H HAZARD DATA YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:    Dust may cause irritation by mechanical abrasion.    None known. (see below - MEDICAL CONDITIONS GENERALLY    RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). ON: None known. N: None known. N: None known. ND FIRST AID PROCEDURES: n case of contact, immediately flush with plenty of low pressure r at least 15 minutes. Remove any contact lenses to ensure</pre>
SIGNS AND S EYES SKIN: INHALATI INGESTIC EMERGENCY A EYES: I water fo thorough SKIN: W material water. result i INHALATI	<ul> <li>H HAZARD DATA</li> <li>YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Dust may cause irritation by mechanical abrasion. None known. (see below - MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).</li> <li>ON: None known.</li> <li>None known.</li> <li>None known.</li> <li>ND FIRST AID PROCEDURES: n case of contact, immediately flush with plenty of low pressure r at least 15 minutes. Remove any contact lenses to ensure flushing. Call a physician.</li> <li>Yash with soap and running water. MOLTEN RESINS: If molten comes in contact with the skin, cool under a running stream of Do NOT attempt to remove the resin from the skin. Removal could n severe tissue damage. Get medical attention.</li> </ul>
SIGNS AND S EYES SKIN: INHALATI INGESTIC EMERGENCY A EYES: I water fo thorough SKIN: W material water. result i INHALATI Call a p	<ul> <li>H HAZARD DATA</li> <li>YMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Dust may cause irritation by mechanical abrasion. None known. (see below - MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).</li> <li>ON: None known.</li> <li>NN FIRST AID PROCEDURES: n case of contact, immediately flush with plenty of low pressure r at least 15 minutes. Remove any contact lenses to ensure flushing. Call a physician.</li> <li>Pash with soap and running water. MOLTEN RESINS: If molten comes in contact with the skin, cool under a running stream of Do NOT attempt to remove the resin from the skin. Removal could n severe tissue damage. Get medical attention.</li> <li>ON: Remove fresh air. Treat any irritation symptomatically.</li> </ul>

MSDS No.: 853 2175 0100-02

Date: 09/24/93

# SPILL PROCEDURES & WASTE DISPOSAL VI. Continued... WASTE DISPOSAL METHOD: Incineration of waste material in a permitted facility in accordance to local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility is a suitable alternative. Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product. VII. APPLICABLE CONTROL MEASURES **APPROPRIATE HYGIENIC PRACTICES:** Do not allow eye or skin contact. Avoid breathing dust or vapor. Wash thoroughly after handling, and before eating, drinking or smoking. PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves Safety glasses Appropriate respiratory protection is required when exposure to an airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart 1 (29 CFR 1910.134) and manufacturer's recommendations. Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are recommended. Appropriate protective clothing WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. HANDLING AND STORAGE PRECAUTIONS For small packages, the following warning applies: 1 WARNING! STATIC CHARGES GENERATED, BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In addition when emptying bags where flammable vapors may be present, blanket vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.

Continued...

	II. ENVIRONA					
of	e following e this product ligations.	environmental t in defining	and regulat their regul	ory data are atory enviro	provided nmental c	to assist users ompliance
Α.	PRODUCT COM	1POSITION				
	PRODUCT (P) Component N		DE NAME or MICAL COMPON	ENT	CASRN	WT. PERCEI
	Ρ	DYMER	REX* Dimeriz	ed rosin	65997-05	-9 100
в.	SARA TITLE	III (See foo	otnotes)			
	COMPONENT NO.	SEC. 304 EHS RQ (1bs)				SEC. 313 TOXIC CHEMICAL (YES, N
					(dust)	NO

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

1

## D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulations 40CFR261.33, paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40CFR261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal.

E. TSCA STATUS

-

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

y.

•		•				
<b>0</b>	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 10				
5	HERCULES INCORPORATED	CONTO* Dark rosin resin,				
$\overline{}$	Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 853 2146 2000-03				
	Supersedes MSDS#: 853 2146 2000-02	Date: 04/16/93				
	I. PRODUCT IDENTIFICATION					
	A. CONTO* Dark rosin resin, MOLTEN					
	DANGER! MOLTEN RESIN. CAUSES PRODUCT MAY BURN IF IG					
	APPEARANCE AND ODOR: Dark, opaque viscou tall oil rosin odou					
	B. CONTO* Dark rosin resin, SOLID	5 8 .				
	WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS).					
	APPEARANCE AND ODOR: Dark brown solid; tall oil rosin odor					
	CASRN: 8050-09-7	HMIS RATINGS: (1)				
		Health hazard: O Minimal Flammability hazard: I Slight Reactivity hazard: O Minimal				
	CHEMICAL & COMMON NAME: Dark rosin-derived resin					
	* Registered Trademark of Hercules Incorporated					
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification</li> <li>CASRN: Chemical Abstracts Service Regis</li> <li>AIHA WEEL: American Industrial Hygienist</li> <li>Environmental Exposure Level.</li> <li>OSHA: Occupational Safery and Health Adm</li> <li>TLV: Registered trademark of American C</li> <li>Hygienists for Threshold Limit Val</li> <li>TWA: Time Weighted Average</li> </ul>	try Number s Association - Workplace inistration. onference of Governmental Industrial				
$\bigcirc$	STEL: Short term exposure limit (See 29 C: Ceiling exposure concentration (See 2 SKIN: May be absorbed through skin (See N/A: Not applicable	9 CFR 1910.1000, March 1, 1989, rev.)				

÷ **,**:

.

(

l

i.

II. HAZARDOUS INGREDIENTS & EXPOSURE	LIMITS
As Hercules interprets the U.S. Occupa Regulations, including the Hazard Comm dated August 24, 1987, this product sh	
If this product is used in a manner th Hercules recommends that the dust be t (Particulates Not Otherwise Classified of Governmental Industrial Hygienists Regulated) as defined by OSHA.	reated as a NUISANCE PARTICULATE ) as defined by the American Conference
	RECOMMENDED AIRBORNE LEVELS
	1992-1993 OSHA TWA TLV-TWA
Particulates not Otherwise classified/regulated	<pre>15 mg/m3 total 10 mg/m3 5 mg/m3 respirable fraction</pre>
If this product is heated to temperatu fumes, the TLV-TWA of 0.1 mg/m3 (as fo pyrolysis products should be observed.	rmaldehyde), for rosin core solder
III. TYPICAL PHYSICAL & CHEMICAL CHAR	•
BOILING POINT: N/A	SOLUBILITY IN WATER: Negligible
/APOR PRESSURE AT 20 C: Negligible	SPECIFIC GRAVITY: Not determined
VAPOR DENSITY: Heavier than air	pH: N/A
VOLATILE (WT.),%: Not determined	
SOFTENING POINT (DROP): 70-80 C (158-	acetate 176 F)
<i>T</i>	
	Ϋ́,
1* <sup>1</sup>	

.1

MSDS	No.: 853	3 2146 2000	0-03	À	Date:	04/16/93	PAGE:	03 of	10
1V.	FIRE, E	EXPLOSION,	& REACTI	νιτγ	HAZARD	DATA	 		
					3		 		

A. MOLTEN product

CAUTION! PRODUCT MAY BURN IF IGNITED.

-----

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. SOLID product

WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS' MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS).

FLASH POINT: Not determined

FLAMMABLE LIMITS: Not determined

AUTOIGNITION TEMPERATURE: Not determined

EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon

SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. Apply water to MOLTEN RESIN fires from a safe, protected location to avoid body contact with hot resin.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.

STABILITY CONSIDERATIONS: Stable.

INCOMPATIBILITY WITH: None

HAZARDOUS DECOMPOSITION PRODUCTS: None expected.

HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed.

HAZARDOUS POLYMERIZATION: Will not occur.



Y

1 1

MSDS No.: 853 2146 2000-03

Date: 04/16/93

V. HEALTH HAZARD DATA

A. MOLTEN product

DANGER! MOLTEN RESIN. CAUSES SEVERE BURNS ON CONTACT.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: Burns can cause irreversible eye injury and blindness. Smoke or fumes from rosin products may cause eye irritation with redness, tearing and discomfort.

SKIN: Serious burns will result from contact with molten product. Repeated or prolonged contact may cause an allergic skin reaction (sensitization) in susceptible individuals. See MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

INHALATION: Breathing smoke or fumes from molten rosin products may produce breathing discomfort, coughing and sore throat. INGESTION: None known

EMERGENCY & FIRST AID PROCEDURES: EYES: Cool burns with plenty of low-pressure water. Get medical attention immediately.

SKIN: Immediately cool burn area with cold water and cold packs for at least 15 minutes. Do NOT put ice directly on the skin. Do NOT attempt to remove solidified resin from the skin as severe tissue damage may result. Get medical attention.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen and soften the material.

> . \_\_\_\_\_\_\_\_\_\_\_\_\_

B. SOLID product

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:Dust may cause irritation by mechanical abrasion. Smoke or<br/>fumes from decomposition of rosin products heated to high<br/>temperatures may cause redness, tearing and discomfort.SKIN:May cause irritation by mechanical abrasion. See below:<br/>MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY

1

EXPOSURE.

INHALATION: None known from dust. Breathing smoke or fumes from decomposition of rosin products heated to high temperatures may produce breathing discomfort, coughing and sore throat. INGESTION: None known.

۷.	HEALTH HAZARD DATA	N.		

### B. SOLID product...Continued

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure . water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water.

INHALATION: Remove to fresh air. Call a physician if irritation persists.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen the material.

\_\_\_\_\_\_

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

The components of this product are not listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

**REPORTED HUMAN EFFECTS:** 

See MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE. A similar resin has been tested in a repeated insult human patch test. No signs of skin irritation or sensitization were noted in the study.

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

Continued...

À

\_\_\_\_\_\_

\_\_\_\_

# V. HEALTH HAZARD DATA

\_\_\_\_\_\_

## ...Continued

#### **REPORTED ANIMAL EFFECTS:**

Hercules Incorporated has not conducted animal testing with this product. Data from studies on similar materials indicate that it has a low order of acute toxicity by mouth or by skin contact and may produce mechanical irritation following skin and eye contact. Subchronic administration of similar materials in the diet of rats led to food rejection and starvation at 5% concentration in the diet. Liver enlargement without pathologic abnormalities was noted at 1%. There were no significant effects noted below dietary levels of 1%.

An inhalation study of thermal decomposition products was conducted by heating a related product to 180 C (356 F). Rats were exposed to vapor and/or decomposition products for 6 hours. No deaths or significant adverse reactions were noted.

# VI. SPILL PROCEDURES & WASTE DISPOSAL

## SPILL PROCEDURES:

If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal.

### WASTE DISPOSAL METHOD:

Incineration of combustible waste material in a permitted facility in accordance with local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility equipped with leachate collection is a suitable alternative.

Refer to Section VIII for pecific Federal Environmental and Regulatory Data regarding use or disposal of this product.

# VII. APPLICABLE CONTROL MEASURES

## APPROPRIATE HYGIENIC PRACTICES:

Do not allow eye or skin contact. Avoid breathing fumes, dust or vapor. Wash thoroughly after handling, and before eating, drinking or smoking.

Continued...

MSDS No.: 853 2146 2000-03 Date: 04/16/93 PAGE: 07 of 10
VII. APPLICABLE CONTROL MEASURES
·
Continued
A. MOLTEN product - PERSONAL PROTECTIVE EQUIPEMNT: Face shield, safety glasses and hard hat Long-sleeve protective shirt, long pants and work shoes Long-cuff lined gloves Lined rain suit with protective hood or shoulder shroud or full aluminized or thermal suit with hood Protective clothing should be made of six-ounce (6 oz) or greater fabric; polyester should be avoided. Appropriate respiratory protection required when exposure to airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA Subpart 1 (29 CFR 1910.134) and manufacturer's recommendations.
B. SOLID product - PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves Safety glasses Appropriate respiratory protoction is much to t
Appropriate respiratory protection is required when exposure to an airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart 1 (29 CFR 1910.134) and manufacturer's recommendations. Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are recommended.
WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible.
A. MOLTEN product - HANDLING AND STORAGE PRECAUTIONS: If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake rosin, and may form flammable dust-air mixtures. See HANDLING AND STORAGE PRECAUTIONS for solid product below. Water contact with hot molten resin may result in foaming or spattering which can cause burns upon skin or eye contact.
-
Continued

•

1

0.00

.

VII.	APPLICABLE CONTROL	MEASURES	•	
}				

## ...Continued

B. SOLID product - HANDLING AND STORAGE PRECAUTIONS: For small packages, the following warning applies: WARNINGI STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In addition, when emptying bags where flammable vapors may be present, blanket vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.

For large bags (1,000 lbs. or greater), the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION! Flaked forms are prone to gradual oxidation. Control inventory.

Use oldest material first.

Store below 32 C (90 F) to preserve product integrity.

ENGINEERING CONTROLS: Adequate ventilation should be provided to keep fumes, dust, or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

Eliminate sources of ignition.

Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintename or repairs. Keep area clean. Product will burn.

A

Υ.

.1

MSDS No.: 853 2146 2000-03

Date: 04/16/93 🐃

#### VIII. ENVIRONMENTAL & REGULATORY DATA \_\_\_\_\_ The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations. Υ. PRODUCT COMPOSITION Α. PRODUCT (P) or TRADE NAME or COMPONENT NO. CHEMICAL COMPONENT CASRN WT. PERCENT Ρ 8050-09-7 100 CONTO\* Dark rosin resin SARA TITLE III (See footnotes) Β. .1 SEC. 304 SEC. 302 COMPONENT EHS EHS SEC. 311/312 SEC. 313 TOXIC NO. HAZARD CATEGORY CHEMICAL (YES, NO) RQ (lbs) TPQ (lbs)

P N/A N/A NHH, HC-3 (dust) NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

## D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

# E. TSCA STATUS

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

(

i

VIII	. EN	/IRONMENTAL REGULATORY DATA
C	ontinu	Jed Jacobian Jacobi
FOOT	NOTES	
:	SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
ł	N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
:	SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
I	N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	SEC. : "Hazar	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements d Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
		HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
	SEC. 3	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
, I	N0:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical
	YES:	Reporting requirements. This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
8 	N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR, 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
CONT/ REL1/ WHEN AS TO PRODU	AINED ABLE A THE M O THE UCT ML	NCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE ND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT SDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS IST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS
		THER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS

ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

Doc. No. 8417s

OR STATE LAWS.

			12-10-4
MATERIAL SAFETY DATA SHEET		PAGE	01 of 07
HERCULES INCORPORATED Hercules Plaza		ROSIN NITRILE PROCESS IN (Crude and distilled)	ITERMEDIATE
Wilmington, DE 19894 Phone #: (302) 594-5000 (2	4 hrs) 👘	MSDS No.: 999 0420 3007	7-01
	ý	Date: 11/30/90	
I. PRODUCT IDENTIFICATIO	N ا <sup>ب</sup>		
DANGER! MAY CAUSE			
ROSIN NITRILE PROCESS INTER	MEDIATE	HMIS RATINGS: (1)	
(Crude and distilled)		Health hazard: 3	Serious
(crude and distilled)		Flammability hazard: 0	
		Reactivity hazard: 0	
		Reactivity hazard: 0	7111111141
II. HAZARDOUS INGREDIENTS	& EXPOSURE L	IMITS	
II. HAZARDOUS INGREDIENTS		RECOMMENDED AIRBORN	 E LEVELS (1)
		IMITS	 E LEVELS (1)
CHEMICAL & COMMON NAMES:		RECOMMENDED AIRBORN 1985-1986	E LEVELS(1) TLV-TWA
CHEMICAL & COMMON NAMES:	*	IMITS RECOMMENDED AIRBORN 1985-1986 OSHA TWA	E LEVELS(1) TLV-TWA
CHEMICAL & COMMON NAMES: Rosin nitrile	% 60-90	IMITS RECOMMENDED AIRBORN 1985-1986 OSHA TWA	E LEVELS(1) TLV-TWA
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms:	% 60-90	IMITS RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi	E LEVELS(1) TLV-TWA shed.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I	% 60-90 	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product	E LEVELS(1) TLV-TWA shed.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr	% 60-90  dentification ial Hygienist	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace	E LEVELS(1) TLV-TWA shed.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I	% 60-90  dentification ial Hygienist	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace	E LEVELS(1) TLV-TWA shed.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex	% 60-90 dentification ial Hygienist posure Level.	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace	E LEVELS(1) TLV-TWA shed.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark	% 60-90 dentification ial Hygienist posure Level. nd Health Adm of American C	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace inistration.	E LEVELS(1) TLV-TWA shed. as supplied.
CHEMICAL & COMMON NAMES: Rosin nitrile (1) Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark Hygienists for Thresh	% 60-90 dentification ial Hygienist posure Level. nd Health Adm of American C old Limit Val	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace inistration.	E LEVELS(1) TLV-TWA shed. as supplied.
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark Hygienists for Thresh TWA: Time Weighted Average	% 60-90 ial Hygienist posure Level. nd Health Adm of American C old Limit Val	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi System rating for product s Association - Workplace inistration. conference of Governmental I ues.	E LEVELS(1) TLV-TWA shed. as supplied. ndustrial
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark Hygienists for Thresh TWA: Time Weighted Average STEL: Short term exposure 1	% 60-90 dentification ial Hygienist posure Level. nd Health Adm of American C old Limit Val imit (See 29	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi Not establi System rating for product s Association - Workplace inistration. onference of Governmental I ues. i CFR 1910.1048, March 1, 198	E LEVELS(1) TLV-TWA shed. as supplied. ndustrial 9, revision)
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark Hygienists for Thresh TWA: Time Weighted Average STEL: Short term exposure I C: Ceiling exposure concent	% 60-90 dentification ial Hygienist posure Level. nd Health Adm of American C old Limit Val imit (See 29 ration (See 29	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi Not establi System rating for product s Association - Workplace inistration. onference of Governmental I ues. CFR 1910.1048, March 1, 198 9 CFR 1910.1000, March 1, 1	E LEVELS(1) TLV-TWA shed. as supplied. ndustrial 9, revision) 989, rev.)
CHEMICAL & COMMON NAMES: Rosin nitrile (1)Explanation of acronyms: HMIS: Hazardous Materials I AIHA WEEL: American Industr Environmental Ex OSHA: Occupational Safety a TLV: Registered trademark Hygienists for Thresh TWA: Time Weighted Average STEL: Short term exposure I C: Ceiling exposure concent	% 60-90 dentification ial Hygienist posure Level. nd Health Adm of American C old Limit Val imit (See 29 ration (See 29	RECOMMENDED AIRBORN 1985-1986 OSHA TWA Not establi Not establi System rating for product s Association - Workplace inistration. onference of Governmental I ues. i CFR 1910.1048, March 1, 198	E LEVELS(1) TLV-TWA shed. as supplied. ndustrial 9, revision) 989, rev.)

•

•

×

 $\overline{E}$ 

~

· · · ·

MSDS No.: 999 0420 3007-01 Date: 11/30/90 PAGE: 02 of 07 111. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS BOILING POINT: Not determined. SOLUBILITY IN WATER: Slight VAPOR PRESSURE @ 20 C: Not determined. SPECIFIC GRAVITY: Not determined. VAPOR DENSITY: Heavier than air pH: N/A VOLATILE (VOL.), %: 90=Crude EVAPORATION RATE: Slower than buty! 60=Distilled acetate MELTING POINT: Not determined. SOFTENING POINT: 18.9 C=Crude 15.2 C=Distilled FIRE, EXPLOSION, & REACTIVITY HAZARD DATA 1V. FLASH POINT: Not determined. FLAMMABLE LIMITS: Not determined. AUTOIGNITION TEMPERATURE: Not determined. EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon SPECIAL FIREFIGHTING PROCEDURES: None UNUSUAL FIRE & EXPLOSION HAZARDS: None STABILITY CONSIDERATIONS: Stable. Nitriles can be reacted at high temperatures and in the presence of catalysts and other reactants to form amines, amides, carboxylic acids and esters, aldehydes, ketones, imines, and other compounds. INCOMPATIBILITY WITH: None 1 HAZARDOUS DECOMPOSITION PRODUCTS: None HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide, ammonia and hydrogen cyanide. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed. HAZARDOUS POLYMERIZATION: Will not occur.

 $\tilde{Y}_{11}$ 

------

MSDS No.: 999 0420 3007-01

Date: 11/30/90

v.	HEALTH HAZARD DATA
	DANGER! MAY CAUSE EYE BURNS AND SKIN IRRITATION.
	AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: 'ES: May cause eye burns which could result in loss of vision.

Smoke or fumes from decomposition of rosin products heated to high temperatures may cause redness, tearing and discomfort. SKIN: May cause severe skin irritation. Prolonged contact may cause burns. See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

- INHALATION: This material has a relatively low vapor pressure. Workplace vapor concentrations are not expected to reach levels that could cause injury. Breathing smoke or fumes from decomposition of rosin products heated to high temperatures may produce breathing discomfort, coughing and sore throat.
- INGESTION: May cause severe injury to the mouth and gastrointestinal tract; swallowing may also cause nausea, vomiting, dizziness, headache.

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Promptly wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse. Discard contaminated leather articles.

INGESTION: If conscious, the person should immediately drink large quantities of liquid. Induce vomiting. Call a physician. NEVER give liquids to or attempt to induce vomiting in an unconscious person.

INHALATION: Remove to fresh air. Call a physician if irritation persists.

-----

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

Repeated exposure to smoke or fumes of decomposition products of rosin or rosin derivatives heated to high temperatures may produce an asthmatic (respiratory sensitization) reaction in sensitive individuals.



MSDS No.: 999 0420 3007-01

Date: 11/30/90

-

.

(

V. HEALTH HAZARD DATA	
Continued	
PRIMARY ROUTES OF ENTRY: Eye	es, skin
regulated as a carcinogen	n by NTP (National Toxicology Program); not by OSHA (Occupational Safety & Health wated by IARC (International Agency for Research
EXPOSURE. If this product	ONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY is heated to temperatures sufficient to produce (A of 0.1 mg/m3, (as formaldehyde) for rosin core should be observed.
REPORTED ANIMAL EFFECTS: Oral LD50, rats greater th Animal studies showed that	an 3.2 g/kg. related materials cause severe eye injury.
VI. SPILL PROCEDURES & WAST	E DISPOSAL
SPILL PROCEDURES: If material is not contamin contaminated, scoop into co	nated, scoop into clean containers for use. If ontainers for disposal.
accordance with local, stat	e waste material in a permitted facility in te, and federal regulations is the recommended ing in a licensed facility equipped with leachate lternative.

Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

**A** 

1

Υ.

	APPLICABLE C	ONTROL MEASURES				
A• A•	void breathing	IC PRACTICES: ith eyes, skin, dust, smoke and after handling,	fumes.	-	nking, or sm	oking.
ir Sa Ap co se	ontaminant is elected and us	•	acceptab	le limits. Re	spirators sho	ould be
	PRACTICES: vewash fountai	ns and safety sh	owers shou	uld be easily	accessible.	
HANDL	ING AND STORA	GE PRECAUTIONS:	Slight an	nmonia odor (w	hen crude)	
ENGIN	IEERING CONTROL	LS: e ventilation.	.1			

-

1

\*

MSDS No.: 999 0420 3007-01

Υ.,

VII	I. ENVIRONMENTAL & REGULATORY DATA							
of		mental and regulatory data fining their regulatory en						
Α.	PRODUCT COMPOSITI	ON						
	PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT				
	Р	ROSIN NITRILE PROCESS INTERMEDIATE (Crude and distilled	N/A )	100				
Β.	SARA TITLE III (S	ee footnotes)						

COMPONENT	EHS	EHS	SEC. 311/312	SEC 313 TOXIC
NO.	RQ (1bs)	TPQ (1bs)	HAZARD CATEGORY	CHEMICAL (YES, NO)
Ρ	N/A	N/A	HC-1, NPH	N/A

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

## E. OTHER

This product contains Rosin nitrile that is listed as a "Toxic Pollutant" under Section 307 of the Clean Water Act, and specific discharge limitations on wastewaters containing it may apply. Refer to the Effluent Guidelines for your industry (40 CFR 401 through 469).

Continued...

۲.

•

	nued 🧠 🦓
FOOTNOTES	
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ)
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazar gories"
Care	HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard NPH Not a physical hazard
SEC	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
N0:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical
	Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title 111 of the Superfund Amendments and Reauthorization Ac of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
N/A:	Percent composition (or estimated range) is listed above. This product is a mixture. As such, it is not listed as a Toxic
	Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
HERCULES	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS
RELIABLE	D IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE
WAEN INE	E CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS

Doc. No. 7516s

MATERIAL SAFETY DATA SHEET	Y, PAGE: 01 of 09	
HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894	HERCULES* GUM ROSIN MOLTEN OR SOLID	
Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 852 3991 0600-04	
Supersedes MSDS #: 852 3991 0600-03	Date: 04/30/93	
I. PRODUCT IDENTIFICATION		
A. HERCULES* GUM ROSIN, MOLTEN		
	45	
APPEARANCE AND ODOR: Amber, viscous liqui rosin odor	d at 100-175 C (212-347 F); terpene	
B. HERCULES* GUM ROSIN, SOLID		
FLAMMABLE VAPORS MAY CAU MAY FORM FLAMMABLE DUST-AI	SE FLASH FIRE. R MIXTURES.	
APPEARANCE AND ODOR: Amber solid; terpene	rosin odor	
CASRN: 8050-09-7	HMIS RATINGS:(1)	
	Health hazard: 0 Minimal Flammability hazard: 1 Slight	
85. 8	Reactivity hazard: 0 Minimal	
CHEMICAL & COMMON NAME: Gum rosin	······································	
CHEMICAL & COMMON NAME: Gum rosin * Registered Trademark of Hercules Incorpo	Reactivity hazard: 0 Minimal	
	MATERIAL SAFETY DATA SHEET HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs) Supersedes MSDS #: 852 3991 0600-03 	MATERIAL SAFETY DATA SHEET PAGE: 01 of 09 HERCULES INCORPORATED HERCULES* GUM ROSIN Multen OR SOLID Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs) MSDS No.: 852 3991 0600-04 Supersedes MSDS #: 852 3991 0600-03 Date: 04/30/93

•

	MSDS No.: 852 3991 0600-04	Date:	04/30/93	PAGE:	02 of 09			
	II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS							
	As Hercules interprets the U.S. Occu Regulations, including the Hazard Co dated August 24, 2987, this product material.	ommunica	tion Standard 2	9 CFR 1910	.1200			
	If this product is used in a manner that could generate particulates (dust), Hercules recommends that the dust be treated as a NUISANCE PARTICULATE (Particulates Not Otherwise Classified) as defined by the American Conference of Governmental Industrial Hygienists (ACGIH) or (Particulates not otherwise Regulated) as defined by OSHA.							
		λ						
			RECOMMENDE	D AIRBORNE 1992-1993				
		Υ.	OSHA TWA	1992 1993	TLV-TWA			
	Particulates not		15 mg/m3 tota		10 mg/m3			
	Otherwise classified/regulated	5 mg/1	m3 respirable f	raction				
	Otherwise classified/regulated If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe	tures s formald	ufficient to pr	oduce smok				
	If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe III. TYPICAL PHYSICAL & CHEMICAL CH	tures s formald d.	ufficient to pr ehyde), for ros ISTICS	oduce smok in core sc	older			
>	If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe	tures s formald d.	ufficient to pr ehyde), for ros ISTICS	oduce smok in core sc	older 			
>	If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe III. TYPICAL PHYSICAL & CHEMICAL CH	formald d. ARACTER	ufficient to pr ehyde), for ros ISTICS	oduce smok in core sc 	older 			
>	If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe III. TYPICAL PHYSICAL & CHEMICAL CH BOILING POINT: 318 C (604 F)	formald d. ARACTER	ufficient to pr ehyde), for ros ISTICS SOLUBILITY IN	oduce smok in core sc 	older 			
>	If this product is heated to tempera fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe III. TYPICAL PHYSICAL & CHEMICAL CH BOILING POINT: 318 C (604 F) VAPOR PRESSURE AT 317 C: 100 mm Hg	formald d. ARACTER	ufficient to pr ehyde), for ros ISTICS SOLUBILITY IN SPECIFIC GRAVI pH: N/A	oduce smok in core so 	older 			
	If this product is heated to temperat fumes, the TLV-TWA of 0.1 mg/m3 (as pyrolysis products should be observe III. TYPICAL PHYSICAL & CHEMICAL CH BOILING POINT: 318 C (604 F) VAPOR PRESSURE AT 317 C: 100 mm Hg VAPOR DENSITY: N/A	formald d. ARACTER	ufficient to pr ehyde), for ros ISTICS SOLUBILITY IN SPECIFIC GRAVI pH: N/A	oduce smok in core so 	older 			

•

----

2 D

•

.

MSDS No	.:	852	3991	0600-	·04
---------	----	-----	------	-------	-----

1

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

\_\_\_\_\_

MOLTEN product Α.

CAUTION! PRODUCT MAY BURN IF IGNITED.

\_\_\_\_\_\_

B. SOLID product

WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS).

\_\_\_\_\_\_

FLASH POINT: 204 C (400 F) COC

FLAMMABLE LIMITS: Not determined

AUTOIGNITION TEMPERATURE: Not determined

EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon

SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. Apply water to MOLTEN RESIN fires from a safe, protected location to avoid body contact with hot resin.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: None

HAZARDOUS DECOMPOSITION PRODUCTS: None expected

HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed.

À

۲.

HAZARDOUS POLYMERIZATION: Will not occur.

Date: 04/30/93

\_\_\_\_\_\_ V. HEALTH HAZARD DATA \_\_\_\_\_ A. MOLTEN product MOLTEN REALN. CAUSES SEVERE BURNS ON CONTACT. DANGER! SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Burns can cause irreversible eye injury and blindness. Smoke EYES: or fumes from rosin products may cause eye irritation with redness, tearing and discomfort. Serious burns will result from contact with molten product. SKIN: Repeated or prolonged contact may cause an allergic skin reaction (sensitization) in susceptible individuals. See MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE. INHALATION: Breathing smoke or fumes from molten rosin products may produce breathing discomfort, coughing and sore throat. INGESTION: None known EMERGENCY & FIRST AID PROCEDURES: EYES: Cool burns with plenty of low-pressure water. Get medical attention immediately. SKIN: Immediately cool burn area with cold water and cold packs for at least 15 minutes. Do NOT put ice directly on the skin. Do NOT attempt to remove solidified resin from the skin as severe tissue damage may result. Get medical attention. INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician. NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen and soften the material. \_\_\_\_\_ B. SOLID product SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Dust may cause irritation by mechanical abrasion. EYES: None known. (See below: MEDICAL CONDITIONS GENERALLY SKIN: RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.)

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen the material.

Continued...

\_\_\_\_\_

V	HEALTH	HAZARD	DATTA
v .	TRUDIT.	Inano	DUTU

#### ...Continued

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

A

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

Not listed as a carcinogen by NTP (National Toxicology Program); not regulated as a carcinogen by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).

**REPORTED HUMAN EFFECTS:** 

See above: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

**REPORTED ANIMAL EFFECTS:** 

Oral LD50, rats - 7.6 g/kg Oral LD50, mice - 4.6 g/kg Oral LD50, guinea pig - 4.1 kg/kg Dermal LD50, rabbits - greater than 2.5 g/kg.

Two-year feeding studies have been conducted in dogs and rats with gum, wood, and tall oil rosins. At a dietary level of 1% rosin, the rats showed a slight decrease in body weight gain and both species showed increased liver sizes. Microscopic examination of the liver and other tissues did not reveal any abnormalities that could be attributed to the test material. At dietary levels of 0.2% or less, the rats and dogs did not have any abnormalities that could be related to the resin (rosin) acids. Tumor incidence was equal to, or less than, that in control animals.

#### **OTHER:**

The following resin acid components of rosin were all negative in the Ames IN VITRO bioassay: Abietic, dehydroabietic, levopimaric, pimaric, isopimaric, and sandaracopimaric. Abietic acid was also negative in the DNA assay with E. COLI.

\_\_\_\_\_\_

A

γ.

ě

\*

VI. SPILL PROCEDURES & WASTE DISPOSAL
SPILL PROCEDURES:
If material is not contaminated, scoop into clean containers for use. If
contaminated, scoop into containers for disposal.
WASTE DISPOSAL METHOD:
Incineration of combustible waste material in a permitted facility in accordance with local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility equipped with leacheate collection is a suitable alternative.
Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
VII. APPLICABLE CONTROL MEASURES
APPROPRIATE HYGIENIC PRACTICES:
Avoid contact with eyes, skin, and clothing.
Avoid breathing dust or vapor.
Wash thoroughly after handling, and before eating, drinking or smoking.
successing, around handling, and before eating, drinking or smoking.
A. MOLTEN product - PERSONAL PROTECTIVE EQUIPMENT
Face shield, safety glasses and hard hat
Long-sleeve protective shirt, long pants and work shoes
Long cuff lined gloves
Lined rain suit with protective hood or shoulder shroud or full aluminized or thermal suit with hood
Protective clothing should be made of six-ounce (6 oz) or greater fabric; polyester should be avoided.
Appropriate respiratory protection required when exposure to airborne contaminant is likely to exceed acceptable limits. Respirators should be
selected and used in accordance with OSHA Subpart I (29 CFR 1910.134) and manufacturer's recommendations.
. SOLID product - PERSONAL PROTECTIVE EQUIPMENT:
Safety glasses
Impervious gloves
Appropriate respiratory protection required when exposure to airborne
contaminant is likely to exceed acceptable limits. Respirators should be
selected and used in accordance with OSHA Subpart I (29 CFR 1910.134) and
manufacturer's recommendations.
Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are
recommended.

Continued...

\_\_\_\_\_

			 	-4	 	
		APPLICABLE		-	 	
)			 	γ,	 	
	Cor	ntinued				

WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible.

A. MOLTEN product - HANDLING AND STORAGE PRECAUTIONS:

If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake rosin, and may form flammable dust-air mixtures. See HANDLING AND STORAGE PRECAUTIONS for solid product below. Water contact with hot molten resin may result in foaming or spattering which can cause burns upon skin or eye contact.

B. SOLID product - HANDLING AND STORAGE PRECAUTIONS: For small packages, the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In addition, when emptying bags where flammable vapors may be present, blanket vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.

For large bags (1,000 lbs. or greater), the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION! Flaked forms are prone to gradual oxidation. Control inventory. Use

oldest material first.

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep dust or vapor<sup>1</sup> concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

2

Eliminate ignition sources.

Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs. Keep area clean. Product will burn.

A

Υ.

Date: 04/30/93

VIII. ENVIRONMENTAL & REGULATORY DATA The following environmental and regulatory data are provided to a of this product in defining their regulatory environmental compli obligations.		***************************************	
The following environmental and regulatory data are provided to a of this product in defining their regulatory environmental compli		VIII. ENVIRONMENTAL & REGULATORY DATA	
of this product in defining their regulatory environmental compli	1		<u>*</u>
of this product in defining their regulatory environmental compli			
of this product in defining their regulatory environmental compli	soft		
		The following environmental and regulatory data are provided to assist u	sers
		of this product in defining their regulatory environmental compliance	
obrigations.			
		obligations.	

#### A. PRODUCT COMPOSITION

PRODUCT (P) or	TRADE NAME or		
COMPONENT NO.	CHEMICAL COMPONENT	CASRN	WT. PERCENT
Р	HERCULES* GUM ROSIN	8050-09-7	100

#### B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
P	N/A	N/A	NHH, HC-3 (dust)	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

## D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulations 40 CFR 261.33 paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261 Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

А.

#### E. TSCA STATUS

-

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

)Continu	ed
·	۲.,
FOOTNOTES:	
SEC. 3	02 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
•	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC. 3	04 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
"Hazar	11/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements d Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
SEC. 3	13 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
CONTAINED RELIABLE A	NCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE

AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT\_MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPARANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 4503s

À

PAGE: 01 of 08 MATERIAL SAFETY DATA SHEET PEXOIL\* B and PEXOIL\* H HERCULES INCORPORATED Light end fractions, Hercules Plaza MOLTEN LIQUID or LIQUID Wilmington, Del, 19894 Phone #: (302) 594-5000 (24 hrs) MSDS No.: 860 2119 0200-02 Supersedes MSDS No.: 860 2119 0200-01 Date: 05/28/93 1. PRODUCT IDENTIFICATION \_\_\_\_\_ \_ \_ \_ \_ \_ \_ . 12 A. PEXOIL\* B and PEXOIL\* H Light end fractions, MOLTEN LIQUID DANGER! MOLTEN RESIN. CAUSES SEVERE BURNS ON CONTACT. PRODUCT MAY BURN IF IGNITED. APPEARANCE AND ODOR: Amber, viscous liquid at 120-160 C (248-320 F); rosin odori \_\_\_\_\_\_ B. PEXOIL' B and PEXOIL' H Light end fractions, LIQUID APPEARANCE AND ODOR: Dark brown liquid; pine odor ------HMIS RATINGS: (1) CASRN: Mixture Health hazard: 0 Minimal Flammability hazard: 0 Minimal Reactivity hazard: 0 Minimal .1 CHEMICAL & COMMON NAME: Rosin oils or light end fractions from processing of rosin-derived resins \* Registered Trademark of Hercules Incorporated 1 (1) Explanation of acronyms: HMIS: Hazardous Materials Identification System rating for product as supplied. CASRN: Chemical Abstracts Service Registry Number AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level. OSHA: Occupational Safety and Health Administration. TLV: Registered trademark of American Conference of Governmental Industrial Hygienists for Threshold Limit Values. TWA: Time Weighted Average STEL: Short term exposure limit (See 29 CFR 1910.1048, March 1, 1989, revision) C: Ceiling exposure concentration (See 29 CFR 1910.1000, March 1, 1989, rev.) SKIN: May be absorbed through skin (See 29 CFR 1910.1048, March 1, 1989, rev.) N/A: Not applicable ţ

7

· 🔍				-
MSDS No.: 860 2119 0200-02	Date: 05/28/	93	PAGE:	02 of 08
11. HAZARDOUS INGREDIENTS & EXPO	SURE LIMITS			
As Hercules interprets the U.S. Oc Regulations, including the Hazard dated August 24, 1987, this produc If this product is heated to tempe	cupational Safet Communication St t should NOT be o	y and Hea andard 29 considere	alth Act a 9 CFR 1910 ed a healt	nd .1200 h hazard.
fumes, the TLV-TWA of 0.1 mg/m3 (a pyrolysis products should be observed	s formaidehyde), ved.	for ros	in core so	lder
III. TYPICAL PHYSICAL & CHEMICAL				
BOILING POINT: N/A	SOLUBILITY	Y IN WATE	ER: Negli	gible
VAPOR PRESSURE AT 20 C: Negligible	e SPECIFIC (	GRAVITY:	Lighter	than water
VAPOR DENSITY: N/A	pH: N/A			
VOLATILE (WT.),%: Negligible @ 20	C EVAPORATIC	ON RATE:		
FREEZING POINT: Not determined			acetat	e
IV. FIRE, EXPLOSION, & REACTIVITY	Y HAZARD DATA			ч.
CAUTION! PRODU	JCT MAY BURN IF I	GNITED.		
FLASH POINT: 163 C (325 F) TCC	.s) •			
FLAMMABLE LIMITS: Not determined				
AUTOIGNITION TEMPERATURE: Not dete	ermined		1 **	2
EXTINGUISHING MEDIA: Water spray,	dry chemical, fo	am, carb	on dioxide	e, or halon
SPECIAL FIREFIGHTING PROCEDURES: L	Jse self-containe	d breath	ing appara	atus.
INUSUAL FIRE AND EXPLOSION HAZARDS:	None			
TABILITY CONSIDERATIONS: Stable		0	JAN 23	IQOE
	ontinued		Unit	

(

20

ţ

(

MSDS No.: 860 2119 0200-02 Date: 05/28/93 PAGE: 03 of 08

(**16**)

ţ

IV. FIRE, EXPLOSION, & REACTIVITY	HAZARD DATA
Continued	
INCOMPATIBILITY WITH: None	
HAZARDOUS DECOMPOSITION PRODUCTS:	None
	•
HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide aliphatic aldehydes and carboxyl	and smoke. Depending on conditions, some ic acids also may be formed.
HAZARDOUS POLYMERIZATION: Will not	occur.
V. HEALTH HAZARD DATA	•
A. MOLTEN LIQUID product	20 
	CAUSES SEVERE BURNS ON CONTACT.
SIGNS AND SYMPTOMS OF OVEREXPOSURE	IN THE WORKPLACE:
EYES: Burns can cause ir or fumes from rosi redness, tearing a	veversible eye injury and blindness. Smoke hyproducts may cause eye irritation with ad discomfort.
SKIN: Serious burns will Repeated or prolon reaction (sensitize MEDICAL CONDITIONS EXPOSURE.	result from contact with molten product. ged contact may cause an allergic skin ation) in susceptible individuals. See GENERALLY RECOGNIZED AS BEING AGGRAVATED BY
INHALATION: Breathing smoke or produce breathing	fumes from molten rosin products may discomfort, coughing and sore throat.
INGESTION: None known	
EMERGENCY & FIRST AID PROCEDURES: EYES: Cool burns with plenty o immediately.	f low pressure water. Get medical attention
1 15 minutes Do NOT put i	ea with cold water and cold packs for at ce directly on the skin. Do NOT attempt to e skin as severe tissue damage may result.
INHALATION: Remove to fresh ai Call a physician.	r. Treat any irritation symptomatically.
- NOTE TO PHYSICIAN: Material sh Mineral oil may be used to loos	nould not be forcibly pulled from the skin. Sen and soften the material.

Continued...

MSDS No.: 860 2119 0200-02 Date: 05/28/93 PAGE: 04 of 08	5
V. HEALTH HAZARD DATA	. <b></b>
Continued	- (
B. LIQUID product	
SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: EYES: Contact may cause mild transient eye irritation. SKIN: Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (see below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). INHALATION: None known. None expected. INGESTION: None known.	
EMERGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.	
SKIN: Wash with soap and running water.	
INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.	
INGESTION: If swallowed, do NOT induce vomiting. Call a physician.	à
MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.	r S
PRIMARY ROUTES OF ENTRY: Eyes, skin	
CANCER INFORMATION: None of the components of this product are listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).	
REPORTED HUMAN EFFECTS: Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION 11.	÷
Continued	!

•

	HEALTH HAZARD DATA
	. Continued
RE	PORTED ANIMAL EFFECTS: Based on tests of a similar resin, this product has a low order of acute peroral and percutaneous toxicity and minimal skin irritancy potential.
 VI	. SPILL PROCEDURES & WASTE DISPOSAL
SP	PILL PROCEDURES: Small Spills: Add inert absorbent, sweep up, and place the material in metal drums for disposal. Large Spills: Dike to contain and pump into drums for use or disposal.
WA	STE DISPOSAL METHOD: Incineration of combustible wastes in permitted facilities is the prefer disposal method.
	Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.
	I. APPLICABLE CONTROL MEASURES
AP	PROPRIATE HYGIENIC PRACTICES: Do not allow eye or skin contact. Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse. Avoid breathing vapor.
Α.	MOLTEN LIQUID product - PERSONAL PROTECTIVE EQUIPMENT: Face shield, safety glasses and hard hat Long-sleeve protective shirt, long pants and work shoes Long-cuff lined gloves Lined rain suit with protective hood or shoulder shroud or full aluminiz or thermal suit with hood Protective clothing should be made of six-ounce (6 oz) or greater fabric polyester should be avoided. Appropriate respiratory protection required when exposure to airborne contaminant is likely to exceed acceptable limits. Respirators should b selected and used in accordance with OSHA Subpart 1 (29 CFR 1910.134) an manufacturer's recommendations.

•

٠

1

Continued...

!

MSDS No.: 860 2119 0200-02 Date: 05/28/93 PAGE: 06 of 08

13

ĺ

(

1.1

VII. APPLICABLE CONTROL MEASURES		
Continued	X	
B. LIQUID product - PERSONAL PROTECTIVE EQ	UIPMENT:	
Impervious gloves Safety glasses		
Appropriate protective clothing		
Appropriate respiratory protection is re contaminant is likely to exceed acceptal selected and used in accordance with OSH manufacturer's recommendations.		
		2
WORK PRACTICES:		
Eyewash fountains and safety showers sho	uld be easily acce	essible.
A. MOLTEN LIQUID product - HANDLING AND STO Water contact with hot molten resin may which can cause burns upon skin or eye c See HANDLING AND STORAGE PRECAUTIONS for	result in foaming	
B. LIQUID product - HANDLING AND STORAGE PR Store in a cool, dry, well-ventilated ar	ECAUTIONS: ea.	
ENGINEERING CONTROLS:		
ENGINEERING CONTROLS: Adequate ventilation should be provided a acceptable exposure limits. Discharge fr comply with applicable air pollution cont	com the ventiles:	entrations below n system should
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution cont PROTECTIVE MEASURES DURING REPAIR AND MAINTE	rom the ventilation trol regulations.	entrations below n system should
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution cont PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources	rom the ventilation trol regulations.	n system should
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution conf PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources	rom the ventilation trol regulations.	n system should
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution conf PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs	rom the ventilation trol regulations.	n system should
Adequate ventilation should be provided acceptable exposure limits. Discharge for comply with applicable air pollution cont PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	om the ventilation trol regulations. NANCE:	n system should  ng <sub>i</sub> or vessels
Adequate ventilation should be provided acceptable exposure limits. Discharge for comply with applicable air pollution cont PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	rom the ventilation trol regulations.	n system should  ng <sub>i</sub> or vessels
Adequate ventilation should be provided acceptable exposure limits. Discharge for comply with applicable air pollution cont PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	om the ventilation trol regulations. NANCE:	n system should  ng <sub>i</sub> or vessels
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution conf PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	om the ventilation trol regulations. NANCE:	n system should  ng <sub>i</sub> or vessels
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution conf PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	om the ventilation trol regulations. NANCE:	n system should  ng <sub>i</sub> or vessels
Adequate ventilation should be provided acceptable exposure limits. Discharge fr comply with applicable air pollution conf PROTECTIVE MEASURES DURING REPAIR AND MAINTE Eliminate ignition sources Completely isolate and thoroughly clean a before beginning maintenance or repairs. Keep area clean. Product will burn.	om the ventilation trol regulations. NANCE:	n system should  ng <sub>i</sub> or vessels

à,

/11	I. ENVIRONMENTAL			
of		mental and regulatory data are fining their regulatory enviro		
۹.	PRODUCT COMPOSITI	ON ''.		
	PRODUCT (P) or	TRADE NAME or CHEMICAL COMPONENT	CASRN	WT. PERCENT
	COMPONENT NO.			

COMPONENT	EHS	EHS	SEC. 311/312	SEC. 313 TOXIC
NO.	RQ (1bs)	TPQ (1bs)	HAZARD CATEGORY	CHEMICAL (YES, NO)
Р	N/A	N/A	NHH, HC-3	N/A

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

## D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

## E. TSCA STATUS

The components of this product are included on the EPA TSCA Chemical ~ Substance Inventory.

Continued...

100

\*\*

MSDS No.: 860 ?119 0200-02

						05/28/93	PAGE: 08 of 0	28
V1	11.	ENVIR	ONMENTAL RE	GULATORY DA	TA			
).	.Cont	inued						
FO	отноті	ES:				, <b>i</b> ,		
	SEC	. 302	- Threshol (EHS) (4) regulatio		luantity, hergency	Extremely Haza Planning and No	ardous Substance otification	
	N/A:	: Th Pla	is chemical anning Quan	is not an F	HS. The	refore, there i	s no Threshold	
	SEC.	304	- Reportabl Appendix	le Quantity A)	for Relea	ases of an EHS	(40 CFR 355,	2
	N/A:	Thi Qua	s chemical Intity (RQ).	is not an E	HS. Ther	efore, there i	s no Reportable	
	SEC. "Haz	HC- HC- HC- HC- HC- NHH	<ol> <li>Immediate</li> <li>Delayed (</li> <li>Fire haza</li> <li>Fire haza</li> <li>Sudden re</li> <li>Reactive  </li> <li>Not a hea</li> </ol>	(acute) hea chronic) hea rd lease of pre hazard	alth haza alth haza ssure ha:	rd	Requirements	
)	SEC.					ease Reporting	Requirements	
ii.	NO: YES:	This Sect Reau Repo This 313	component ion 313 of thorization rting requi component of Title 11	is NOT subj Title III o Act of 1980 rements. is subject f	ect to th f the Sup 6 and 40 to the re	e reporting reporting reporting reporting Amendment CFR Part 372 To porting require	quirements of nts and oxic <sup>.</sup> Chemical <sup>ements</sup> of Section	
I	N/A:	Perc This Chem Repo	ent composi product is ical under rtable cons	tion (or est a mixture.	imated r As such Sect. 31	ange) is listed , it is not lis	d above.	
			5					
ELIA HEN S TO RODU RODU	BLE A THE M THE CT MU CT, E	ND TO SDS W CORRE ST DE FTHER	AS PRESENT AS PREPARED CTNESS OR S CIDE WHAT S	THE MOST RE NO WARRAI UFFICIENCY ( AFETY MEASUF	A SNEET P ASONABLE NTY, GUAR DF THE M.N RES ARE N	FORMATION. THE ECESSARY TO SAF	LIEVED TO BE N ON THE SUBJECT ENTATION IS MADE E USER OF THIS FELY USE THIS	
ST.	ONMENT ATE L <i>i</i>	IAL R AWS.	EGULATORY C	OMPLIANCE OF	BLIGATION	S UNDER ANY APP	AND DETERMINE ITS PLICABLE FEDERAL	

Jc. No. 1922s

!

!

1

MATERIAL SAFETY DATA SHEET	PAGE: 01 of 08
HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894	HERCULES* BELTOR Synthetic resin
Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 860 2171 0004-01
	Date: 01/05/90
<i>ì</i> /	
I. PRODUCT IDENTIFICATION	
WARNING STATIC CHARGES GENERATE VAPORS MAY CAUSE FLASH MAY FORM FLAMMABLE DUST	D BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE
HERCULES* BELTOR Synthetic resin	HMIS RATINGS: (1)
CAS Number: (8052-10-6)	Health hazard: O Minima Flammability hazard: l Slight Reactivity hazard: O Minima
APPEARANCE AND ODOR: Brown to red so	
* Registered Trademark of Hercules In	corporated.
FOOTNOTES	
(1)Explanation of acronyms: HMIS: Hazardous Materials Identificat OSHA: Occupational Safety and Health TLV: Registered trademark of America	tion System rating for product as supplied. Administration. An Conference of Governmental Industrial
Hygienists for Threshold Limit TWA: Time Weighted Average N/A: Not applicable	

4

contained in this Material Safety Data Sheet from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

\_

MSDS No.: 860 2171 0004-01 Date: 01/05/90 PAGE: 02 of 08 HAZARDOUS INGREDIENTS & EXPOSURE LIMITS 11. The ingredients in this product are not listed in 29 CFR 1910, Subpart Z, nor do they appear in "Threshold Limit Values for Chemical Substances in the Work Environment Adopted by ACGIH" for 1989-90. If this product is used in a manner that could generate particulates (dust), Hercules recommends that the dust be treated as a NUISANCE PARTICULATE (Particulates Not Otherwise Classified) as defined by the American Conference of Governmental Industrial Hygienists (ACGIH) or (Particulates not otherwise Regulated) as defined by OSHA. RECOMMENDED AIRBORNE LEVELS OSHA TWA TLV-TWA 1989-1990 Particulates not 15mg/m3 total 10 mg/m3Otherwise classified/regulated 5mg/m3 respirable fraction 111. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS BOILING POINT: N/A SOLUBILITY IN WATER: Negligible VAPOR PRESSURE AT 20 C: Not determined. SPECIFIC GRAVITY: 1.14 VAPOR DENSITY: N/A pH: N/A VOLATILE (VOL.), %: Negligible at 20 C EVAPORATION RATE: Slower than butyl acetate SOFTENING POINT: 90 C (194 F) IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA WARNING STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. 1 MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS). FLASH POINT: 210 C (410 F) FLAMMABLE LIMITS: N/A AUTOIGNITION TEMPERATURE: Not determined. λ Continued... Υ.

Ϋ.

i

(

÷ (

	MSDS No.: 860 2171 0004-01 Date: 01/05/90 PAGE: 03 of 08				
$^{\prime}$	IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA				
	رجمContinued				
	EXTINGUISHING MEDIA: Water spray, dry chemical, foam, or carbon dioxide				
	SPECIAL FIREFIGHTING PROCEDURES: None				
	UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.				
	STABILITY CONSIDERATIONS: Stable. Store below 32 C (90 F), in order to preserve product integrity.				
	INCOMPATIBILITY WITH: None				
	HAZARDOUS DECOMPOSITION PRODUCTS: None				
	HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed.				
	HAZARDOUS POLYMERIZATION: Will not occur.				
	V. HEALTH HAZARD DATA				
	SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: EYES: Dust may cause irritation by mechanical abrasion. SKIN: Prolonged and repeated contact may cause a skin sensitization reaction in susceptible individuals (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). INHALATION: None known. None expected.				
	INGESTION: None known.				
	EMERGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flush with plently of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.				
	SKIN: Wash with soap and running water. MOLTEN RESINS: If molten material comes in contact with the skin, cool under a running stream of water. Do NOT attempt to remove the resin from the skin. Removal could result in severe tissue damage. Get medical attention.				
	NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. _Mineral oil may be used to loosen the material.				
	Continued				

÷.

MSDS No.: 860 2171 0004-01

1

Í

ĺ

# V. HEALTH HAZARD DATA

#### ...Continued

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This material contains rosin/a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals under certain non-industrial exposure conditions of repeated and prolonged skin contact. Individuals sensitized to rosin derivatives may also react to this resin after skin contact. Hercules is unaware of any allergic skin reactions caused by industrial exposure to this resin or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers. Repeated exposure to fumes of thermal decomposition products of BELTOR heated to high temperatures may produce an asthmatic reaction (respiratory sensitization) in sensitive individuals.

## PRIMARY ROUTES OF ENTRY: Eyes, skin

## CANCER INFORMATION:

The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

## **REPORTED HUMAN EFFECTS:**

None known. See above: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

### **REPORTED ANIMAL EFFECTS:**

This material has not been tested. However, similar rosin resins had an acute oral LD50 greater than 5000 mg/kg in rats. In 90-day feeding studies with rats at 1% in the diet, these resins caused an increased liver weight, although other organ weights and histopathology revealed no significant effects and were comparable to the controls. When fed to rats and dogs at a 1% dietary level for two years, food consumption and growth rate were slightly reduced for rats but no difference was observed for dogs. There were no histologic findings in any organs or tissues examined, including the liver, that could be attributed to the test material. At the 0.05% dietary level no significant difference from the control animals were detected with either rats or dogs.

Continued...

Υ.

MSDS No.: 860 2171 0004-01 Date: 01/05/90 PAGE: 05 of 08 VI. SPILL PROCEDURES WASTE DISPOSAL SPILL PROCEDURES: If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal. WASTE DISPOSAL METHOD: À Incineration of waste material in a permitted facility in accordance to local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility is a suitable alternative. Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product. VII. APPLICABLE CONTROL MEASURES ------APPROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Wash thoroughly after handling, and before eating, drinking or smoking. PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves Safety glasses Appropriate respiratory protection is required when exposure to an airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations. Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are recommended. WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. HANDLING AND STORAGE PRECAUTIONS: Keep away from sparks and flame. Avoid accumulating dust. Avoid suspending dust in air. Flaked forms are prone to gradual oxidation. Control inventory. Use oldest material first. Continued...

MSDS No.: 860 2171 0004-01 Date: 01/05/90 PAGE: 06 of 08

.

1

.

ł,

(

↓ V 	II. APPLICABLE CONTROL MEASURES	,
H	ANDLING AND STORAGE PRECAUTIONS:Continued	
	For small packages, the following warning applies:	
	WARNING   STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment. In	
	vessel with inert gas, ground operator, and pour material slowly into conductive, grounded chute.	
	For large bags (1,000 lbs. or greater), the following warning applies: WARNING  STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION   A GROUND CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION	
ΕN	GINEERING CONTROLS: Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.	11
PR	OTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:	9
)	Eliminate sources of ignition. Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.	(
	Keep area clean. Product will burn.	
	ž.	
	× •	

· · ·

À

VIII. ENVIRONMENTAL & REGULATORY DATA

The following Environmental and regulatory data are provided to assist users of this product in defiting their regulatory environmental compliance obligations.

A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT
Ρ	HERCULES* BELTOR	8052-10-6	100
	ν.		

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 Hazard Category	SEC 313 TOXIC CHEMICAL (YES, NO)
Р	N/A	N/A	NHH, HC-3 (dust)	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

## D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

None

Continued...

MSDS No.: 860 2171 0004-01

 $\left( \right)$ 

 $\gamma^{(1)}$ 

\*

(

(

Ç

i

_	
)	VIII. ENVIRONMENTAL REGULATORY DATA
	Continued
	FOOTNOTES:
	SEC. 302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations) N/A: Product does NOT contain an EHS.
	SEC. 304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A) N/A: Product does NOT contain an EHS.
	SEC 311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard Categories"
	HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
	SEC 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements This product does NOT contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
D	oc. No. 3225s
	· <b>A</b> ,
	· • • • • • • • • • • • • • • • • • • •

Ŷ.,

	30
TERIAL SAFETY DATA SHEET	PAGE: 01 OF 07
S INCORPORATED	MELHI* NLM SYNTHETIC RESIN
LMINGTON, DE 19894	
ONE #: (302) 594-5000 (24 HR)	MSDS NO.: 860 2165 1300-02
PERSEDES MSDS #: 860 2165 1300-0	)1 DATE: 03/16/90
PRODUCT IDENTIFICATION	
	λ
VAPORS MAY CAUSE FLAS MAY FORM FLAMMABLE DUST	
LHI* NLM SYNTHETIC RESIN	HMIS RATINGS:(1)
	HEALTH HAZARD: 0 MINIMAL FLAMMABILITY HAZARD: 1 SLIGHT REACTIVITY HAZARD: 0 MINIMAL
PEARANCE AND ODOR: DARK BROWN SC	LID OR FLAKE; TYPICAL ROSIN ODOR
TERED TRADEMARK OF HERCULES	INCORPORATED.
, HAZARDOUS INGREDIENTS & EXPOS	
3PART Z, NOR DO THEY APPEAR IN "T 3STANCES IN THE WORK ENVIRONMENT THESE MATERIALS ARE USED IN A MA JST), HERCULES RECOMMENDS THAT TH RTICULATE ACCORDING TO THE AMERIC SIENISTS (ACGIH).	NNER THAT COULD GENERATE PARTICULATES NE RESIN DUST BE TREATED AS A NUISANCE CAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL
JTNOTES	
EXPLANATION OF ACRONYMS:	CATION SYSTEM RATING FOR PRODUCT AS SUPPLIED.
ITAINED IN THIS MATERIAL SAFETY D IABLE AND TO REPRESENT THE MOST IN THE MSDS WAS PREPARED. NO WAR THE CORRECTNESS OR SUFFICIENC OFT MUST DECIDE WHAT SAFETY MEA DOUCT, EITHER ALONE OR IN COMBINA	THE INFORMATION AND RECOMMENDATIONS DATA SHEET FROM SOURCES BELIEVED TO BE REASONABLE CURRENT OPINION ON THE SUBJECT RANTY, GUARANTY OR REPRESENTATION IS MADE Y OF THE INFORMATION. THE USER OF THIS SURES ARE NECESSARY TO SAFELY USE THIS TION WITH OTHER PRODUCTS, AND DETERMINE ITS OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

·

)

۰

DS NO.: 860 2165 1300-02 DATE: 03/16/90 PAGE: 02 OF 07

.

A

•

3

·· TYPICAL PHYSICAL & CHEMICAL CHARAC		
ILING POINT: N/A	SOLUBILITY IN WATE	R: NEGLIGIBLE
POR PRESSURE 20 C: NEGLIGIBLE	SPECIFIC GRAVITY:	1.06
POR DENSITY: N/A	PH: N/A	
VOLATILE (VOL.): NEGLIGIBLE AT 20 C	EVAPORATION RATE:	SLOWER THAN BUTYL
FTENING POINT: 98-106 C (208-254 F)		
. FIRE, EXPLOSION, & REACTIVITY HAZA		
JARNINGI STATIC CHARGES GENERATED BY VAPORS MAY CAUSE FLASH FIR MAY FORM FLAMMABLE DUST-AIR (FOR BAGS 1000 LBS. OR GREAT HAZARDS).	E. MIXTURES.	
ASH POINT: ABOVE 150 C (300 F)		
TOIGNITION TEMPERATURE: NOT DETERMINE	D.	
TINGUISHING MEDIA: WATER SPRAY, DRY C	HEMICAL, FOAM, OR C	ARBON DIOXIDE
ECIAL FIREFIGHTING PROCEDURES: USE SELF-CONTAINED BREATHING APPARATU COOL CONTAINERS WITH WATER IF EXPOSED		
JSUAL FIRE & EXPLOSION HAZARDS: MAY FORM FLAMMABLE DUST - AIR MIXTURE	s.	1
ABILITY CONSIDERATIONS: STABLE		'
COMPATIBILITY WITH: NONE		
ZARDOUS DECOMPOSITION PRODUCTS: NONE		
ZARDOUS PRODUCTS OF COMBUSTION: CARBON MONOXIDE, CARBON DIOX DE AND S ALIPHATIC ALDEHYDES AND CARBOXYLIC AC	MOKE, DEPENDING ON IDS ALSO MAY BE FORM	CONDITIONS, SOME 1ED.
ZARDOUS POLYMERIZATION: WILL NOT OCCU	R.	
○		

DS NO.: 860 2165 1300-02

# HEALTH HAZARD DATA

GNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: DUST MAY CAUSE IRRITATION BY MECHANICAL ABRASION. SMOKE OR FUMES OF DECOMPOSITION PRODUCTS OF ROSIN PRODUCTS HEATED TO HIGH TEMPERATURES MAY CAUSE EYE IRRITATION, WITH REDNESS, TEARING AND DISCOMFORT. SKIN: PROLONGED AND REPEATED CONTACT MAY CAUSE A SKIN SENSITIZATION

- SKIN: PROLONGED AND REPEATED CONTACT MAY CAUSE A SKIN SENSITIZATION REACTION IN SUSCEPTIBLE INDIVIDUALS (SEE BELOW: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).
- INHALATION: BREATHING SMOKE OR FUMES OF DECOMPOSITION PRODUCTS OF ROSIN PRODUCTS HEATED TO HIGH TEMPERATURES MAY PRODUCE BREATHING DISCOMFORT, COUGHING AND SORE THROAT. NONE KNOWN.

ERGENCY & FIRST AID PROCEDURES:

EYES: IN CASE OF CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES. REMOVE ANY CONTACT LENSES TO ENSURE THOROUGH FLUSHING. CALL A PHYSICIAN.

SKIN: WASH WITH SOAP AND RUNNING WATER. MOLTEN RESINS: IF MOLTEN MATERIAL COMES IN CONTACT WITH THE SKIN, COOL UNDER A RUNNING STREAM OF R. DO NOT ATTEMPT TO REMOVE THE RESIN FROM THE SKIN. REMOVAL COULD LT IN SEVERE TISSUE DAMAGE. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN: MATERIAL SHOULD NOT BE FORCIBLY PULLED FROM THE SKIN. MINERAL DIL MAY BE USED TO LOOSEN THE MATERIAL.

> , \_\_\_\_\_

DICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: THIS PRODUCT CONTAINS ROSIN OR A ROSIN DERIVATIVE. ROSIN AND SOME OF ITS DERIVATIVES HAVE BEEN REPORTED TO CAUSE AN ALLERGIC SKIN REACTION (SENSITIZATION) IN SUSCEPTIBLE INDIVIDUALS AFTER REPEATED OR PROLONGED SKIN CONTACT. HERCULES INCORPORATED IS UNAWARE OF ANY ALLERGIC SKIN REACTIONS CAUSED BY INDUSTRIAL EXPOSURE TO THIS PRODUCT OR SIMILAR MATERIALS. A THOROUGH SEARCH OF HERCULES MEDICAL RECORDS HAS DISCLOSED NO CASE OF SKIN SENSITIZATION TO ROSIN OR ITS DERIVATIVES FROM INDUSTRIAL EXPOSURE IN OUR WORKERS. NONE HAVE BEEN REPORTED BY OUR CUSTOMERS.

REPEATED EXPOSURE TO SMOKE OR FUMES OF DECOMPOSITION PRODUCTS OF ROSIN OR ROSIN DERIVATIVES HEATED TO HIGH TEMPERATURES MAY PRODUCE AN ASTHMATIC REACTION (RESPIRATORY SENSITIZATION) IN SENSITIVE INDIVIDUALS.

IMARY ROUTES OF ENTRY: EYES, SKIN

CONTINUED...

DS NO.: 80	60 216	5 1300-1			03/16/90	PAGE:		
HEALTH	HAZA	RD DATA						
.CONTINUE	)							
NATIONAL CARCINOGI	DNENTS TOXIC ENS BY	OF THIS OLOGY PE THE OCE	ROGRAM (NTP) CUPATIONAL (	). THEY SAFETY AI	ISTED AS CARCINOGE HAVE NOT BEEN REG ND HEALTH ADMINIST DNAL AGENCY FOR RE	ULATED A	IS (OSHA)	
JDUCT HAS 1PONENTS.	NOT B	EEN TES	TED AS SUCH	. THE FOU	LOWING OBSERVATIO	INS RELAT	Е ТО	
WEEKS BY	TCH TE TWO D	ST: SINO AY CHALL	GLE APPLICA LENGE APPLIC ITATION AND	CATION, 2	FIVE DAYS FOLLOWE 200 SUBJECTS, IMPR ZATION.	D AFTER EGNATED	THREE DISKS;	
PORTED AN ACUTE:		PERORAL 4.1 G⁄K(	S; PERORAL	GUINEA F	KG; PERORAL MOUSE PIG LD50 = 6.2 G/K THAN 2.5 G/KG.	LD50 = G; PERC	UTANEO	US
HRON		REJECTIO	DING STUDY, DN AND STARU FED TO 11% (	JATION; N	DAYS- AT 5% IN THE 11LD HEPATIC FATTY IN DIET.	DIET, F CHANGES	00D	
CHRONIC:		INCREASE	D RELATIVE	LIVER WE	RS- REDUCED WEIGHT EIGHT IN 0.1% FEMA F WEIGHT, BOTH SEX	LES, INC	REASE	ĨN
	ł	DOG FEED	DING STUDY,	TWO YEAF	RS- NO ADVERSE FI	NDINGS.		
THERMOLYS	1	VAPOR HE NOMINAL EFFECTS		ON OF 0.	AN 177 C, 6 H INHA 585 MG/L PRODUCED I	NO ADVE	RSE	
, SPILL	PROCE	DURES &	WASTE DISPO	)SAL				
IF MATER	AL IS	NOT COM	RIAL IS REL	EASED OR SCOOP IN	R SPILLED: NTO CLEAN CONTAINE			
	TON OF E TO L METHO	F COMBUS LOCAL, S D. LAND	STATE, 🖓D F	EDERAL R A LICENS	AL IN A PERMITTED REGULATIONS IS THE GED FACILITY EQUIP	RECOMME	NDED	ATE
			FOR SPECIFI DISPOSAL OF		AL ENVIRONMENTAL A RODUCT.	ND REGUL	ATORY	

.

1992

÷.

DS NO.: 860 2165 1300-02

APPLICABLE CONTROL MEASURES \_\_\_\_\_ PROPRIATE HYGIENIC PRACTICES: DO NOT ALLOW EYE OR SKIN CONTACT. AVOID BREATHING DUST. WASH THOROUGHLY AFTER HANDLING, AND BEFORE EATING, DRINKING OR SMOKING. RSONAL PROTECTIVE EQUIPMENT: IMPERVIOUS GLOVES SAFETY GLASSES APPROPRIATE RESPIRATORY PROTECTION IS REQUIRED WHEN EXPOSURE TO AN AIRBORNE CONTAMINANT IS LIKELY TO EXCEED ACCEPTABLE LIMITS. RESPIRATORS SHOULD BE SELECTED AND USED IN ACCORDANCE WITH OSHA, SUBPART I (29 CFR 1910.134) AND MANUFACTURER'S RECOMMENDATIONS. PERSONNEL EXPOSED TO HOT MOLTEN MATERIAL SHOULD WEAR PROTECTIVE CLOTHING THAT PROVIDES PROTECTION FROM THERMAL BURNS. FULL FACE SHIELD, LINED RAIN SUIT (OR OTHER HEAT RESISTANT MATERIAL), AND LINED IMPERVIOUS GLOVES ARE RECOMMENDED. ХĿ, **RK PRACTICES:** EYEWASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE EASILY ACCESSIBLE. NDLING AND STORAGE PRECAUTIONS: 🔭 AWAY FROM SPARKS AND OPEN FLAME. SMALL PACKAGES, THE FOLLOWING WARNING APPLIES: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. AVOID IGNITION SOURCES SUCH AS SPARKS AND FLAME. GROUND ALL EQUIPMENT. IN ADDITION, WHEN EMPTYING BAGS WHERE FLAMMABLE VAPORS MAY BE PRESENT, BLANKET VESSEL WITH INERT GAS, GROUND OPERATOR, AND POUR MATERIAL SLOWLY INTO CONDUCTIVE, GROUNDED CHUTE. FOR LARGE BAGS (1,000 LBS. ÖR GREATER), THE FOLLOWING WARNING APPLIES: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. AVOID IGNITION SOURCES SUCH AS SPARKS AND FLAME. GROUND ALL EQUIPMENT AND THE BAG. IN ADDITION, WHEN EMPTYING WHERE FLAMMABLE VAPORS MAY BE PRESENT, BLANKET VESSEL WITH AN INERT GAS. ATTENTION! A GROUND CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION! GINEERING CONTROLS: ADEQUATE VENTILATION SHOULD BE PROVIDED TO KEEP DUST CONCENTRATIONS BELOW ACCEPTABLE EXPOSURE LIMITS. DISCHARGE FROM THE VENTILATION SYSTEM SHOULD COMPLY WITH APPLICABLE AIR POLLUTION CONTROL REGULATIONS. DTECTIVE MEASURES DURING REPAIR AND MAINTENANCE ELIMINATE SOURCES OF IGNITION. COMPLETELY ISOLATE AND THOROUGHLY CLEAN ALL EQUIPMENT, PIPING OR VESSELS BEFORE BEGINNING MAINTENANCE OR REPAIRS. KEEP AREA CLEAN. PRODUCT WILL BURN.

)S NO.: 860 2165 1300-02 DATE: 03/16/90 PAGE	E: 06 OF 07
ENVIRONMENTAL & REGULATORY DATA	
: FOLLOWING ENVIRONMENTAL AND REGULATORY DATA ARE PROVIDED TO AS THIS PRODUCT IN DEFINING THEIR REGULATORY ENVIRONMENTAL COMPLI- IGATIONS.	SSIST USERS ANCE
PRODUCT COMPOSITION	
PRODUCT (P) OR TRADE NAME OR COMPONENT NO. CHEMICAL COMPONENT CAS NUMBER	WT. PERCENT
P MELHI* NLM N/A	100

. -

SARA TITLE III (SEE FOOTNOTES)

COMPONENT	SEC. 304 EHS RQ (LBS)	SEC. 302 EHS TPQ (LBS)	SEC. 311/312 HAZARD CATEGORY	SEC 313 TOXIC CHEMICAL (YES, NO)
Р	N∕A	N∕A	NHH, HC-3 DUST	NO

CLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

THIS PRODUCT DOES NOT CONTAIN ANY HAZARDOUS SUBSTANCES LISTED IN 40 CFR 302.4.

÷.,

 $d \in \mathbb{R}$ 

RCRA INFORMATION

THIS PRODUCT IS NOT LISTED IN FEDERAL HAZARDOUS WASTE REGULATION 40 CFR 261.33, PARAGRAPH (E) OR (F) - I.E., CHEMICAL PRODUCTS THAT ARE CONSIDERED HAZARDOUS IF THEY BECOME WASTES. IT DOES NOT EXHIBIT ANY OF THE HAZARDOUS CHARACTERISTICS LISTED IN 40 CFR 261, SUBPART C. STATE OR LOCAL HAZARDOUS WASTE REGULATIONS MAY APPLY IF THEY ARE DIFFERENT FROM THE FEDERAL REGULATION.

OTHER

NONE

CONTINUED...

S NO.: 860 2165 1300-02

1 -

ENVIRONMENTAL REGULATORY DATA

CONTINUED

TNOTES:

SEC. 302 - THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE (EHS) (40 CFR 355 EMERGENCY PLANNING AND NOTIFICATION REGULATIONS) N/A: PRODUCT DOES NOT CONTAIN AN EHS.

SEC. 304 - REPORTABLE QUANTITY FOR RELEASES OF AN EHS (40 CFR 355, APPENDIX A) N/A: PRODUCT DOES NOT CONTAIN AN EHS.

SEC 311/312 - 40 CFR 370 HAZARDOUS CHEMICAL REPORTING REQUIREMENTS "HAZARD CATEGORIES"

HC-1 IMMEDIATE (ACUTE) HEALTH HAZARD HC-2 DELAYED (CHRONIC) HEALTH HAZARD HC-3 FIRE HAZARD HC-4 SUDDEN RELEASE OF PRESSURE HAZARD HC-5 REACTIVE HAZARD NHH NOT A HEALTH HAZARD

12

313 - 40 CFR 372 TOXIC CHEMICAL RELEASE REPORTING REQUIREMENTS

THIS PRODUCT DOES NOT CONTAIN TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372 TOXIC CHEMICAL REPORTING REQUIREMENTS.

-----

. NO. 2855S

	l bγ U.S. Depa	SAFE	as "Essentially	Similar" to Fo	orm OSHA	-20}	Supersede Page 1 of
01151410				יוביונגי ואפוי		واست معقده	San Cables of the Street Street and
CHEMICAL NAME		······································	۱	EMERGE	R TELEP	HONE	NO. 302-656-98
SYNONYMS:	Not applica	blc			AL FAMI		Not applicable
FORMULA:	<ul> <li>Not applica</li> </ul>			MOLECU	LAR WEI	GHT:	Not applicable
TRADE NAME AN	D SYNONYM	S: · Yarmor <sup>®</sup> F	•	•	•		•
La nore and a star	Alorian Maria	III HAVE	Provets Tru	11:53(13)			
•		ATERIAL			%	7	LV (UNITS)
Not applicable		• • •	•	•		·	
•	•. •	• •	1	•			a .
•••••		• • •		•			· · ·
		-111	An Silc/an	D/1 1./1	Saran Marker		
BOILING POINT, 76	i0 mm Hg	206°C (403	°FI		<u>i are</u>		and a contraction
· SPECIFIC GRAVITY		0.93		VAPOR P	G POINT		-10°C (14°F)
.VAPOR DENSITY (/		5.3		- SOLUBIL	and a second	G	20°C: Less than 1 π
PERCENT VOLATIL			· ·		R, % BY \		20°C: Slight
BY VOLUME	.23	100	· · · · ·	EVAPORA (BUTYL	ATION RA		Less than 1, slow
APPEARANCE AND	ODOR	Straw-color	ed liquid; pine	odor .			
	£Ϋζ		and the second se		50000 A		
FLASH FOINT (TEST METHOD)	76°C (169°F	Э, СОС		AUTOIGN		<u>نحمومه الم</u>	Not available
FLAMMABLE LIMIT	S'IN AIR, %	BY VOLUME	LOWER	Not available	UPP	ER	Not available
EXTINGUISHING MEDIA	Water fog, fo	oam, dry chemical	, carbon dioxi	de <sup>i</sup>			
SPECIAL FIRE- FIGHTING PROCEDURES	Cool contain	ers with water if a	exposed to fire		• • • • • • • • • • • •	••••••••••••••••••••••••••••••••••••••	······································
UNUSUAL FIRE AND EXPLOSION HAZARDS	Not applicab	le					

Effects	of Overexposure: Causes burns of eyes and skin.
YES:	y & First Aid Procedures: In case of contact, immediately flush with plenty of water for at least 15
	minutes. Call a physician.
SKIN:	Wash with soap and running water A Remove contaminated clothing.
	Wash clothing before reuse.
	Ϋ.
I. REA	ACTIVITY DATA
Stable.	Conditions to Avoid: None
ncompa	ibility (Materials to Avoid): None
lazardoi	as Decomposition Products: Exposure to heat may cause liberation of acetic
cid va	pors. Burning liberates CO, CO <sub>2</sub> , NH <sub>3</sub> , and smoke.
lazardou	is Polymerization Will Not Occur.
II. SI	PILL OR LEAK PROCEDURES
	be Taken if Material is Released or Spilled: Small Spills: Add absorbent,
weep up	, and discard. Large Spills: Dike to contain and pump into drums for use or
isposa.	• ag a
lacta D	anonal Mathada Diasana (f. 1997) at 1997 at 199
aste D.	sposal Method: Dispose of in accordance with local, state, and Federal
00111953	ons , , , , , , , , , , , , , , , , , , ,
	.ons.
	ons. •
	SPECIAL PROTECTION INFORMATION
III. S espirat	PECIAL PROTECTION INFORMATION cory Protection: None required in normal use.
III. S Lespira	PECIAL PROTECTION INFORMATION ory Protection: None required in normal use. tion Local Exhaust: Special:
AIII. S Respirat	PECIAL PROTECTION INFORMATION ory Protection: None required in normal use. ion Local Exhaust: Special: Mechanical: Recommended Other:
III. S espirat entilat	SPECIAL PROTECTION INFORMATION cory Protection: None required in normal use. tion Local Exhaust: Special: Mechanical: Recommended Other: (General)
AIII. S Respirat Ventilat	SPECIAL PROTECTION INFORMATION cory Protection: None required in normal use. tion Local Exhaust: Special: Mechanical: Recommended Other: (General) ve Gloves: Solvent resistant Eye Protection: Chemical goggles
AIII. S Respirat Ventilat	SPECIAL PROTECTION INFORMATION cory Protection: None required in normal use. tion Local Exhaust: Special: Mechanical: Recommended Other: (General)
Protect: Other Protect:	PECIAL PROTECTION INFORMATION Ory Protection: None required in normal use. ion Local Exhaust: Special: Mechanical: Recommended Other: (General) ve Gloves: Solvent resistant Eye Protection: Chemical goggles rotective Equipment: Face shield, eyewash and safety shower
TII. Sespiration of the second	•       •         SPECIAL PROTECTION INFORMATION       •         ory Protection: None required in normal use.       •         ion       Local Exhaust:       Special:         Mechanical:       Recommended       Other:         (General)       •       •         .ve Gloves:       Solvent resistant       Eye Protection: Chemical goggles         otective Equipment:       Face shield, eyewash and safety shower
Protect: Other Protect: (X. SPI Precaut:	
Protect: Other Protec	SPECIAL PROTECTION INFORMATION Sory Protection: None required in normal use. Sory Protection: None required in normal use. Solvent Exhaust: Special: Mechanical: Recommended Other: (General) Solvent resistant Eye Protection: Chemical goggles Solvent: Face shield, eyewash and safety shower Solvent: Face shield, eyewash and safety shower Sonary Labeling: CAUSES BURNS OF EYES AND SKIN
TII. S espirat entilat rotect: ther Pr X. SPI recaut: ANGER! o not g void br	
TII. S espirat entilat rotect: ther Pr X. SPI recaut: ANGER! o not g void br ear gog	SPECIAL PROTECTION INFORMATION         tory Protection: None required in normal use.         tion       Local Exhaust:         Mechanical:       Recommended         (General)         .ve Gloves:       Solvent resistant         Eye Protection:       Chemical goggles         totective Equipment:       Face shield, eyewash and safety shower         CCIAL PRECAUTIONS       I         conary Labeling:       I         CAUSES BURNS OF EYES AND SKIN       I         get in eyes, on skin, or on clothing.       I         eathing vapors or mist.       ggles, face shield, and rubber gloves when handling.
TII. Sespirate entilate rotect: ther Providence X. SPI recaut: ANGER! o not ge void br ear gog eep cor	SPECIAL PROTECTION INFORMATION         ory Protection: None required in normal use.         ion       Local Exhaust:         Mechanical:       Recommended         Other:          Mechanical:       Recommended         Other:          (General)          .ve Gloves:       Solvent resistant         Eye Protection:       Chemical goggles         rotective Equipment:       Face shield, eyewash and safety shower         CIAL PRECAUTIONS          onary Labeling:          CAUSES BURNS OF EYES AND SKIN          eathing vapors or mist.          gles, face shield, and rubber gloves when handling.          tainers closed.
III. Sespirate entilate rotect: ther Provident of the second X. SPR recaut: ANGER! o not go void br ear go eep cor se with	PECIAL PROTECTION INFORMATION ory Protection: None required in normal use. ion Local Exhaust: Special: Mechanical: Recommended Other: (General) ve Gloves: Solvent resistant Eye Protection: Chemical goggles rotective Equipment: Face shield, eyewash and safety shower CIAL PRECAUTIONS onary Labeling: CAUSES BURNS OF EYES AND SKIN set in eyes, on skin, or on clothing. eathing vapors or mist. ggles, face shield, and rubber gloves when handling. tainers closed. a adequate ventilation.
III. Sespirate entilate rotect: ther Provident of the second X. SPR recaut: ANGER! o not go void br ear go eep cor se with	SPECIAL PROTECTION INFORMATION         ory Protection: None required in normal use.         ion       Local Exhaust:         Mechanical:       Recommended         Other:          Mechanical:       Recommended         Other:          (General)          .ve Gloves:       Solvent resistant         Eye Protection:       Chemical goggles         rotective Equipment:       Face shield, eyewash and safety shower         CIAL PRECAUTIONS          onary Labeling:          CAUSES BURNS OF EYES AND SKIN          eathing vapors or mist.          gles, face shield, and rubber gloves when handling.          tainers closed.
TII. Sespirate entilate rotect: ther Pr X. SPI recaut: ANGER! o not go void br ear gog eep cor se with ash tho	PPECIAL PROTECTION INFORMATION ory Protection: None required in normal use. ion Local Exhaust: Special: Mechanical: Recommended Other: (General) ve Gloves: Solvent resistant Eye Protection: Chemical goggles otective Equipment: Face shield, eyewash and safety shower CIAL PRECAUTIONS onary Labeling: CAUSES BURNS OF EYES AND SKIN ret in eyes, on skin, or on clothing. eathing vapors or mist. gles, face shield, and rubber gloves when handling. tainers closed. adequate ventilation. proughly after handling.
TII. Sespiral entilat rotect: ther Pr X. SPH recaut: ANGER! o not g void br ear gog eep cor se with ash tho IRST AT YES - T	PPECIAL PROTECTION INFORMATION cory Protection: None required in normal use. ion Local Exhaust: Special: Mechanical: Recommended Other: (General) .ve Gloves: Solvent resistant Eye Protection: Chemical goggles cotective Equipment: Face shield, eyewash and safety shower CCIAL PRECAUTIONS .onary Labeling: CAUSES BURNS OF EYES AND SKIN get in eyes, on skin, or on clothing. reathing vapors or mist. gles, face shield, and rubber gloves when handling. tainers closed. adequate ventilation. broughly after handling. D: in case of contact, immediately flush with plenty of water for at least 15
TII. Sespirate entilate rotect: ther Present X. SPR recaut: ANGER! o not gevoid br ear gog eep cor se with ash tho IRST AT YES - I	SPECIAL PROTECTION INFORMATION         cory Protection: None required in normal use.         ion       Local Exhaust:         Mechanical:       Recommended         Other:          Mechanical:       Recommended         Other:          (General)           Eye Protection:       Chemical goggles         otective Equipment:       Face shield, eyewash and safety shower
TII. S espirat entilat rotect: ther Pr X. SPI recaut: ANGER! o not g void br ear gog eep cor se with ash tho IRST AJ YES - J KIN - W	Anno. PECIAL PROTECTION INFORMATION Cory Protection: None required in normal use. Cory Protection: None required in normal use. Cory Protection: None required in normal use. Nechanical: Recommended Other: (General) Ve Gloves: Solvent resistant Eye Protection: Chemical goggles Totective Equipment: Face shield, eyewash and safety shower CAUSES SURNS OF EYES AND SKIN CAUSES BURNS OF EYES AND SKIN Seathing vapors or mist. geles, face shield, and rubber gloves when handling. tainers closed. Tadequate ventilation. Troughly after handling. D: n case of contact, immediately flush with plenty of water for at least 15 infues. Call a physician. Tabele Call a clothing. The search of the search of
TII. Sespiral entilat rotect: ther Pr X. SPI recaut: ANGER! o not g void br ear gog eep cor se with ash tho IRST AJ YES - J KIN - W	SPECIAL PROTECTION INFORMATION         cory Protection: None required in normal use.         ion       Local Exhaust:         Mechanical:       Recommended         Other:          Mechanical:       Recommended         Other:          (General)           Eye Protection:       Chemical goggles         otective Equipment:       Face shield, eyewash and safety shower
TII. S espirat entilat rotect: ther Pr X. SPI recaut: ANGER! o not g void br ear gog eep cor se with ash tho IRST AT YES - T KIN - W	Anno. PECIAL PROTECTION INFORMATION Cory Protection: None required in normal use. Cory Protection: None required in normal use. Cory Protection: None required in normal use. Nechanical: Recommended Other: (General) Ve Gloves: Solvent resistant Eye Protection: Chemical goggles Totective Equipment: Face shield, eyewash and safety shower CAUSES SURNS OF EYES AND SKIN CAUSES BURNS OF EYES AND SKIN Seathing vapors or mist. geles, face shield, and rubber gloves when handling. tainers closed. Tadequate ventilation. Troughly after handling. D: n case of contact, immediately flush with plenty of water for at least 15 infues. Call a physician. Tabele Call a clothing. The search of the search of

)

•

)

ι.		5 mit 1					
• •	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 07					
<b>'</b>	HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894	ROSIN NITRILE PROCESS INTERMEDIATE (Crude and distilled)					
	Phone #: $(302)$ 594-5000 (24 hrs)	MSDS No.: 999 0420 3007-01					
		Date: 11/30/90					
	I. PRODUCT IDENTIFICATION						
	DANGER! MAY CAUSE EYE BURNS AND	SKIN IRRITATION.					
	ROSIN NITRILE PROCESS INTERMEDIATE (Crude and distilled)	HMIS RATINGS:(1) Health hazard: 3 Serious Flammability hazard: 0 Minimal Reactivity hazard: 0 Minimal					
	APPEARANCE AND ODOR: Amber semi-solid; ammonia odor						
	II. HAZARDOUS INGREDIENTS & EXROSURE LIMITS						
	CHEMICAL & COMMON NAMES: % RECOMMENDED AIRBORI 1985-1980						
$(\bigcirc$		OSHA TWA TLV-TWA					
	Rosin nitrile 60-90	Not established.					
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification System rating for product as supplied.</li> <li>AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Administration.</li> <li>TLV: Registered trademark of American Conference of Governmental Industrial Hygienists for Threshold Limit Values.</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29 CFR 1910.1048, March 1, 1989, revision)</li> <li>C: Ceiling exposure concentration (See 29 CFR 1910.1048, March 1, 1989, rev.)</li> <li>SKIN: May be absorbed through skin (See 29 CFR 1910.1048, March 1, 1989, rev.)</li> <li>N/A: Not applicable</li> </ul>						

• • • • • •

.

 $\bigcirc$ 

-

		-	•	,	
	MSDS No.: 999 0420 3007-01 Date: 1	1/30/90	PAGE: 02 of 07		•
$\cap$	III. TYPICAL PHYSICAL & CHEMIRAL CHARACTERIS				(
$\cup$	BOILING POINT: Not determined. SOLU	BILITY IN WATER	l: Slight		
	VAPOR PRESSURE @ 20 C: Not determined. SPEC	IFIC GRAVITY:	Not determined.		
	VAPOR DENSITY: Heavier than air \lambda pH:	N/A			
	VOLATILE (VOL.), %: 90=Crude EVAP( 60=Distilled	DRATION RATE:	Slower than butyl acetate		
	MELTING POINT: Not determined.				
	SOFTENING POINT: 18.9 C=Crude 15.2 C=Distilled				
<b>8</b> 1	IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DAT	ГА ГА			
	FLASH POINT: Not determined.	.3			
	FLAMMABLE LIMITS: Not determined.				
	AUTOIGNITION TEMPERATURE: Not determined.				
$\mathbf{O}$	EXTINGUISHING MEDIA: Water spray, dry chemica	ıl, foam, carbo	n dioxide, or halon		(
	SPECIAL FIREFIGHTING PROCEDURES: None	e.			
	UNUSUAL FIRE & EXPLOSION HAZARDS: None				
	STABILITY CONSIDERATIONS: Stable. Nitriles can be reacted at high te of catalysts and other reactants to form am and esters, aldehydes, ketones, imines, and	nines, amides,	carboxylic acids		
	INCOMPATIBILITY WITH: None				
	HAZARDOUS DECOMPOSITION PRODUCTS: None		1		
	HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide, ammonia an on conditions, some aliphatic aldehydes and formed.	d hydrogen cya carboxylic ac	nide. Depending ids also may be		
	HAZARDOUS POLYMERIZATION: Will not occur.				
	-				

\*

C

------

12

5.

MSDS No.: 999 0420 3007-01

Date: 11/30/90

v.	HEALTH HAZARD DATA

DANGER! MAY CAUSE EYE BURNS AND SKIN IRRITATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

- EYES: May cause eye burns which could result in loss of vision.
   Smoke or fumes from decomposition of rosin products heated to high temperatures may cause redness, tearing and discomfort.
   SKIN: May cause severe skin irritation. Prolonged contact may cause burns. See below: MEDICAL CONDITIONS GENERALLY
  - RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.
- INHALATION: This material has a relatively low vapor pressure. Workplace vapor concentrations are not expected to reach levels that could cause injury. Breathing smoke or fumes from decomposition of rosin products heated to high temperatures may produce breathing discomfort, coughing and sore throat.
- INGESTION: May cause severe injury to the mouth and gastrointestinal tract; swallowing may also cause nausea, vomiting, dizziness, headache.

#### EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes, Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Promptly wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse. Discard contaminated leather articles.

INGESTION: If conscious, the person should immediately drink large quantities of liquid. Induce vomiting. Call a physician. NEVER give liquids to or attempt to induce vomiting in an unconscious person.

INHALATION: Remove to fresh air. Call a physician if irritation persists.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

Repeated exposure to smoke or fumes of decomposition products of rosin or rosin derivatives heated to high temperatures may produce an asthmatic (respiratory sensitization) reaction in sensitive individuals.

MSDS No.: 999 0420 3007-01

Date: 11/30/90

1.

4 ٧. HEALTH HAZARD DATA \_\_\_\_\_ ...Continued PRIMARY ROUTES OF ENTRY: Eyes, skin CANCER INFORMATION: À Not listed as a carcinogen by NTP (National Toxicology Program); not regulated as a carcinogen by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer). **REPORTED HUMAN EFFECTS:** See above- MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE. If this product is heated to temperatures sufficient to produce smoke or fumes, the TLV-TWA of 0.1 mg/m3, (as formaldehyde) for rosin core solder pyrolysis products should be observed. **REPORTED ANIMAL EFFECTS:** Oral LD50, rats greater than 3.2 g/kg. Animal studies showed that related materials cause severe eye injury. SPILL PROCEDURES & WASTE DISPOSAL SPILL PROCEDURES: If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal. WASTE DISPOSAL METHOD: Incineration of combustible waste material in a permitted facility in accordance with local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility equipped with leachate collection is a suitable alternative.

Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

VII.	APPLICABLE CON				
			0		
	OPRIATE HYGIENIC				
	void contact wit			ing.	
	void breathing d				
Wa	ash thoroughly a	ifter handling	, and befo	re eating, dri	nking, or smoking.
PERS	ONAL PROTECTIVE	FOULPMENT:			
	mpervious gloves	-			
	afety glasses			1	
		ratory protect	tion is re	quired when exp	posure to an airbo
					spirators should b
Se	elected and used	in accordance	e with OSH	A, Subpart I (2	29 CFR 1910.134) a
ma	anufacturer's re	commendations	•		
WORK	PRACTICES:				
F.	yewash fountains	and_safety sl	howers sho	uld be easily a	accessible.
	,				
- ,	LING AND CTODAGE	PRECAULTIONS	Slight a	mmonia odor (wł	nen crude)
	LING AND STORAGE	TRECAUTIONS.	-		
HANDI	LING AND STORAGE NEERING CONTROLS		-		

Ň

÷

ŧ

۷.

.

.1

٠.



VIII. ENVIRONMENTAL & REGULATORY DATA The following Environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations. PRODUCT COMPOSITION Α. PRODUCT (P) or TRADE NAME or COMPONENT NO. CHEMICAL COMPONENT CAS NUMBER WT. PERCENT Ρ ROSIN NITRILE PROCESS 100 N/A INTERMEDIATE 2 A . (Crude and distilled) SARA TITLE III (See footnotes) Β. SEC. 304 SEC. 302 COMPONENT EHS EHS SEC. 311/312 SEC 313 TOXIC NO. RQ (lbs) TPQ (lbs) HAZARD CATEGORY CHEMICAL (YES, NO) Ρ N/A N/A HC-1, NPH N/A

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

#### E. OTHER

This product contains Rosin nitrile that is listed as a "Toxic Pollutant" under Section 307 of the Clean Water Act, and specific discharge limitations on wastewaters containing it may apply. Refer to the Effluent Guidelines for your industry (40 CFR 401 through 469).

Continued...

MSDS No.: 999 0420 3007-01 Date: 11/30/90 PAGE: 07 of 07

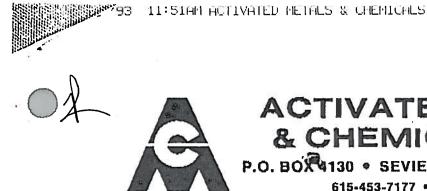
- 5 - 6 2 - 5

Contin	nued
FOOTNOTES	5:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard
	HC-1 Immediate <sup>r</sup> HC-1 immediate <sup>r</sup> HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard NPH Not a physical hazard
SEC 3	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
CONTAINED RELIABLE WHEN THE	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS D IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE E CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS

ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

Doc. No. 7516s

OR STATE LAWS.



i Sofut

12.00%

# & CHEMICALS, INC.

P.O. BO 130 • SEVIERVILLE, TENNESSEE 37864 615-453-7177 • FAX 615-428-3446

MATERIAL SAFETY DATA SHEET

۲.,

SECTION I - MATERIAL IDENTIFICATION

Product Name: Nickel-Aluminum-Cobalt Alloy

Chemical Name: Metallic Alloy containing nickel and cobalt

Physical Form: Grit or powder. Grayish black coloration; no noticeable odor.

SECTION II - MATERIAL COMPOSITION

Components	Percentage	CAS Numbers	TLV's
Nickel Aluminum Cobalt	5.0% maximum 50.0% maximum 45.0% maximum	7440-02-0 7429-90-5	1.0 mg/m3 10.0 mg/m3 0.05 mg/m3

(As airborne dusts or mists)

#### HAZARDOUS COMPONENTS:

Nickel, metal, dust, compounds or fumes are listed under 29 CFR 1910, Subpart Z, OSHA Toxic and Hazardous Substances as an air contaminant. Nickel metal, fumes or dust may cause eye, lung, and skin irritations.

The NTP (National Toxicological Program) anticipates nickel to be a human carcinogen. The IARC (Internation Agency for Research on Cancer) lists nickel as a probable human carcinogen.

Cobalt dust and fumes are listed under 29CFR1910, Subpart 2, as an air contaminant; dust or fumes may cause eye, lung, and skin irritations.

Material Safety Data Sheet Nickel-Aluminum-Cobalt Alloy Page - 2

and the state of t

SECTION III - PHYSICAL DATA

Boiling Points: > 2600 C Solubility in Water: Insoluble Evaporation Rate: N.A. Specific Gravity: > 1.0

SECIION IV - HEALTH HAZARD INFORMATION

Skin: Some individuals may be "nickel-cobalt sensitized" and have allergic reactions upon contact.

Eye: The finely divided power is abrasive and will cause irritation, tearing, redness, and blurred vision.

Inhalation: Inhalation of dusts will cause irritation of the respiratory tract.

Primary Route of Entry: Inhalation of dusts.

Chronic Effects: Chronic respiratory diseases will be aggravated by exposure to dusting conditions.

Υ.

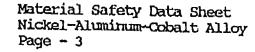
SECTION V - SPECIAL PROTECTION INFORMATION

Respiratory Protection: Wear a NIOSH-approved respirator for dust and mist in dusting situations.

Eye Protection: Wear goggles and face shield to avoid eye contact. If dust contacts eyes, immediately flush with copicus amounts of water and contact physician.

Skin Contact: Wear protective gloves, especially individuals sensitive to metals. If skin contact occurs, immediately wash effected area with warm soapy water.

Provide local ventilation to meet permissible exposure limits.



and the state of the second

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point: N/A Extinguishing Media: This material is considered non-flammable. If a fire occurs in the area where this material is used, use sand or dry chemicals, avoid water.

Unusual Fire and Explosion Hazards: None known at this time.

· A,

SECTION VII - REACTIVITY DATA

Stability: This material is stable. Polymerization: Does not occur. Incompatibilities: Strong acids and bases can cause decomposition of this material.

SECTION VIII - SPILL AND LEAK PROCEDURES

Steps to be taken in the event of a spill: Sweep or shove spilled material into original or suitable container.

Waste Disposal Methods: Incineration for recovery of the metals is the recommended and desired method. The material may be landfilled in accordance with all applicable local, state, and federal regulations.

SECTION IX - OTHER INFORMATION

Proper handling can insure minimal exposure to individuals and the environment. Please review with all personnel the proper techniques of protection before using this material. Safety is the responsibility of the immediate user.

001 12 193 10:52

1 - 11

Material Safety Data Sheet Nickel-Aluminum-Cobalt Alloy Page - 4

This information is provided in good faith and is believed to be correct as of August, 1990. Activated Metals and Chemicals, Inc., makes no representation as to the complete accuracy of this information. It is expected the companies receiving this information will use good judgment in applications for this product to prevent any harm to individuals, property or the environment.

ACTIVATED METALS AND CHEMICALS, INC., U.S.A.

August, 1990

and the second distance

· P

A

۲.

e,i

#### LIME HYDEATED

PAGE:

MATERIAL SAFETY DATA SHEET ACCEPTED BY C.S.H.A. AS ESSENTIALLY SIMILIAN TO U.S.H.A. FURM 20 ND CHEMICAL CO.ENVINONMENTAL&UCCUPATIONAL SAFETY DEPT.BOX 2219,CLUMBUS.CH432 24- HUJE FRERGENCY TELEFHUNL: 600-324-1133 (LUCATED AT ASHLAND, KENTUCKY) SHEAND PRODUCT NAME: LIME HYDRATED J5 50 J30 4135770-DATA SHEET NO: UUUUS35-UUI HEFEULES INCORPORATED LATEST REVISION DATE: 02/78-78046 P L URAWER 1937 9 PREJULT: 3514600 HATTIESUURG MISS 39401 1NV)10E: 521532 INVUILE DATE: 00/20/80 10: SAME \* ATTN: PURCHASING/SAFETY DEPT. A. 18. ENERAL DE GÉGLELUID: ALKALI AZAFD CLASSIFICATION: (17) DRA-0 本 ややお キャ キャック・ チャイン ジャンジャンジャー Selt 101、11-14/24ドDOUS (JMPUNENTS) キャキャチャキャキャキャキャキャキャキャ INGRED1ENT PERCENT TLV \_ \_ \_ \_\_\_\_\_\_ 5 MG/CUM >ວປ ∛ HYLXAIE MEASUREMENT REFINEMENT PECLERTY \_ \_ \_ \_ \_ \_ \_ \_ \_ NITIAL BUILING PLINT - FLF PRODUCT 5102.00 DEG F ( 2850.00 DEG C MHG 76Ŭ.UŬ NUT APPLICABLE APDK PRESSURE \_\_\_\_\_ NOT APPLICABLE APOR DENSITY \_\_\_\_ 2.300 PECIFIC GRAVITY 68.00 DEG F a DEG C 20.00 ERCENT VOLATILES NCT APPLICAULE VAPORATILN RATE NET APPLICABLE

LUNTINUED DN PAGE: 2

```
104266
                              LINE HYLEATED
                                                                 PAGE:
ΞL [
    FGINT(CLOSED CUP) NUL APPLICABLE
JWER EXPLOSIVE LIMIT - NUT APPLICABLE
EXTINUUISHING MEDIA: CARDUN LIUXIDE DR DRY CHEMICAL
1424KOLUS DECLAPUSITION PREDUCTS: NOT APPLICABLE
PECIAL FIREFIGHTING PROCEDURES: SELF-CONTAINED BREATHING APPARATUS WITH A FULL
    FACEPIECE CRERATED IN PRESSURE-DEMAND OF CTHER PUSITIVE PRESSURE MODE.
INUSUAL FIRE & EXPLOSION HAZARUS: NUT APPLICABLE
HRESH LD LIMIT VALUE:
                            5 MG/CUM
FFELTS OF OVEFEXPOSURE: FOR PRODUCT
YES - LAUSES BUR IS.
KIN - CAUSES BURNS.
REATHINS - OF DUST CAN CAUSE INRITATION OF NASAL AND RESPIRATORY PASSAGES.
WALLENING - RESULTS IN SEVELE DAMAGE TO MOULOS HEMBRANES.
                         1851 410:
  ON SKIN: THEFUUGHLY MASH EXPESED AREA VITH SUAP AND WATER. REMOVE
   CONTAMINATED CLUTHING. LAUNDER CONTAMINATED CLUTHING BEFERE RE-USE.
F IN LYES: FLUSH WITH LARGE ANDUNTS OF WATER, LIFTING UPPER AND LONCE LIDS
   ULEASIONALLY, GET MEDILAL ATTENTION.
F SWALL (ILED: GIVE TWL GLASSES OF NATER; "INDUCE VOMITING IMMEDIATELY BY
   STICKING FINGER DURN THRUAT. CALL & PHYSICIAN. NEVER GIVE ANYTHING BY
   MUTHITG AN UNCONSUIDUS PERSUN.
F BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS
   DIFFICULT. ADMINISTER DAYGEN. IF BREATHING HAS STUPPED GIVE ARTIFICIAL
   RESPIPATION. REEP PERSON WARRE JUILT AND BET REDICAL ATTENTION.
AZAF DEUS PULYMERIZATIUN: CANNOT OULUF
TABILITY: STABLE
                                     .1
NCOMPATABILITY: AVGIC CONTACT A ITH: , STRONG MINERAL ACIDS .. STRONG DRGANIC
   AC I J S
```

#### LIML HYERATED

#### 4760

TE DE TAKEN IN CASE NATERIAL IS RELEASED OR SPILLED:

- MALE SPILE: COVER WITH EXCESS JFY SODA ASH MIX AND SWEEP UNTO PAPER OF COLLECT IN BEANER.
- ARGE SPILE: ELIMINATE ALL IGNITION SEGNES (FLARES, FLAMES, INCLUDING PILET LIGHIS, ELECTRICAL SPARKS). PERSENS NOT WEARING PROTECTIVE EQUIPMENT SHUJED BE EXCLUDED FREM AFTA OF SPILE UNTIL CLEAN-OP HAS BEEN COMPLETED. MIX WITH DAY SEDA ASH. SECOP INTE A CRY BUCKET.
- ASTE DISPOSAL METHOD:
- MALE SPILE: DISSULVE IN LARGE AMOUNT OF WATER AND NEUTRALIZE WITH CM-HUL. FLUSH DOWN DEALW WITH EXCESS WATER.
- ARGE SPILL: POUR INTE LARGE TARK OF WATER AND NEUTRALIZE. FLOOM TO OKAIN WITH LARGE EXCESS OF WATER.

☆☆☆ キャキ キャキ キャキ キャー A S E CT 1 0 1 1 1 - P R UT E CT 1 V E E E U I P MENT TU B E U S E J キャーキャキャキャキャキャキャ

ESPIRAT & Y PRINTECTION: LE NÉEDED JSÉ A NIÚSH/MSHA JUINT, Y APROVED DÚST FESHIRATOR. (ASK YOUR SAFEIT EUJIPMENT SJPPLIER)

TOTATILA: PROVIDE SUFFILIENT MECHANICAL (GENERAL AND/UK LCCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TEVES).

ROTECTIVE GLOVES: WEAF RESISTANT GLOVES SUCH AS:, NEUPRENE, POLYVINYL CHLORIDE

- YE FRETECTION: CHEMICAL SPLASH GUGGLES IN COMPLIANCE WITH OSHA REGULATIONS ALE ADVISED: HUWEVER, USHA REGULATIONS ALSO PERMIT UTHER TYPE SAFETY GLASSES. (CENSULT YOUR SAFETY EQUIPMENT SUPPLIER)
- THER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR INPERVIOUS CLOTHING AND DOURS.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS \*\*\*\*\*\*\*\*\*\*\*\*\*\*

- UNTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN ENPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/CH SULID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATA SHEET MUST BE DÖSERVED.
- HE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT MARRANIED TO BE WHETHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCOMSTANCES.

LAST PAGE--SEE ATTACHMENT PAGE ENCLOSED--LAST PAGE

			0	Ĺ	ت يا.	· · · · · · · · · · · · · · · · · · ·
he made manuals and	Z	LINC OXI	DE		TERL DATA	AL SAFETY SHEET 3506
PRODUCT/COMPANY	IDENTIFIC	ATTON	2	c		3508
AME (COMMON NAME OR SYNONY	A)				1	
ac Oxide (French Process) IEMICAL NAME	-		AZ	PRODUCT C O, AZODOX, A	ODE#	8
nc Oxide		FORM	IULA	51.120.000, M		MOLECULAR WEIGHT
a the second		ZnO				81.38
ANUFACTURER'S NAME: MIDWEST	ZINC - HILLSB	IORO, INC.	8			
P.O. BOX	<b>.</b> .					
HILLSBO	10, IL 62049		-	SSUED DATE	DEM	
a di strategi e ta s		·		3/9/94	n Evi	SED DATE
LEPHONE (24 HOUR EMERGENCY	OR INFORMATIC	DNI: (217)520				
	. 0 <u>.</u>	510). (217)532	2-3931			
COMPOSITION			!_			· (*)
COMPOSITION/INFORM	<u>ANTION ON</u>	<b>INGREI</b>	DIENTS			
MATERIAL OR COMPONENT		'CAS. #	WT. %		FAIDOO	
coxide it and a second	5 B	1314-13-2		OSHA		NC.(mg/cu.m.) ACGIH
i a		1514-13-2	99.7-100	5.0 Resp. 1 10.0 Total 1	Dust	10.0 dust
lmium	· ·	7439-92-1	< 0.003	10.0 10(a)	Just	*
l		7440-43-9	< 0.002			
HAZARDS IDENTIFICA		1				
	and the second se		<b>a</b> 12	s 's		e 12 #
OUTES OF ENTRY INGESTION INH	ALATION SKIN	CARCIN	OGENICITY		29	
TE OVEREXPOSURE (SYMPTOMS AND EFF		Not lis	ited as a card	cinogen by IARC	NTP, C	SHA.
Ictal fume fever with symptoms of fever ac or dust.	chills, metallic ta	ste, chest light	ness or naus	62 may regult fue		
HIG UXING IS FCIALIVELY non-toxic by mouth	h hi. – – – – –	19			m mbala	tion of zinc oxide
inc oxide is relatively non-toxic by mout crmatitis (papulopustular cczema) with ONIC OVEREXPOSURE (SYMPTOMS AND F	intense itching me	ever, nausea, s	tomach cran	nps or diarrhea in	a large de	oses.
ONIC OVEREXPOSURE (SYMPTOMS AND E	FFECTS)	if ic un nom	CACCSSIVE SKI	n contact.	<del></del>	25%.
ICAL CONDITIONS POSSIBLY AGGRAVATED	<u> </u>				3	
e reported.		Ϊ,				
FIRST AID MEASURES	·				14	
				· 1		
A straight a program by	0.					
lation: Remove from exposure; place ind stion: Induce vomiting in conscious indiv or Eves: Fluth with planty of water Ve						
or Eyes: Flush with plenty of water. If s	ymptoms develop:	iysician, : consult a nhv	sician			
		ousuit a pily.	siciali.	a.		
IRE FIGHTING MEASU			2			
POINT	AUTO IGNITION TE	MPERATURE		FLAMMANIEL		
UAL FIRE AND EXPLOSION HAZARDS				FLAMMABLE LI Not Applicable	0	•
ppucable	FIRE EXTINGUISHI	ING AGENTS RE	COMMENDE	D FIRE EXTINGUIS	HING AG	ENTS TO AVOID
AL FIRE FIGHTING PRECAUTIONS				No specific age	ents	
IOSH/MSHA approved self-contained	breathing appara	tus and full pro	otective clot	hing if involved in	lire.	20
<u> </u>						
		•				

.

3. C

.

	DIC								
RELEASE MEASU	KES		(3	3	··	8 	3 <sup>× 2</sup> - 1		×
ILLS OR LEAKS by method which keeps dust to a minimum is acceptable. Vacuuming is preferred for dust. Use approved respiratory protection if ssiblity of dust or fume exists. Do not use compressed air for cleaning.									
. NDLING AND	STORAGE	34	i.	×.	····	• •		a a <b>de</b> A <b>de</b> Registra	
ORMAL HANDLING se of approved respirators is required for applications where equate ventilation cannot be provided. Activities which generate ist or fune should be avoided. When melted, the temperature ould be kept as low as possible.			STORAGE General storage	proce	dures acce				le le contra
. EXPOSURE CONT	ROLS/PERSON	IAL PI	ROTECTION	I.	· · ·	. ~	:	* *	
IGINEERING CONTROLS Local exhaust ventilation is reco remissible air concentrations.	mmended for dust and/c	or fume ge	enerating operation	is who	ere airborn	c exposu	cs may exc		]
RSONAL HYGIENE void inhalation or ingestion. P rsonal hygiene procedures. A s inificant dust exposure occurs.	ractice good housekeepin bower is recommended i	ng and f	SPECIAL: PRECAU NPCA HMIS 1H NFPA Classifical	-0F-0	R-PPE(E)		ELINSTRUC		
		· • <b>•</b>	LABEL SIGNAL WO	RD:	CAU			•	:
SPIRATORY PROTECTION here airborne exposures may c r concentrations, the minimum commended is a negative press	respiratory protection ure air purifying respirate	or	EXES AND FACE Salety glasses rec particles in eyes e	omm xists.	ended when				- - - -
th cartridges that are NIOSH/I mes and mists having a TWA n IHER CLOTHING AND EQUIPMENT	ot less than 0.05 mg/cu.m	dust, n.			·· · · · · · · · · · · · · · · · · · ·		· · ·	m	
rotective clothing is recommend	ded for jobs with heavy d	ust exposi	ure to prevent skin	irrita	tion. Conta	minated	clothing (	ب المربعة مربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة المربعة	· ·
PHYSICAL/CHEM	ICAL PROPERT	TES		·	.+ 1 2 + 	• • • • • • •	, Mair 25 1 1		
ATERIAL IS (AT NORMAL CONDITI	• • • •	RANCEAN	ID ODOR odorless	. 6			<u>.</u>		
ELTING POINT (DEGREES C) iblimes at 1975	BOILING POINT (DEGREE Not Available		SPECIFIC GRAVITY	(H2O	) = 1) .	VAPOR D	ENSITY (AIR	ored[sec. ≖1)ų ilpinur en 2010,es	
DLUBILITY IN WATER (% BY WT.) soluble	pH Not Applicable		VAPOR PRESSURE Not Applicable	(mm	Hg)	EVAPOR	ATION RATE	<u>នេះជាក់ទីដំកំ</u> ន	. I .
STABILITY AND R	EACTIVITY			<u> </u>		eng vi	H CARDERS	11013-25.190 11013-25.190	цЦ <sup>2</sup> , 1
ABILITY ablc	CONDITIONS TO AVOID Not Applicable	·			ī ,				<b>-</b> 1 · · ·
COMPATIBILITY (MATERIALS TO A inc oxide and magnesium can re	AVOID)	ted. Zinc	: oxide	HAZA Nonc	RDOUS DEC	OMPOSIT	ION PRODUC	CTS : : :	- ·
id chlorinated rubber were mix AZARDOUS POLYMERIZATION	cd and exploded in one in CONDITIONS TO AVOID	nstance.						يانراني . ماليني	1.1
/ill not occur	Not Applicable	•				··		. 45. gyptas	
. TOXICOLOGICAL	INFORMATIO	N		с е	a Kilon K	130 1			취 
D50(SPECIES, ROUTE) Not available.	LC50(SPECIE Not availab			\$	MUTAGENIC Not availa		2	<u>and did yie</u>	].
. ECOLOGICAL	9	s:	10	4.)	- 1	· · · · ·	a . HT 88.,	<u>ដៃ អូវីស</u> េរ រូបគ្នាស្រែរ ចុះរ	
Crry Io. "vailable.	•	· · · · · · · · · · · · · · · · · · ·	ENVIRONMENTAL I Not available.	FATE	••	9 9 9	11 11 1 10 10 1 1 10	····· (# 쇼)··· (# 1) · · · · ·	] %
9					0		•	I II E	

.

## . DISFOSAL CONSIDERATIONS

STE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE, AND LOCAL DISPOSAL OR DISCHARGE LAWS) nazardous under 40 CFR 261, Subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 TR 264 or 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257.

lis ed in unaltered form, material should be tested to determine if it must be classified as a hazardous waste for imposes. Under specific circumstances, application can be made to the EPA Administrator to have a particular successignated non-hazardous.

40 CFR 261

## TRANSPORT

T REGULATION AND ID (OR PIN) NUMBER is material is not regulated by the DOT.

## **REGULATORY INFORMATION**

MIS CLASSIFICATION, SARA REGULATION AND OTHER INFORMATION	12
FIMIS does not classify this material	
CA Status: On TSCA Inventory	
gulated under SARA Title III:	
ссt. 302	
cct. 311/312: Immediate	
cct. 313 Chemicals: Zinc compounds RCLA Reportable Quantity	
Nonc	
ARNING: The State of California has listed lead as a share in the title	
ARNING: The State of California has listed lead as a chemical which can cause birth defects of othe rm and has listed cadmium as a chemical known to cause cancer.	r reproductive
out of the second as a chemical known to cause cancer.	
DEFEDENCES	

## REFERENCES

MISSIBLE CONCENTRATION REFERENCES

HA regulations for airborne contaminants 29 CFR 1910.1000 and 1018; ACGIH Threshold Limit Values for Chemical Substances ARD INFORMATION REFERENCES un of the Threshold Limit Values, 6th Ed., ACGIH Strial Hygiene and Taxicology, Vol. 2A, 3rd Rev. Ed., 1981 A. we Protection Guide on Hazardous Materials, 10th Ed., 1991 Idbook of Toxic and Hazardous Chemicals; Sittig, Marshall; 1981 MES Plus Database; Micromedex, Inc., Vol. 17, 1993 TATOX Database; Spectrum Research, Inc., Version 2.0, 1992 IERAL

dbook of Chemistry and Physics, 57th Ed., 1976-77, Weast, R.C., Editor, CRC Inc.

y

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLEY FOR YOUR INFORMATION, CONSIDERATION, AND INVESTIGATION. MIDWEST ZINC -- HILLSBORO, INCORPORATED PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

Ťi ,

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865 MATERIAL SAFETY DATA SHEET 24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151 CHEMTREC # (800) 424-9300 -- NATIUNAL RESPUNSE CENTER # (800) 424-8802 J326 -06 ALETIC ACID, GLACIAL PAGE: 1 ISSUED: 03/28/92 EFFECTIVE: 03/09/92 J.T.BAKER INC., 222 RED SCHUDL LANE, PHILLIPSBURG, NJ 08865 SECTION I - PRODUCT IDENTIFICATION PRODUCT NAME: ACETIC ACID: GLACIAL COMMON SYNUNYMS: ETHANOIC AC', METHANE CARBUXYLIC ACID; ETHYLIC ACID CHEMICAL FAMILY: ORGANIC ACIDS Production Production FORMULA: 60.05 FORMULA WT .: 64-19-7 CAS ND.: NIOSH/RIECS ND.: AF1225000 LABURATORY REAGENT PRODUCT USE: 4803,9524,0903,9511,9520,9522,9508,9507,9506,9515,9501,9500 PRODUCT CODES: 9505,5355,9503,9513 Υ. . PRECAUTIONARY LABELING BAKER SAF-T-DATA\* SYSTEM 2 MODERATE HEALTH MODERATE FLAMMABILITY 2 ----2 MODERATE REACTIVITY 3 SEVERE (CORKOSIVE) CUNTACT LABORATORY PROTECTIVE EQUIPMENT GOGGLES & SHIELD; LAD CUAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER а — 18 U.S. PRECAUTIONARY LABELING DANGER COMBUSTIBLE. CAUSES SEVERE BURNS. HARMFUL IF SWALLOWED OR INHALED. KEEP AWAY FROM HEAT, SPARKS, FLAME. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. AVOID BREATHING VAPUR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEWUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE WATER SPRAY, ALCOHOL FOAM, DRY CHEMICAL, OR CARBON DIUXIDE. IN CASE OF SPILL, NEUTRALIZE WITH SODA ASH OR LIME AND PLACE IN DRY CONTAINER. CONTINUED ON PAGE: 2

This Copy

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865 MATERIAL SAFETY DATA SHEET 24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151 CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802 PAGE: 2 ACETIC ACID, GLACIAL HU326 -06 ISSUED: 03/28/92 EFFECTIVE: 03/09/92 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PRECAUTIONARY LABELING (CONTINUED) INTERNATIONAL LABELING FLAMMABLE. CAUSES SEVERE BURNS. KEEP OUT OF REACH OF CHILDREN. DO NOT BREATHE VAPOUR. IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE. SAF-T-DATA\* STURAGE COLUR CODE: RED (FLAMMABLE) SECTION II - COMPONENTS OSHA/PEL wEIGHT % ACGIH/TLV CAS NO. COMPUNENT 10 PPM TO PPM 90-100 64-19-7 ACETIC ACID SECTION III - PHYSICAL DATA BOILING PUINT: 118 C (244 F) VAPUR PRESSURE (MMHG): 11 (20 C) (AT 760 MM HG) VAPOR DENSITY (AIR=1): 2.1 MELTING PUINT: 17 C (62 F) (AT 760 MM HG) EVAPORATION RATE: 0.97 SPECIFIC GRAVITY: 1.05 (BUTYL ACETATE = 1) (H20=1)Y % VOLATILES BY VOLUME: 100 SOLUBILITY(H20): COMPLETE (100%) (21 C) 22 - L PH: 2.4 (1.OM SOLUTION) PHYSICAL STATE: LIQUID DDOR THRESHOLD (P.P.M.): N/A CDEFFICIENT WATER/OIL DISTRIBUTION: N/A APPEARANCE & ODOR: COLORLESS LIJUID. VINEGAR-LIKE ODOR. CUNTINUED ON PAGE: 3 -ДĽ,

-

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865 M A T E R I A L S A F E T Y D A T A S H E E T 24-HUUR EMERGENCY TELEPHONE (908) 859-2151 CHEMTREC # (800) 424-9300 NATIONAL RESPONSE CENTER # (800) 424-8802
ACETIC ACID, GLACIAL PAGE: 3 EFFECTIVE: 03/09/92 ACETIC ACID, GLACIAL PAGE: 3 ISSUED: 03/28/92
SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH PUINT (CLUSED CUP): 39 C (103 F) NFPA 704M RATING: 2-2-1
AUTUIGNITION TEMPERATURE: 426 C (800 F)
FLAMMABLE LIMITS: UPPER - 19.9 % LOWER - 4.0 %
FIRE EXTINGUISHING MEDIA
USE WATER SPRAY, ALCOHUL FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
SPECIAL FIRE-FIGHTING PROCEDURES FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRENAREA IF IT CAN BE DUNE WITHOUT RISK. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.
UNUSUAL FIRE & EXPLOSION HAZARDS VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK. CLOSED CONTAINERS EXPUSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG UXIDIZERS MAY CAUSE FIRE. REACTS WITH MOST METALS TO PRODUCE HYDROGEN GAS, WHICH CAN FORM AN EXPLOSIVE MIXTUKE WITH AIR.
TOXIC GASES PRODUCED ACETIC ACID, CARBON MUNUXIDE, CARBON DIUXIDE
EXPLUSION DATA-SENSITIVITY TO MECHANICAL IMPACT NONE IDENTIFIED.
EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE NONE IDENTIFIED.
SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE (TLV/TWA): 25 MG/M3 (10 PPM)
SHORT-TERM EXPOSURE LIMIT (STEL): 37 MG/M3 (15 PPM)
PERMISSIBLE EXPOSURE LIMIT (PEL): 25 MG/M3 (10 PPM)
TOXICITY ŐF COMPONENTS

.

CONTINUED ON PAGE: 4

J.T. BAKER INC. 222 RED SCHOUL LANE, PHILLIPSBURG, NJ 08865 MATERIAL SAFETY DATA SHEET 24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151 CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802 ACETIC ACID, GLACIAL PAGE: 4 .0326 -06 ISSUED: 03/28/92 EFFECTIVE: 03/09/92 SECTION V - HEALTH HAZARD DATA (CONTINUED) URAL RAT LD50 FUR ACETIC ACID 3310 MG/KG 525 MG/KG INTRAVENOUS MOUSE LD50 FOR ACETIC ACID 1060 MG/KG SKIN RABBIT LD50 FOR ACETIC ACID 5620 PPM INHALATION MOUSE LC50 FUR ACETIC ACID NTP: NÚ Z LIST: NU USHA REG: NO CARCINDGENICITY: IARC: NU CARCINUGENICITY NONE IDENTIFIED. REPRODUCTIVE EFFECTS NONE IDENTIFIED. EFFECTS OF OVEREXPOSURE SEVERE IRRITATION OR BURNS OF RESPIRATORY SYSTEM, INHALATION: PULMONARY EDEMA, LUNG INFLAMMATION, HEADACHE, COUGHING, DIFFICULT BREATHING, DIZZINESS, CHEST PAINS, TEETH DAMAGE, RESPIRATORY FAILURE SEVERE BURNS, MAY CAUSE DERMATITIS SKIN CUNTACT: SEVERE BURNS, PERMANENT EYE DAMAGE EYE CONTACT: SKIN ABSORPTION: NONE IDENTIFIED BURNS THE MOUTH AND THRUAT, NAUSEA, VOMITING, INGESTION: GASTROINTESTINAL IRRITATION, DIARRHEA, SHOCK, MAY BE FATAL CHRONIC EFFECTS: LUNG DAMAGE, TEETH DAMAGE 1 TARGET URGANS RESPIRATORY SYSTEM, EYES, SKIN, TEETH, LUNGS MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE RESPIRATORY SYSTEM DISEASE, SKIN DISORDERS PRIMARY ROUTES OF ENTRY INHALATION, INGESTION, SKIN CONTACT, EYE CONTACT CONTINUED ON PAGE: 5

MATË 24HU	C. 222 RED SCHOOL LANE, PHILLIPS R I A L – S A F E T Y – D A T A UR EMERGENCY TELEPHONE (908) 8 424-9300 NATIONAL RESPONSE CEN	S Н Е Е Т 59-2151 °				
0326 -06 EFFECTIVE: 03/09/92	ACETIC ACID, GLACIAL	PAGE: 5 Issued: 03/28/92				
SECTI	ÜN V – HEALTH HAZARD DATA (CONTIN	UED)				
EMERGENCY AND FIRST AI						
	A PHYSICIAN. IF SWALLOWED, DO N CIUUS, GIVE WATER, MILK, OR MILK					
	NHALED, REMOVE TO FRESH AIR& IF FICIAL RESPIRATION• IF BREATHING EN•					
WATE	ASE UF CONTACT, IMMEDIATELY FLUSH R FUR AT LEAST 15 MINUTES WHILE R HING AND SHOES. WASH CLOTHING BE	EMOVING CONTAMINATED				
	ASE OF EYE CUNTACT, IMMEDIATELY F R FOR AT LEAST 15 MINUTES.	LUSH WITH PLENTY OF				
SARA/TI	TLE III HAZARA CATEGORIES AND LIS	TS				
TE: YES CHRONIC: YE	S FLAMMABILITY: YES PRESSURE: NO	REACTIVITY: NG				
EXTREMELY HAZARDOUS SU Cercla Hazardous Subst Sara 313 Toxic Chemica TSCA Inventory:	BSTANCE: ND ANCE: YES CONTAINS ACETIC ACI	D (RG = 5000 LBS).				
	SECTION VI - REACTIVITY DATA					
STABILITY: STABLE	HAZARDOUS POLYMERIZ	ATION: WILL NOT OCCUR				
CONDITIONS TO AVOID:	HEAT, FLAME, OTHER SOURCES OF I	GNITION				
INCOMPATIBLES:	STRONG OXIDIZING AGENTS, MOST C ALUMINUM), CHROMIC ACID, NITRIC Hydrogen peroxidë, Alkaliës, Ca Amines, phosphorus Trichloride, Pentachloride	ACID, SULFURIC ACID, RBONATES, STRONG BASES,				
DECOMPOSITION PRODUCTS	CARBON MONOXIDE, CARBON DIOXIDE					
	CONTINUED ON PAGE: 6					

 $\bigcirc$ 

•

MATERIAL SA 24-HUUR EMERGENCY T	HUÜL LANE, PHILLIPSBURG, NJ 08865 F E T Y – U A T A – S H E E T ELEPHONE –– (908) 859–2151 TIUNAL RESPONSE CENTER # (800) 424–8802					
	ACID, GLACIAL PAGE: 6 ISSUED: 03/28/92					
	L & DISPOSAL PROCEDURES					
OFF IGNITION SOURCES; NU FLARES, You can do su without risk. Neu	PARATUS AND FULL PROTECTIVE CLOTHING. SHUT SMOKING, UR FLAMES IN AREA. STUP LEAK IF TRALIZE SPILL WITH SODA ASH OR LIME. WITH TERIAL INTO CLEAN, URY CONTAINER AND FLUSH AREA WITH WATER.					
J. T. BAKER NEUTRASORB(R) OR TEAM(R) FOR SPILLS OF THIS PRODUCT.	"LOW NA+" ACID NEUTRALIZERS ARE					
DISPOSAL PROCEDURE DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL Environmental regulations.						
EPA HAZARDOUS WASTE NUMBER: DO	01, DOD2 (IGNITABLE, CORROSIVE WASTE)-					
ATIC TUXICITY FATHEAD MINNOW 96HR-LC50 > 100MG MOSQUITU FISH 48HR-LC50 = 251 MG/L;	/L; WATER FLEA 96HR-LC50 = 100 MG/L; GOLDEN ORFE MINNOW 48HR-LC50 = 410 MG/L.					
SECTION VIII - INDUS	TRIAL PROTECTIVE EQUIPMENT					
REQUIREMENTS						
RESPIRATORY PROTECTION: RESPIRATORY CONCENTRATIO 500 PPM, A C ACID/ORGANIC	PROTECTION REQUIRED IF AIRBORNE ON EXCEEDS TLV. AT CONCENTRATIONS UP TO HEMICAL CARTRIDGE RESPIRATOR WITH CARTRIDGE IS RECOMMENDED. ABOVE THIS F-CUNTAINED BREATHING APPARATUS IS					
EYE/SKIN PROTECTION: SAFETY GOGGI Suit, Neopre	ES AND FACE SHIELD, UNIFORM, PROTECTIVE ENE GLOVES ARE RECOMMENDED.					
CONTI	NUED ON PAGE: 7					
-						

2

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865 MATERIAL SAFETY DATA SHEET 24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151 CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802 ACETIC ACID, GLACIAL PAGE: 7 326 -00 ISSUED: 03/28/92 EFFECTIVE: 03/09/92 SECTION IX - STORAGE AND HANDLING PRECAUTIONS SAF-T-DATA\* STURAGE COLUR CODE: RED (FLAMMABLE) STURAGE REQUIREMENTS KEEP CONTAINER TIGHTLY CLOSED. STORE 'IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA OR CABINET. STORE ABOVE 17 C. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION DOMESTIC (D.O.T.) PROPER SHIPPING NAME: ACETIC ACID, GLACIAL HAZARD CLASS: ы REPORTABLE QUANTITY: 5000 LBS. PACKAGING GROUP: II UN/NA: UN2789 LABELS: CORROSIVE REGULATORY REFERENCES: 49CFR 172.101; 173.245; 173.245A ERNATIONAL (1.M.O.) PROPER SHIPPING NAME: ACETIC ACID, GLACIAL I.M.G. PAGE: 8100 8, 3.3 HAZARD CLASS: MARINE POLLUTANTS: NO PACKAGING GROUP: II UN: UN2789 LABELS: CORROSIVE, FLAMMABLE LIQUID REGULATORY REFERENCES: 49CFR 172.102; PART 176; IMU AIR (I.C.A.O.) ACETIC ACID, GLACIAL PROPER SHIPPING NAME: HAZARD CLASS: Ы PACKAGING GROUP: II UN: UN2789 LABELS: CORROSIVE, FLAMMABLE LIQUID REGULATURY REFERENCES: 49CFR 172.101; 173.6; PART 175; ICAO/IATA=== wE BELIEVE THE TRANSPORTATION DATA AND REFERENCES CONTAINED HEREIN TO BE FACTUAL AND THE OPINION OF QUALIFIED EXPERTS. THE DATA IS MEANT AS A GUIDE TO THE OVERALL CLASSIFICATION OF THE PRODUCT AND IS NUT PACKAGE SIZE SPECIFIC, NOR SHOULD IT BE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH THE COMPANY ASSUMES LEGAL RESPONSIBILITY.=== THE INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION. ANY USE OF THE INFORMATION MUST BE DETERMINED BY THE USER TO BE IN ACCURDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS 49CFR 172.3 AND EMPLOYEE TRAINING 49CFR 173.1. CONTINUED ON PAGE: 8

۲,

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865 MATERIAL SAFETY DATA SHEET 24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151 CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802 PAGE: 8 26 -06 ACETIC ACID, GLACIAL EFFECTIVE: 03/09/92 ISSUED: 03/28/92 SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CUNTINUED) U.S. CUSTOMS HARMONIZATION NUMBER: 29152100005 N/A = NUT APPLICABLE UR NUT AVAILABLE N/E = NUT ESTABLISHEDTHE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET MEETS THE REQUIREMENTS OF THE UNIFED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910-1200 ET. SEG.) AND THE CANADIAN WURKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING GF THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR. APPLICATION. DEPENDING ON USAGE, PROTECTIVE CLOTHING INCLUDING EVE AND FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL TR BREATHING CHEMICAL VAPORS/FUMES. OSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES ARE SO VARIED, BAKER CANNOT WARN OF ALL UF THE POTENTIAL DANGERS OF USE UR INTERACTION WITH OTHER CHEMICALS UR MATERIALS. BAKER WARRANTS THAT THE CHEMICAL MEETS THE SPECIFICATIONS SET FORTH ON THE LABEL. BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE. THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, BAKER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET. NOTE: CHEMTREC, CANUTEC, AND NATIONAL RESPONSE CENTER EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPUSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE (1-800-JTBAKER) FUR ASSISTANCE. ----COPYRIGHT 1992 J.T.BAKER INC. \* TRADEMARKS OF J.T.BAKER INC. = = = APPROVED BY QUALITY ASSURANCE DEPARTMENT. -- LAST PAGE ----"ISSUED BY VWR 10/23/93"

.;

		JAIA SHEEI	
A Division of EXXON CH	MICAL, COMPANY, A D	72, HOUSTON, TEXAS 77001 Ivision of EXXON CORPORATION	ř
ISOPROPYL ALCOHOL, ANHYDROL	JS <sup>v</sup> ·	PAGE: 1 DATE PREPARED: MAY 3, 1993 MSDS NO.: 90230000	) 96
SECTION 1 PRODUCT IDENTIF	CATION &	EMERGENCY INFORMATION	
PRODUCT NAME: Isopropyl Alcohol,	Anhydrous		
CHEMICAL NAME: 2-Propanol	<b>F</b>	CAS 67-63-0	
CHEMICAL FAMILY: Aliphatic Alcohol	$\overline{V}_{-}$	ў. Э	
PRODUCT DESCRIPTION: Clear colorless liquid.	$F_{I_{2}}$		
EMERGENCY TELEPHONE NUMBERS:	EXXON CHEN Chemtrec	MICAL AMERICAS 800-726-2015 800-424-9300	
SECTION 2 HAZARDO	US INGREDI	ENT INFORMATION	
Flammable PEL; TLV Eye irritant For additional inf SECTION 3 HEALTH		Section 3. IN & PROTECTION	
NATUR	E OF HAZARD		
EYE CONTACT: Irritating, and will injure eye		t removed promptly.	
SKIN CONTACT: Frequent or prolonged contact ma Low order of toxicity.			
INHALATION: High vapor concentrations are in tract, may cause headaches and	dizziness, a	the eyes and the respiratory re anesthetic and may have	
other central nervous system eff Negligible hazard at ambient ter INGESTION: Minimal toxicity.	nperature (-18	8 to 38 Deg C; O to 100 Deg F)	
Small amounts of the liquid asp ingestion, or from vomiting, may edema.	irated into t v cause bronc	he respiratory system during hiopneumonia or pulmonary	
F	IRST AID		
EYE CONTACT: Immediately flush eyes with larg minutes. Get prompt medical atte	ge amounts of ention.	water for at least 15	
SKIN CONTACT: Immediately flush with large amo Remove contaminated clothing, in	ounts of wate ncluding shoe	r; use soap if available. s, after flushing has begun.	
	λ		



## MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001 A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

JISOPROPYL ALCOHOL, ANHYDROUS

PAGE	:	2		
DATE	PREPARED:	MAY	З,	1993
MSDS	NO.:	9023	3000	00

1 1.

#### INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention. **INGESTION:** 

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

ACUTE TOXICITY DATA IS AVAILABLE UPON REQUEST.

#### WORKPLACE EXPOSURE LIMITS

## OSHA REGULATION 29CFR1910.1000 REQUIRES THE FOLLOWING PERMISSIBLE EXPOSURE LIMITS:

A TWA of 400 ppm (980 mg/m3) and a STEL of 500 ppm (1225 mg/m3) for Isopropyl Alcohol.

#### THE ACGIH RECOMMENDS THE FOLLOWING THRESHOLD LIMIT VALUES:

a TWA of 400 ppm (983 mg/m3), and a STEL of 500 ppm (1230 mg/m3) for Isopropyl Alcohol.

#### PRECAUTIONS

#### **PERSONAL PROTECTION:**

For open systems where contact is likely, wear long sleeves, chemical resistant gloves, and chemical goggles.

Where contact may occur, wear safety glasses with side shields. Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

#### VENTILATION:

The use of mechanical dilution ventilation is recommended whenever this product is used in a confine space, is heated above ambient temperatures, or is agitated.

Use explosion-proof ventilation equipment.

#### CHRONIC EFFECTS:

In developmental toxicity studies conducted by the Chemical Manufacturers Association, unexpected acute toxicity was found when Isopropanol was administered to pregnant rabbits by gavage. There were no unexpected toxic effects in pregnant rats exposed in the same study. In rats there were some relatively mild developmental effects at maternally toxic levels. There was no evidence of developmental toxicity in the rats at levels which did not also produce maternal toxicity. There were no indications of developmental toxicity in the rabbits at any exposure level. Findings from a multigeneration reproduction study indicate that infant and immature rats are more sensitive than their parents to the acute oral toxicity induced by high (1000 mg/kg/day) doses of Isopropanol. The effect levels for rats and rabbits were at several times the maximum exposure that would occur at the TLV. This information has been reported to the U.S. EPA under the provisions of Section 8(e) of TSCA.

#### CHRONIC TOXICITY DATA IS AVAILABLE UPON REQUEST

.1



## MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001 A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

ISOPROPYL ALCOHOL, ANHYDROUS	DATE PREPARED:	3 MAY 3, 1993 90230000
SECTION 4 FIRE & EXPLOSIO	N HAZARD	<u></u>
FLASHPOINT: 54 Deg F. METHOD: TCC FLAMMABLE LIMITS: LEL: 2.0 UEL: 12.7 @ 77 Deg F. Autoignition temperature: > 662 Deg F.		
temperatures at or above the flashpoint. "Empty" containers retain product residue (liquid a dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOL EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STAT OTHER SOURCES OF IGNITION; THEY MAY EXPLODE, AND CAU	nd/or vapor) and c DER, DRILL, GRIND, IC ELECTRICITY, DR SE INJURY OR DEATH bunged and prompt1	2 1.
Shut off "fuel" to fire. If a leak or spill has hold spray to disperse the vapors.	ons or extinguish w	with
HAZARDOUS COMBUSTION PRODUCTS: No unusual SECTION 5 SPILL CONTROL P	ROCEDURE	
<pre>if possible to do so without hazard. For small spi procedures; for large spills implement cleanup pro public area, keep public away and advise authoriti product is subject to CERCLA reporting (see Sectio Response Center. Prevent liquid from entering sewers, watercourses, spilled liquid with sand or earth. Do not use comb as sawdust. Recover by pumping (use an explosion proof or hand with the prophent</pre>	cedures and, if in es. Also, if this n 7) notify the Na or low areas. Cor ustible materials pump) or with a	itional itain
WATER SPILL: Eliminate sources of ignition. Warn occupants and and downwind areas of fire and explosion hazard ar	i shipping in surro nd request all to a	ounding stay
-	SECTION 4 FIRE & EXPLOSIO         FLASHPOINT: 54 Deg F. METHOD: TCC         FLAMMABLE LIMITS: LEL: 2.0 UEL: 12.7 @ 77 Deg F.         AUTOIGNITION TEMPERATURE: > 662 Deg F.         GENERAL HAZARD:         Flammable Liquid, can release vapors that form flam         temperatures at or above the flashpoint.         "Empty" containers retain product residue (liquid a         dangerous. DO NOT PRESSURIZE. CUT, WELD. BRAZE, SOL         EXPOSE SUCH CONTAINERS TO HEAT, FLAME. SPARKS, STAT         OTHER SOURCES OF IGNITION: THEY MAY EXPLODE AND CAU         Empty drums should be completely drained, properly         turned to a drum reconditioner, or properly dispose         FIRE FIGHTING:         Use water spray to cool fire exposed surfaces and t         Shut off "fuel" to fire. If a leak or spill has not         spray to disperse the vapors.         Either allow fire to burn under controlled conditic         alcohol type foam and dry chemical. Try to cover 1         HAZARDOUS COMBUSTION PRODUCTS:         No unusual         SECTION 5 SPILL CONTROL P         LAND SPILL:         Eliminate sources of ignition. Prevent additional         if possible to do so without hazard. For small spi         procedures; for large spills implement cleanup pro         public area, keep public away and advise authoriti	ISOPROFIL ALCONOL, ANNOYAGE A       MSDS NO.:         SECTION 4 FIRE & EXPLOSION HAZARD         FLASHPOINT: 54 Deg F, METHOD: TCC         FLAMMABLE LIMITS: LEL: 2.0 UEL: 12.7 @ 77 Deg F.         AUTOIGNITION TEMPERATURE: > 662 Deg F.         GENERAL HAZARD:         Flammable Liquid, can release vapors that form flammable mixtures at tamperatures at or above the flashpoint.         "Empty" containers retain product residue (liquid and/or vapor) and can dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, DF OTHER SOURCES OF IGNITION; THEY MAY EXPLODE, AND CAUSE INJURY OR DEATH Empty drums should be completely drained, properly bunged and prompt turned to a drum reconditioner, or properly disposed of.         FIRE FIGHTING:       Use water spray to cool fire exposed surfaces and to protect personne Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disprese the vapors.         Either allow fire to burn under controlled conditions or extinguish alcohol type foam and dry chemical. Try to cover liquid spills with alcohol type foam and dry chemical. Try to cover liquid spills with the posible to do so without hazard. For small spills implement clear procedures; for large spills implement cleanup procedures autorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the NR Response Center.         Prevent liquid from entering severs, watercourses, or low areas. Cor spilled liquid with sand or earth. Do not use combustible materials as saudust.         Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbert.



## MATERIAL SAFETY DATA SHEET

EXXON CHEMICAL AMERICAS, P.O. BOX 3272, HOUSTON, TEXAS 77001 A Division of EXXON CHEMICAL COMPANY, A Division of EXXON CORPORATION

-

ISOPROPYL ALC	OHOL, ANHYDR	OUS	,1 ,1	PAGE: DATE PREPARED: MSDS NO.:	4 May 3, 1993 90230000
	SE	CTION 6	NOTES		
National Paint Hazardous National Fire	TEMS: on is for people & Coatings Asso Materials Identi Protection Assoc tion of the Fire	ciation's ( fication Sy iation (NFP	NPCA) stem (HMIS) A 704)		×
HEALTH FLAMMABILITY REACTIVITY	NPCA-HMIS N 2 3 O	FPA 704 1 3 0		KEY 4 = Severe 3 = Serious 2 = Moderate 1 = Slight O = Minimal	
<u> </u>	SECTION 7	REGULA	TORY INFO	RMATION	
DOT HAZARD CLA DOT IDENTIFICA NAME: Ison FLASHPOINT: 54	PPING NAME: Tammable Liquid SS: Flammable 1 TION NUMBER: U Propanol (Isoprop Deg F. METHOD:	UN1219 Iquid JN 1219 Dyl Alcohol TCC			<b>60.0</b>
This product is CERCLA: If this product under the require and Liability Ac if there may be SARA TITLE III: Under the provis Reauthorization Immediate health This information Reporting Require	is accidentally s ements of the Con t (CERCLA). We r other local repor '''' ions of Title III Act, this product Delayed Health may be subject	spilled, it mprehensive recommend ye rting requi I, Sections t is classi h, Fire. to the prov	is not subje Environmenta ou contact lo rements. 311/312 of fied into the isions of the	ect to any spec al Response, Co ocal authorities the Superfund A a following haz e Community Rig	ial reporting mpensation, s to determine mendments and ard categories: ht-to-Know
SECTI	ON 8 TYPICA	L PHYSIC	AL & CHEMI	CAL PROPERT	IES
SPECIFIC GRAVITY 0.79 at 68 SOLUBILITY IN WA 100.00 at 68 SP. GRAV. OF VAP Greater than 1.00	TER, WT. % AT	9 2 *F: V 3 Air=1): F	6 at 100 30 at 131 ISCOSITY OF at 68	RE, mmHg at ' LIQUID, CST TING POINT,	AT °F:

JISOPROPYL ALCOH		2 2	PAGE: DATE PREPARED: MSDS NO.:	5 MAY 3, 1993 90230000
EVAPORATION RATE, n- 2.3		BOILING PO 180 to 181	INT, <sup>°</sup> F:	
	SECTION 9	REACTIVITY	DATA	
STABILITY: Stable CONDITIONS TO AVOID Not Applicable	INSTABILITY:	HAZARDOUS I Will not occ	POLYMERIZATION: Cur	6
MATERIALS AND CONDIT Caustics, amines, alkar chlorinated compounds. HAZARDOUS DECOMPOSIT None	nolamines, aldehyde:	COMPATIBILITY s, strong oxidi	t: zing agents, and	
	SECTION 10 ST	ORAGE" AND	ANDLING	
No, but use proper grou STORAGE TEMPERATURE.	LATION HAZARD: nding procedure °F:		045744	
NO, but use proper grou STORAGE TEMPERATURE, Ambient TORAGE/TRANSPORT PRI Atmospheric	nding procedure °F:	Ampient	OADING TEMPERATU Ading/unloading	
Ambient TORAGE/TRANSPORT PRI	nding procedure °F:	VISC. AT LO		
Ambient TORAGE/TRANSPORT PRI	nding procedure °F:	VISC. AT LO		
Ambient TORAGE/TRANSPORT PRI	nding procedure °F:	VISC. AT LO		
Ambient TORAGE/TRANSPORT PRI	nding procedure °F:	VISC. AT LO		
EVISION SUMMARY:	nding procedure °F: ESSURE, mmHg:	Ambient VISC. AT LO 3	ADING/UNLOADING	
EVISION SUMMARY: Since SEPTEMBER 15, 1992	nding procedure °F: ESSURE, mmHg:	Amplent VISC. AT LO 3 revised in Sec RED:	ADING/UNLOADING	TEMP., cST

### U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

MANUFACTURER'S NAME	
W.R. Grace & Co., Davison Chemical Division	EMERGENCY TELEPHONE NO.
ADDRESS (Number, Street, City, State, and ZIP Code) 3rd St. & Railroad Ave., P. O. Box 436, South Pittsburg CHEMICAL NAME AND SYNONYMS	. Tennessee 37380
CHEMICAL FAMILY TRADE NA Raney (	AME AND SYNONYMS Cobalt Catalyst #27
90% Co	6 10% AL & Al203

SECTION	N 11 -	HAZA	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS PIGMENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV
	<u>ે .</u>	N.A.	BASE METAL CO	90	(Units)
CATALYST		N.A.	ALLOYS		N.A.
SOLVENTS	_	N.A.	METALLIC COATINGS		N.A.
ADDITIVES		N.A.	FILLER METAL PLUS COATING OR CORE FLUX		N.A.
DTHERS		N.A.	OTHERS		
		N.A.	× *		
HAZARDOUS MIXTURE	S OF C	THER LIC	DUIDS, SOLIDS, OR GASES	×	TLV (Units)
Not Applie	cable	2	9.		
		25		┽╌┤	

	SECTION III	PHYSICAL DATA	
BOILING POINT ("F.)	N.A.		lbs/gal
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT, VOLATILE BY VOLUME (%)	1087 ga.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE	0
SOLUBILITY IN WATER	Insol.	=1)	N.A
APPEARANCE AND ODOR		0 micron typical particle size	8.

SECTION	IV - FIRE AND E	EXPLOSION HAZARD DA	τ.	
N.A		FLAMMABLE LIMITS		Uei
EXTINGUISHING MEDIA Wat SPECIAL FIRE FIGHTING PROCEDURES	er			
SPECIAL FIRE FIGHTING PROCEDURES Material is shipped in wat generate heat. Use water,			ll smolder a	nd
chlorite) to cool down and	quench smolder	ing material.	(sodium hyp	00-

k.	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 09						
dive	HERCULES INCORPORATED	HERCULES* RESIN 731D						
Ner	Hercules Plaza	Disproportionated rosin,						
$( \bigcirc )$	Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hr <b>;</b> @)	MOLTEN or SOLID						
	Phone #: (302) 394-3000 (24 mg)	MSDS No.: 874 7301 0100-03						
	Supersedes MSDS No.: 874 7301 0100-02							
	I. PRODUCT IDENTIFICATION							
	<i>y</i>	[:						
	A. HERCULES* RESIN 731D Disproportionate	ed rosin, MOLTEN						
	DANGER! MOLTEN RESIN. CAUSES PRODUCT MAY BURN IF I	S SEVERE BURNS ON CONTACT. GNITED.						
	APPEARANCE AND ODOR: Pale amber, viscous rosin odor	-						
	B. HERCULES* RESIN 731D Disproportionate	ed rosin, SOLID						
	VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MI	.1						
	APPEARANCE AND ODOR: Amber-colored solid or flake; typical rosin odor							
	CASRN: 8050-09-7	HMIS RATINGS:(1)						
		Health hazard: 0 Minimal						
		Flammability hazard: 1 Slight						
		Reactivity hazard: 0 Minimal						
	CHEMICAL & COMMON NAME: Disproportionated	l rosin						
	* Registered Trademark of Hercules Incorpo	prated						
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification S</li> <li>CASRN: Chemical Abstracts Service Registre</li> <li>AIHA WEEL: American Industrial Hygienists</li> <li>Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Admin</li> <li>TLV: Registered trademark of American Correlations</li> </ul>	ry Number Association - Workplace histration. hference of Governmental Industrial						
$\bigcirc$	TWA: Time Weighted Average STEL: Short term exposure limit (See 29 CF C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 29 N/A: Not applicable	FR 1910.1048, March 1, 1989, revision) CFR 1910.1000, March 1, 1989, rev.)						

.

4

r 🕋

MSDS No.: 874 7301 0100-03

Date: 04/02/93

9

II.	HAZARDO	DUS INGREDI	ENTS &	EXPOSURE	LIMITS		
		interprets including					

dated August 24, 1987, this product should NOT be considered a health hazard. If this product is used in a manner that could generate particulates (dust), Hercules recommends that the dust be treated as a NUISANCE PARTICULATE

(Particulates Not Otherwise Classified) as defined by the American Conference of Governmental Industrial Hygienists (ACGIH) or (Particulates not otherwise Regulated) as defined by OSHA.

> RECOMMENDED AIRBORNE LEVELS 1992-1993 TLV-TWA OSHA TWA

> > acetate

1

Particulates not Otherwise classified/regulated

15 mg/m3 total 10 mg/m3 5 mg/m3 respirable fraction

If this product is heated to temperatures sufficient to produce smoke or fumes, the TLV-TWA of 0.1 mg/m3 (as formaldehyde), for rosin core solder pyrolysis products should be observed.

\_\_\_\_\_ III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

\_\_\_\_\_\_ SOLUBILITY IN WATER: Negligible BOILING POINT: N/A VAPOR PRESSURE AT 20 C: Not determined SPECIFIC GRAVITY: 1.06 pH: N/A VAPOR DENSITY: N/A VOLATILE (WT.),%: Not determined EVAPORATION RATE: Slower than butyl

SOFTENING POINT: 80 C (176 F)

10

Y ..

MSDS No.:	874	7301	0100-	-03
-----------	-----	------	-------	-----

Date: 04/02/93

4

Ł

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

A. MOLTEN product

CAUTION! PRODUCT MAY BURN IF IGNITED.

B. SOLID product

WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS).

-----

FLASH POINT: 209 C (408 F) COC

FLAMMABLE LIMITS: Not determined

AUTOIGNITION TEMPERATURE: Not determined

EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon

SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. Apply water to MOLTEN RESIN fires from a safe, protected location to avoid body contact with hot resin.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May form flammable dust-air mixtures.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: None

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide, smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids also may be formed.

HAZARDOUS POLYMERIZATION: Will not occur.

•

Conti	nued
FOOTNOTE	5:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements ard Categories" HC-1 Immediate (acute) health hazard
	HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH NOT a health hazard NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Section 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
CONTAINEI RELIABLE	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE

PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 7870s

## Monsanto MATERIAL SAFETY DATA

MONSANTO PRODUCT NAME

ADIPIC ACID, RESIN GRADE

MONSANTO COMPANY 800 N. LINDBERGH BLVD. ST. LOUIS, MO 63167 EMERGENCY PHONE NO. (CALL COLLECT) 314-694-1000

### **PRODUCT IDENTIFICATION**

Hexanedioic acid Synonyms: 1,4-butanedicarboxylic acid  $\mathbf{T}_{\mathbf{A}}$ Chemical Formula: HOOC(CH<sub>2</sub>)<sub>4</sub>COOH 124-04-9 This product appears on the inventory of Chemical Substances published by the U.S. CAS No.: Environmental Protection Agency (EPA) under the authority of the Toxic Substances Control **TSCA Inventory:** Act (TSCA) DOT Proper Shipping Name: ORM-E, Solid, N.O.S. (adipic acid) (for bulk shipments) DOT Hazard Class/I.D. No .: ORM-E/NA9188 DOT Label: Not Applicable U.S. Surface Freight Classification: Adlpic Acid Reportable Quantity (RQ) Under DOT (49 CFR) and CERCLA Regulations: Adipic Acid, 5000 pounds SARA Hazard Notification j,

Hazard Categories under criteria of SARA Title III rules (40 CFR Part 370: Immediate

Section 313 Hazardous Chemical(s): Not Applicable

Hazardous Chemical(s) under OSHA Hazard Communication Standard:

This substance is identified as a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

#### WARNING STATEMENTS

CAUTIONI MAY CAUSE EYE IRRITATION COMBUSTIBLE DUST - EXPLOSION POTENTIAL

### PRECAUTIONARY MEASURES

Keep away from heat, sparks and flame. Avoid creating a dust cloud in handling, transfer and clean up. Avoid contact with eyes. Wash thoroughly after handling.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

10/000

## MONSANTO MATERIAL SAFETY DATA ADIPIC ACID, RESIN GRADE

FIRST AID: IF IN EYES, immediately flush with plenty of water. Remove material from skin and clothing. Get medical attention if irritation persists.

IN CASE OF:

SPILL or LEAK, vacuum or sweep up and place into containers for disposal.

# **OCCUPATIONAL CONTROL PROCEDURES**

Eye Protection: Where there is significant potential for eye contact, wear chemical goggies and have eye flushing equipment available.

Skin Protection: Although adipic acid does not present a significant skin concern, minimize skin contamination by following good industrial practice. Wearing of protective gloves is recommended. Wash hands and contaminated skin after handling.

Respiratory Protection: Avoid breathing dust, vapor and/or mist. Use NiOSH/MSHA approved respiratory protection equipment (full faceplece recommended) when airborne exposure is excessive (see below). Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NiOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

Airborne Exposure Limits:

Product: Adipic Acid

À

Although OSHA and ACGIH have not established specific exposure limits for this material, they have established limits for nuisance dusts:

OSHA PEL/8-hour Time-weighted average: Total 15 mg/m<sup>3</sup>; respirable 5 mg/m<sup>3</sup> ACGIH TLV/8-hour Time-weighted average: Total 10 mg/m<sup>3</sup>

These limits are stated only to indicate the least stringent airborne dust exposure levels applicable to nuisance dusts. Adipic acid may cause mild eye and respiratory tract irritation at exposure concentrations below these limits.

.1

# FIRE PROTECTION INFORMATION

Flash Point: 385°F

Method: Cieveland Open Cup

Meiting Point: 305°F

Ignition Temperature: 450°F

Extinguishing Media: Water spray or any Class A extinguishing agent.

#### MONSANTO MATERIAL SAFETY DATA ADIPIC ACID, RESIN GRADE

#### Page 3 of 4

### FIRE PROTECTION INFORMATION (continued)

Special Firefighting Procedures: Firefighters and others who may be exposed to products of combustion (see "Hazardous Decomposition Products" below) should wear full protective clothing including self-contained breathing apparatus. Fire fighting equipment should be thoroughly decontaminated after use.

Unusual Fire and Explosion Hazards: Adipic acid is a combustible dust. When mixed in sufficient quantities in air, explosive concentrations can occur.

# REACTIVITY DATA

Materials to Avoid: None known.

Hazardous Decomposition Products: Cyclopentanone may form. No other uniquely hazardous decomposition products are expected. If the product is burned, as with any organic material, carbon monoxide, carbon dioxide, smoke, and soot can be produced.

Ϋ́,

Hazardous Polymerization: Does not occur.

#### **HEALTH EFFECTS SUMMARY**

The following information summarizes human experience and results of scientific investigations reviewed by health professionals for hazard evaluation of adipic acid and development of Precautionary Measures and Occupational Control Procedures recommended in this document.

#### Effects of Exposure

Inhalation and skin contact are expected to be the primary routes of occupational exposure to adipic acid. Occupational exposure to this material-has-not-been-reported to-cause significant-adverse health effects. -However, based on available information, exposure to adipic acid may produce mild eye and/or respiratory tract irritation.

#### Toxicological Data

Data from Monsanto studies and from the available scientific literature indicate the following:

Single dose (acute) studies indicate:

Oral - Practically Nontoxic (Rat LD50 - 5,050 mg/kg) Dermal - Practically Nontoxic (Rabbit LD50 - >7,940 mg/kg) Eye irritation - Moderately irritating (Rabbit, 18.2/110.0) Skin irritation - Nonirritating (Rabbit, 4-hr. exposure, 0.0/8.0)

No adverse effects were reported in rats exposed to adipic acid by repeated inhalation. Rats given adipic acid in their diets for two years showed no increase in tumors. No birth defects were reported in mice, rats or hamsters given adipic acid orally during pregnancy. No adverse genetic changes were reported in standard tests using bacterial, animal and human cells, and animals.

#### Additional Information

Adipic acid is GRAS (Generally Recognized As Safe). The United States Food and Drug Administration regulates it for use as a direct food additive and an indirect additive in packaging material that has direct food contact under several sections of part 21 CFR (Code of Federal Regulations).

## MONSANTO MATERIAL SAFETY DATA ADIPIC ACID, RESIN GRADE

#### PHYSICAL DATA

!

Appearance: White crystalline powder Melting Point: 152°C Bolling Point: 337.5°C Solubility in Water @ 20°C: 1.90 g/100 mi @ 90°C: 83.0 g/100 mi

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

# SPILL, LEAK & DISPOSAL INFORMATION

Adipic Acid is designated as a hazardous substance by the Environmental Protection Agency (EPA) under the Federal Water Pollution Control Act - 40 CFR 116.4, CERCLA - 40 CFR 302.4, and DOT 49 CFR 172.101 Appendix. Spills of 5,000 ibs. or greater must be reported to the appropriate Regulatory Authorities.

Waste Disposai: Adipic acid is not a "hazardous waste" as that term is defined in the Resource Conservation and Recovery Act (RCRA), 40 CFR 261, "identification and Listing of Hazardous Waste". Burn in an approved incinerator or dispose of in an approved chemical landfill in accordance with all applicable local, state and federal laws an regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

Spill or Leak Procedures: Avoid creating a dust cloud as this material, if dispersed in air, could present a potential dust explosion hazard. Vacuum or sweep up spills and place into containers for later disposal as recommended above. Use vacuum, guipment designed specifically for handling combustible dusts.

DATE: 7/17/90

SUPERSEDES: 9/25/89

# FOR ADDITIONAL NON-EMERGENCY INFORMATION, CONTACT:

Manager, Product Safety Fibers & Intermediates Division Monsanto Chemical Company A unit of Monsanto Company 314-694-1000

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.



UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC. Industrial Chemicals Division

# MATERIAL SAFETY DATA SHEET

#### EFFECTIVE DATE: 01/28/91

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

#### I. IDENTIFICATION

Y

PRODUCT NAME: DIETHYLENETRIAMINE, COMMERCIAL GRADE

CHEMICAL NAME: Ethyleneamine Mixture

CHEMICAL FAMILY: Ethyleneamines

FORMULA: Not Applicable

MOLECULAR WEIGHT: Not Applicable

SYNONYMS: DETA C: DETA - Comm. C-DETA, C-DTA

CAS # and Not Applicable CAS NAME: Not Applicable (mixture)

**II. PHYSICAL DATA** (Determined on typical material)

BOILING POINT, 760 mm Hg: 207 C (404 F)

FREEZING POINT: Sets to glass below - 61C (-78F)

SPECIFIC GRAVITY(H2O = 1): 0.955 at 20/20 C VAPOR PRESSURE AT 20'C: 0.07 mm Hg

VAPOR DENSITY (air = 1): 3.5-3.6 SOLUBILITY IN WATER by wt:

EVAPORATION RATE (Bulyi Acetate = 1): 0.009

APPEARANCE AND ODOR: Water-white liquid; mild amine odor.

Copyright 1985, 1989, 1991 Union Carbide Chemicals & Plastics Technology Corp. UNION CARBIDE is a Trademark of Union Carbide Corporation EMERGENCY PHONE NUMBER: 1–800–UCC-HELP (Number available at all times) or 304–744–3487

> UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC. Industrial Chemicals Division 39 Old Ridgebury Road, Danbury, CT. 06817-0001

. . . .

III. INGREDIENTS					
MATERIAL	%	TLV (Units)	HAZARD		
Diethylenetriamine (CAS# 111-40-0)	89-93	1ppm TWA, ACGIH and OSHA	See Section V		
Aminoethylpiperazine (CAS# 140-31-8)	7-11	None established	See Section V		
IV. F	IRE AND	EXPLOSION HAZA	RD DATA		
FLASH POINT (lest method(s)):	210 F. I 215 F. (	Pensky-Martens closed cu Cleveland open cup ASTM I	p ASTM D93 D92		
FLAMMABLE LIMITS IN AIR, % by volume:		OWER: Not determine JPPER: Not determine	-		
EXTINGUISHING MEDIA:	Apply alco technique:	bhol-type or all-purpose-t s for large fires. Use CO2	ype foams by manufacturers' recommende or dry chemical media for small fires.		
SPECIAL FIRE FIGHTING PROCEDURES:	this may c	ause splattering and increa	r or foam into hot, burning pools; ase fire intensity. Use protective stained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Oxides of	nitrogen will be evolved.			
		HEALTH HAZARD	ΔΤΑ		
EXPOSURE LIMIT(S):	See Sec	tion III.			
EFFECTS OF SINGLE OVERI	EXPOSUR	E:			
SWALLOWING:	vomiting, c The nature the amoun	fiarrhea, dizziness, weakne e and severity of these sig	of mouth and threat, abdominal pain, nause ss, thirst, collapse and possible coma. ns and symptoms will be dependent on the lungs may occur during ingestion		
SKIN ABSORPTION:	Proionged harmful an	or widespread exposure m nounts of material.	ay result in the absorption of potentially		
INHALATION:	sensation nausea an	of the nose and throat, co d vomiting. Extremely high Some individuals may devel	excessive tear formation, burning ughing, wheezing, shortness of breath, vapor concentrations may cause lung op asthma. (See "Other Effects of		
SKIN CONTACT:	Causes se	vere local redness, swelling	g and chemical burns.		
EYE CONTACT:	Corneal in may possi	vere conjunctival irritation, jury may be marked, exten bly lead to permanent impa disturbances of vision. (S	sive, and if not promptly treated, irment of vision. Vapor may cause		

EFFECTS OF REPEATED OVEREXPOSURE:

Repeated exposure to high concentrations of vapor may cause injury to liver,

•

	kidney, and respiratory tract.
MEDICAL CONDITIONS AG	GRAVATED BY OVEREXPOSURE: Because of its irritating properties, this material may aggravate an existing dermatitis. Breathing of vapor and/or mists may aggravate asthma and inflammatory or fibrotic pulmonary disease.
SIGNIFICANT LABORATOR HEALTH HAZARD EVALUA	Y DATA WITH POSSIBLE RELEVANCE TO HUMAN TION: This material contains N-aminoethylpiperazine which has exhibited evidence weak mutagenic activity in standard in vitro test systems. Materials of closely related chemical structure do not exhibit carcinogenic potential in lite-time mouse skin painting studies. The relevance of mutagenic activity this material to potential health hazards in man is not known at the present time.
OTHER EFFECTS OF OVE	<ul> <li>REXPOSURE:</li> <li>Inhalation of ethylenearnines may cause sensitization of the respiratory tract, and the development of an asthmatic reaction on further exposure.</li> <li>There may be some susceptible' individuals who develop long-term hyperreactive airways, asthma and other respiratory injury following exposure to extremely low concentrations of ethylenearnines, even below the irritation threshold. Other respiratory irritants may produce a reaction in individuals whose airways have become hyperreactive.</li> <li>"Since there are no definitive screening methods available to identify susceptible individuals, we suggest that people with asthma, or other long-standing respiratory conditions (for example, chronic bronchitis, emphysema, etc.) should be protected from any potential exposure to ethylenearnines.</li> <li>Skin contact may cause sensitization and an allergic skin reaction.</li> <li>Cross-sensitization may also occur by skin contact with this material and other amines.</li> </ul>
EMERGENCY AND FIRST A	ID PROCEDURES:
SWALLOWING:	If patient is fully conscious, give two glasses of water or milk at once. Do not induce vomiting. Obtain medical attention without delay.
SKIN:	Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Obtain medical attention. Wash clothing before wearing again. Discard shoes.
INHALATION:	Remove to fresh air. Give artificial respiration if not breathing. Oxygen may be given by qualified personnel if breathing is difficult. Obtain medical attention.
EYES:	Immediately flush eyes thoroughly with water and continue washing for at least 15 minutes. Obtain medical attention, preferably from an ophthalmologist, urgently.
NOTES TO PHYSICIAN:	There is no specific antidote. Treatment should be directed at the control of symptoms and the clinical condition of the patient. Due to the corrosive nature of the material, swallowing may lead to severe ulceration and inflammation of the upper alimentary tract with hemorrhage and fluid loss. Also, perforation of the esophagus or stomach may occur, leading to mediastinitis or peritonitis and the resultant complications. Due to the severely corrosive nature of the material, any aspiration during vomiting could result in severe lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. However, the acute peroral systemic toxicity of the material indicates that evacuation of the stomach contents should be undertaken at the earliest possible time by means carrying the least likelihood for aspiration (e.g. the use of gastric lavage with endotracheal intubation). Exposure to the vapor may cause minor edema of the corneal epithelium. This condition, referred to as "glaucopsia." "blue haze," or "blue-gray haze," produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure, and leaves no sequelae. Although not detrimental to the eyp per se, glaucopsia predisposes an affected individual to physical accidents, and reduces the ability to undertake skilled tasks such as driving a motorized vehicle.

.

•

	VI. REACTIVITY DATA
STABILITY: Stable	
CONDITIONS TO AVOID	Some decomposition can occur upon vigorous heating; e.g., application of high-pressure steam or flame.
NCOMPATIBILITY (materia	als to avoid): Avoid contamination with acids, epoxides, oxidizing agents, aldehydes, ketones, acrylates and organic halides.
HAZARDOUS COMBUSTIO	N OR DECOMPOSITION PRODUCTS: Burning can produce carbon monoxide, carbon dioxide and oxides of ritrogen. Vigorous heating above ambient temperatures can produce ethylenediamine, other volatile amines and ammonia.
HAZARDOUS POLYMERIZ	ATION: Will Not Occur
CONDITIONS TO AVOID	: None
	VII. SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IF M	IATERIAL IS RELEASED OR SPILLED: Wear suitable protective equipment; avoid contact with liquid and vapors! Small spills could be flushed with large amounts of water. Larger spills should be collected for disposal. Avoid discharge to sewers or waterways. This product is resistant to biodegradation in a biological wastewater treatment plant. A large spill could be toxic to the biomass in a treatment plant or could be toxic to fish. Therefore, avoid discharge to sewers or to natural waters.
WASTE DISPOSAL METHO	D: Incingrate in a furnace where permitted under appropriate Federal, State, and local regulations.
VIII	. SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTI	ON (specify type): Positive pressure supplied air respirator equipped with a full facepiece should be used during any operation where there is potential for release of this product to workplace air.
VENTILATION:	This product should be confined within closed equipment, in which case general (mechanical) room ventilation should be satisfactory. Special local ventilation is needed at points where vapors can be expected to escape to workplace air.
PROTECTIVE GLOVES:	Butyl or Neoprene
EYE PROTECTION:	Monogongles
OTHER PROTECTIVE EQU	IPMENT: Eye bath, safety shower, and chemical apron
	IX. SPECIAL PRECAUTIONS

Harmful and corrosive if swallowed. Harmful if inhaled or absorbed through skin. May cause asthma with possible long-term lung damage. May cause allergic skin reaction. Cross-sensitation to other amines may occur. Combustible. Aspiration may cause lung damage. May cause liver, kidney and respiratory system damage. Do not get in eyes, on skin on clothing. Do not swallow. Avoid breathing vapor. Keep away from heat and flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.
FOR INDUSTRY USE ONLY

process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

> Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical, Vapors."

> > 1

#### X. REGULATORY INFORMATION

#### STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

#### FEDERAL EPA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

\*\*\* None \*\*\*

# Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

\*\*\* NONE \*\*\*

#### Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are: 121 None \*\*\*

#### STATE RIGHT-TO-KNOW

**CALIFORNIA Proposition 65** 

This product does not contain materials which the State of California has

#### found to cause cancer, birth defects or other reproductive harm.

.

#### MASSACHUSETTS Right - To - Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are: HAZARDOUS SUBSTANCES ( => 1%)

		UPPER BOUND
CHEMICAL	CAS NUMBER	CONCENTRATION %
Diethylenetriamine	111-40-0	93.0
N-Aminoethylpiperazine	140-31-B	11.0

PENNSYLVANIA Right-To-know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBS	TANCES (≈> 1%)	
		UPPER BOUND
CHEMICAL	CAS NUMBER	CONCENTFATION %
Diethylenetriamine	111-40-0	93.0
N-Amirice thylpiperazine	140-31-8	11.0

Toxic Substances Control Act(TSCA) STATUS: The ingredients of this product are on the TSCA inventory.

#### CALIFORNIA SCAQMD RULE 443.1 VOC'S: Not presently available

#### OTHER REGULATORY INFORMATION:

\*\*\* None Known \*\*\*

NOTE ----

The opinions expressed are those of qualified experts within Union Carbide. We believe that the information contained is current as of the date of the Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide, -it is the user's obligation to determine the conditions of safe use of the product. REVISED SECTIONS: Revisions in this MSDS occurred in the following sections:

λ

Section V: HEALTH HAZARD DATA

ï,

à.

Section IX: PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

1

PC: 26237 F NUMBER: N0140D

(	MATERIAL SAFETY DATA SHEET HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	$S = \frac{1}{4} \frac{4}{5} \frac{3}{7}$ PAGE: 01 of 07 HERCULES* AMINE D Hydroabietylamine MSDS No.: 856 2181 0100-02
	Supersedes MSDS No.: 856 2181 0100-01	Date: 04/30/93
	I. PRODUCT IDENTIFICATION	ي.
		In the second of
	DANGER! CAUSES SKIN AND EYE	BURNS, POSSIBLE BLINDNESS.
ĩ	HERCULES* AMINE D Hydroabietylamine	HMIS RATINGS: (1)
	CASRN: 61790-47-4	Health hazard: 3 Serious Flammability hazard: 1 Slight Reactivity hazard: 1 Slight
	CHEMICAL & COMMON NAME: Rosin amine	
$(\bigcirc$	APPEARANCE AND ODOR: Pale amber, viscous	liquid; faint ammonia odor
	* Registered trademark of Hercules Incorp	oorated
*	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification</li> <li>CASRN: Chemical Abstracts Service Regist</li> <li>AIHA WEEL: American Industrial Hygienists Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Admi</li> <li>TLV: Registered trademark of American Connectional Hygienists for Threshold Limit Value</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29 CC)</li> <li>C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 20 N/A: Not applicable</li> </ul>	ry Number Association - Workplace nistration. onference of Governmental Industrial les. CFR 1910.1048, March 1, 1989, revision) CFR 1910.1000, March 1, 1989, rev.)

-

MSDS No.: 856 2181 0100-02 Date: 04/30/93 PAGE: 02 of 07 HAZARDOUS INGREDIENTS & EXPOSURE LIMITS 11. WT % CHEMICAL & COMMON NAMES: CASRN RECOMMENDED AIR-BORNE LEVELS (1) OSHA PEL TLV-TWA 61790-47-4 100 Rosin amine Not established Not established If this product is heated to temperatures sufficient to produce smoke or fumes, the TLV-TWA of 0.1 mg/m3 (as formaldehyde), for rosin core solder pyrolysis products should be meserved. III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS BOILING POINT: 344 C (651 F) decomposes SOLUBILITY IN WATER (WT., % AT 100 C): < 0.5 λ. VAPOR PRESSURE AT 20 C: < 1 mm Hg SPECIFIC GRAVITY: 1.00 Υ., VAPOR DENSITY: Not determined pH: N/A VOLATILE (WT.,%): None EVAPORATION RATE: Slower than butyl acetate FREEZING POINT: Viscosity increases 1. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA \_\_\_\_\_ FLASH POINT: 207 C (404 F), Setaflash Closed, Cup FLAMMABLE LIMITS: Not determined AUTOIGNITION TEMPERATURE: 221 C (430 F) EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide or halon SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. UNUSUAL FIRE AND EXPLOSION HAZARDS: None STABILITY CONSIDERATIONS: Stable INCOMPATIBILITY WITH: None HAZARDOUS DECOMPOSITION PRODUCTS: None known. HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide, nitrogen oxides, ammonia and hydrogen cyanide. Depending on conditions, aldehydes and carboxylic acids also may be formed. HAZARDOUS POLYMERIZATION: Will not occur.

MSDS No.: 856 2181 0100-02 Date: 04/30/93 PAGE: 03 of 07

Э.

•

/. HEALTH H/	AZARD DATA
DAI	NGER! CAUSES SKIN AND EYE BURNS, POSSIBLE BLINDNESS.
SIGNS AND SYMP EYES:	TOMS OF OVEREXPOSURE IN THE WORKPLACE: Droplet contamination can cause redness, swelling, pain, tearing. Splash may cause corneal injury or permanent blindness.
SKIN:	Redness, itching, pain, swelling and rash. Can cause severe, slow-healing burns and permanent scarring. (See below: Medical conditions generally recognized as being aggravated by exposure.)
INGESTION: INHALATION:	Diarrhea, intestinal discomfort, nausea, xomiting.
EYES: Imme	RST AID PROCEDURES: diately flush with plenty of low pressure water for at least Remove any contact lenses to ensure thorough flushing. Call a
clothing.	ptly wash with soap and running water. Remove contaminated If signs of irritation apppear, see a physician. Wash clothing e. Discard contaminated leather articles.
quantities	If conscious, the person should immediately drink large of liquid to dilute this product. Call a physician. NEVER give an unconscious person.
INHALATION: Call a phys	Remove to fresh air. Treat any irritation symptomatically. ician.
	SICIAN: Use only soap and water to remove from skin. Use of y increase skin injury.
This produc derivatives (sensitizat contact. H caused by i thorough se sensitizati	IONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: t contains rosin or a rosin derivative. Rosin and some of its have been reported to cause an allergic skin reaction ion) in susceptible individuals after repeated or prolonged skin ercules Incorporated is unaware of any allergic skin reactions ndustrial exposure to this product or similar materials. A earch of Hercules medical records has disclosed no case of skin on to rosin or its derivatives from industrial exposure in our lone have been reported by our customers.
PRIMARY ROUTES	OF ENTRY: Eyes, Skin
-	· A,

Continued...

٨

1

;

	2 2
• • •	Continued
CAN	CER INFORMATION: Not listed as a carcinogen by NTP (National Toxicology Program); not regulated as a carcinogen by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).
REF	ORTED HUMAN EFFECTS: Contact with the neat product for two hours caused skin irritation in human subjects. Contact for short periods (15 minutes or less) did not produce irritation. Contact with 1 to 2% aqueous solution for several hours did not produce irritation.
	Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.
REI	ORTED ANIMAL EFFECTS: Oral LD50, rats - 2500 mg/kg. Oral LD50, guinea pigs - 700 mg/kg. Corrosive to eyes and skin. Skin injury had delayed onset.
ΟΤΙ	IER: Negative in Ames test.
VI	SPILL PROCEDURES & WASTE DISPOSAL
SP	LL PROCEDURES:
WA S	TE DISPOSAL METHOD: Incineration in accordance with local, state, and federal regulations is the preferred method.
	Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

· · · · · ·		
MSDS No.: 856 2181 0100-02	Date: 04/30/93	PAGE: 05 of 07
VII. APPLICABLE CONTROL MEASUR		
APPROPRIATE HYGIENIC PRACTICES: Do not allow eye or skin con Avoid breathing vapor. Wash thoroughly after handli Remove contaminated clothing	tact, ng, and before eating, dri	nking, or smoking.
PERSONAL PROTECTIVE EQUIPMENT: Impervious gloves Chemical goggles Face shield Appropriate protective cloth Appropriate respiratory prot contaminant is likely to exc selected and used in accorda manufacturer's recommendatio Personnel exposed to hot mol that provides protection fro suit (or other heat resistan recommended.	ection is required when ex eed acceptable limits. Re nce with:OSHA, Subpart I ( ns. ten material should wear p m thermal burns. Full fac	spirators should be 29 CFR 1910.134) and protective clothing se shield, lined rain
WORK PRACTICES: Eyewash fountains and safety HANDLING AND STORAGE PRECAUTION Store in a cool, dry, well-v	S:	accessible.
ENGINEERING CONTROLS: Adequate ventilation should acceptable exposure limits. comply with applicable air p	be provided to keep vapor Discharge from the ventil	ation system should
PROTECTIVE MEASURES DURING REPA Eliminate ignition sources. Completely isolate and thoro before beginning maintenance		piping or vessels

-

MSDS No.: 856 2181 0100-02

Date: 04/30/93

ĺ

 $\overline{\mathbf{O}}$ 

VIII. ENVIRONMENTAL & REGULATORY DATA

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CASRN	WT. PERCENT
Ρ	HERCULES* AMINE D Hydroabietylamine	61790-47-4	100

2

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
Ρ	N/A	N/A	HC-1, NPH	NO
			Υ.	

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. TSCA STATUS

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Contir	nued
FOOTNOTES	):
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	
"Haza	ard Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Ac of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A:	

WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

2

Doc. No. 1554s

8 10 10

· .

MATERIAL SAFETY DATA SHEET

NSDS: OR 026C DATE: 9/21/83 PAGE: 1 of 2

HERCULES	<b>INCORPORATED</b>	
WILMINGTO	N, DELAWARE,	19894

PHONE NUMBERS: Regular - 302-594-5000

After Normal Business Hours and Only for Emergencies involving Safety and Health - 302-995-3000

1. PRODUCT IDENTIFICATION Chemical Name & Synonyms: Dehydroabietylamine acetate paste Chemical Family: Amine salt CAS No:--Formula: C22H29O2N, Molecular Weight: Chief component, 345 AMINE DIM ACETATE 70% Trade Name: S., II. HAZARDOUS INGREDIENTS 3 % TLV-TWA VALUES ADOPTED BY ACGIN 1983-84 Material

Dehydroabietylamine acetate

Not established

in the second		·
III. PHYSICAL DATA		
Boiling Point: 100°C (212°F)(water)	Freezing Point:	Viscosity increases
Vapor Pressure: Not determined	Specific Gravity:	1.03
Vapor Density: 2.0	Percent Volatile:	30
(Air=1)	(By Volume)	
Solubility in Water @ 20°C: up to 50%	Evaporation Rate:	Slower; less than 1
рН: 6.9	(Butyl Acetate=1)	
	vinegar-like odor.	

70

IV. FIRE AND EXPLOSION HAZARD DATA		
Flash Point: 191°C (375°F) COC		
Autoignition Temperature: Not established	. •	5
Flammable Limits In Air, % by Volume: NA	• .	
Extinguishing Media: Water spray, dry chemical, foam, or carbon dioxi	lde. `	
Special Fire-Fighting Procedures: Cool containers with water if expos	ed to fire.	
Unusual Fire and Explosion Hazards: See SECTION VI REACTIVITY DATA.		

Notes: NA = Not Applicable.

The information contained herein is furnished without warranty of any kind. Product users should make independent judgments of suitability of this information to ensure proper use and protect the health and safety of employes.

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Introduction of water to storage vessel. If a two stage mixture results a slow exothermic reaction may be initiated.

An exotherm begins at 325°C (617°F).

**INCOMPATIBILITY:** (SPECIFIC MATERIALS TO AVOID) Acid, base, oxidizing materials as bleach and chlorine.

#### HAZARDOUS DECOMPOSITION PRODUCTS: hydrogen chloride

#### HAZARDOUS POLYMERIZATION:

Will occur with certain catalysts as strong acids or bases and compounds containing AI, Cu, Zn, Pb.

# 5. ENVIROMENTAL AND DISPOSAL INFORMATION

ACTION TO TAKE FOR SPILLS/LEAKS: Dilute with water. Use personal protective equipment as recommended during clean up. Use only sand to absorb spills. Warning: DO NOT USE CLAY BASED ABSORBANTS SUCH AS SPEEDI-DRI, MILLSORB ETC AS A VERY EXOTHERMIC, EXPLOSIVE REACTION WILL OCCUR. Use SODA ASH (Na<sub>2</sub>CO<sub>3</sub>) in conjunction with water which will react with the epichlorohydrin to yield glycerine.

#### **Disposal Method:**

Consult with local, state and federal officials.

#### 6. HEALTH HAZARD DATA:

#### EYE:

Will cause irritation and possible delayed corneal damage.

#### SKIN CONTACT:

Will cause irritation, burns and allergic skin reactions.

#### SKIN ABSORPTION:

The  $LD_{50}$  for skin absorption in rabbits is 515 mg/Kg. Single and repeated exposure can result in absorption in harmful amounts.

#### INGESTION:

The oral  $LD_{so} = 282 \text{ mg/Kg}$  for male rats, (175 mg/Kg for female rats.) Moderate to high oral

toxicity. Swallowing large amounts may death.

#### INHALATION:

 $LC_{50} = 2165$  ppm in female rats, 3617 ppm in male rats for 1 hr. Excessive vapor concentrations are easily attained and may cause unconsciousness and death. Effects may be delayed. Excessive exposure may cause irritation to upper respiratory tract.

#### SYSTEMIC AND OTHER EFFECTS:

May cause lung, liver and/or kidney effects. (kidney effects being most likely).

#### CARCINOGENIC STATUS:

Epichlorohydrin has been shown to cause cancer in laboratory animals. Epichlorohydrin is listed as a potential carcinogen by IARC and NTP.

#### **BIRTH DEFECTS:**

Unlikely to cause birth defects.

#### **REPRODUCTIVE EFFECTS:**

Studies have shown interference with fertility in males.

#### **MUTAGENICITY:**

(Effects in genetic material): Epichlorohydrin has been shown to have mutagenic activity in bacteria and animals. The correlation to humans is known.

#### 7. FIRST AID:

#### EYES:

Х'n

Immediately irrigate with water for 15 minutes. Promptly contact physician.

#### SKIN:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Gail a physician if irritation persists. Wash clothing before reuse. Destroy contaminated shoes. Seek medical attention immediately.

#### **INGESTION:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

#### INHALATION:

Remove to fresh air. Give Oxygen or artificial respiration if necessary. Seek medical attention.

## NOTE TO PHYSICIAN:

No specific antidote. Epichlorohydrin may cause delayed skin burns and these may be second degree burns with little or no warning. If burn is present treat as any thermal burn. Liver and Kidney should be monitored after a significant exposure. Lung functions should be followed after a significant single or intermittent inhalation exposure.

# 8. HANDLING PRECAUTIONS:

**EXPOSURE GUIDELINES:** 

ACGIH TLV and OSHA PEL are 2 ppm, skin.

# **EYE PROTECTION:**

Use chemical goggies. Eye wash fountain should be located in immediate work area.

### **VENTILATION:**

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

# **RESPIRATORY PROTECTION:**

Use an approved air purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded use an approved positive pressure breathing apparatus.

#### SKIN PROTECTION:

Use neoprene or other protective clothing Impervious to this material. Contaminated leather items should be removed and destroyed.

# 9. ADDITIONAL INFORMATION:

# SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Do not get in eyes, on skin or clothing.

Do not breathe vapors. Storage tanks should be blanketed with nitrogen, and the oxygen content should be maintained below nine percent. (9%)

# 10. NFPA HAZARD RATING:

4	=	EXTREME	HEALTH	
3	=	HIGH	FIRE	
2	=	MODERATE	REACTIVITY	5
1	=	SLIGHT	SPECIFIC	
0	=	INSIGNIFICANT		•

U = INSIGNIFICANI

λ

 $\mathbf{v}_{i+1}$ 

# **11. REGULATORY INFORMATION**

# STATUS ON SUBSTANCE LISTS:

The concentrations shown in this document are maximum or ceiling levels (expressed

In weight %, unless otherwise specified) to be used for regulations. Trade Secrets are indicated by "TS".

#### FEDERAL EPA:

## COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, and LIABILITY ACT of 1980 (CERCLA):

requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.4.

Components present in this product at level which could require reporting under the statute are:

Chemical CAS# / wt % RQ

epichlorohydrin 106-89-8 >99% 100#

#### SUPERFUND AMENDMENTS and REAUTHORIZATION ACT of 1986 (SARA) TITLE III:

Sections 301-304 require emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (Rqs) in 40 CFR 355. Components present in this product at a level which could require reporting under this statute are:

Chemical	CAS#	WI % IPQ

epichlorohydrin 106-89-8 > 99% 1,000#

#### OTHER REGULATORY INFORMATION:

California Proposition 65: As defined in 22 California Code of Regulations, Division 2, Chapter 3, Article 7 : During normal use and processing of epichiorohydrin the exposure levels may exceed those of significant risk as defined in this communication standard.

This product is known to the state of California to cause cancer.

#### TOXIC SUBSTANCES CONTROL ACT (TSCA):

The components of this product are contained on the chemical substance inventory list.

Ł

Sections 311-312 require products to be reviewed and applicable EPA Hazard Definitions be identified and made known.

### EPA HAZARD CLASSIFICATIONS:

	Chronic Hazard		Pressure Hazard	Reactive Hazard
ye:	yez	yes	по	· · · · · · · · · · · · · · · · · · ·

Section 313 requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at level which could require reporting under the statute are:

1.

.1

Chemical	CAS#	<u>w1.%</u>
Epichlorohydrin	106-89-8	> 99%

If you are unsure if you must report more information, call the EPA Emergency Planning and Right-To-Know Hot Line : 800-535-0202 or 202-479-2449

---

(		MA	TERIAL	SAFETY	<b>DATA</b> \$ 5,080-21	PAGE 1
$\sim$	Shell			MSDS NUMBER		
( ) I		B736 RGENCY ASSIS	7 (4-85) TANCE	GENERAL MSDS		BE SAFE
	24 HOUR EMEI	AGENCI AGOIO		SHELL: 713	-241-4819  {	
	SHELL: 713-47	/3-9461 CHEMT	REC: 400-424-9300		\$/	AFETY INFORMATION AND PASS IT ON
	ACUTE HEALTH *	FIRE 3	2 HAZARD RATIN	IG LEAST - 0 SLIGHT	E - 4	PASS II ON PRODUCT LIVERITT LAW REQUIRES IT]
			c health effects refer to	the discussion in Sect	ion III	
	*Fo	r acute and chrome		IAME		
	SECTION I		<u> </u>			
3	PRODUCT	ICHLORDHYDRIN				
		CHLORO-2,3-EPOX	Y PROPANE			
		LOGENATED ALKYL	EPOXIDE			
		2410 32411				
	CODE					
	SECTION II-A		PRODUCT/INGREDI	ENT	CAS NUMBER	PERCENT
			COMPOSITION			
	NO.				106-89-8	100
$\frown$	P EPICHLO	ROHYDRIN				
$\bigcirc$			( <b>9</b> )			
(Lassar			ACUTE TOXICITY	DATA		
	SECTION II-			RMAL LD50	ACUTE INHALAT	IDN LCOU
	NO. ACUTE	ORAL LD50			500 PPM(4H)	(RAT)
	*********		754 MG/	<g (rabbit)<="" td=""><td>BOO FINK MAD</td><td></td></g>	BOO FINK MAD	
	P 90 MG P 236 M	S/KG (RAT) AG/KG (MOUSE)				
	·					
	· · · · · · · · · · · · · · · · · · ·		HEALTH INFORM	ATION		
	SECTION II	I *		*****************		ARD COMMUNICATION
		CONTEN	BELOW ARE CONSISTEN	WITH REQUIREMENT	S UNWER THE OSTAT TH	
	THE HEALTH STANDARD (	29 CFR 1910.120	).			MAGE INCLUDING
	EYE CONTAC BASED ON F	RODUCT TESTING	PRODUCT IS CORRDSIV	E TO THE EYES AND ATING TO THE EYES.	MAY CAUSE SEVERE DA	
	BLINUNESS				ADORS ARE ALSO IRRI	TATING TO THE
		SED VIT I VIE -	, PRODUCT IS CORROSI TESTING, PRODUCT MAN HARMFUL IF ABSORBED			
	INHALATIO BASED ON	N PRODUCT TESTING	3 PRODUCT MAY CAUSE SENSITIZATION AND RE	SEVERE IRRITATION SPIRATORY DEPRESSI DUCE LIVER, KIDNEY	ON. BASED ON PRODU	CT TESTING PRODUCT ND CNS DEPRESSION.
	INGESTION	N PRODUCT TESTIN ND CNS DEPRESSI	G PRODUCT IS TDXIC A	ND IS HARMFUL IF S	SWALLOWED; MAY PRODU	

4

. .**b**.:

MSDS 5,080-21 SIGNS AND SYMPTOMS IRRITATION AS NOTED ABOVE. KIDNEY DAMAGE MAY BE EVIDENCED BY CHANGES IN URINE OUTPUT, URINE PAGE 2 APPEARANCE OR EDEMA (SWELLING FROM FLUID RETENTION). LIVER DAMAGE MAY BE EVIDENCED BY LOSS OF APPEARANCE OR EDEMA (SWELLING FROM FLUID RETENTION). LIVER DAMAGE MAY BE EVIDENCED BY LOSS OF APPETITE, JAUNDICE (YELLOWISH SKIN COLOR) AND SOMETIMES PAIN IN THE UPPER ABDOMEN ON THE RIGHT SIALLY ON EXERTION, AND MAY BE ACCOMPANIED BY CHRONIC COUGH. SKIN SENSITIZATION (ALLERGY, MAY EVIDENCED BY RASHES, ESPECIALLY HIVES. LUNG SENSITIZTION (E.G., ALLERGY, ASTHMA) MAY BE EVIDENCED BY WHEEZING WITH SHORTNESS OF BREATH AND COUGH. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, AGGRAVATED MEDICAL CONDITIONS PREEXISTING EYE, SKIN, RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LIVER, KIDNEY, AND LUNG FUNCTIONS FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE IN THIS PRODUCT. TO THIS PRODUCT. PREEXISTING SKIN OR LUNG ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING OTHER HEALTH EFFECTS EPICHLOROHYDRIN HAS BEEN SHOWN TO BE CARCINOGENIC IN ANIMAL INHALATION, INTUBATION, AND DRINKING WATER EXPOSURE STUDIES. IT HAS BEEN CLASSIFIED AS AN ANTICIPATED HUMAN CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM (NTP). IT HAS BEEN CLASSIFIED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCED (TARC) AS A DROBABLE WIMAN CARCINOSEN (TARC CROUP CA) BASED ON THE SOLLOWING CONCLUSIONS. CANCER (IARC) AS A PROBABLE HUMAN CARCINOGEN (IARC GROUP 2A) BASED ON THE FOLLOWING CONCLUSIONS: CANCER (IARC) AS A PROBABLE HUMAN CARCINOGEN (IARC GROUP 2A) BASED ON THE FOLLOWING CONCLUSIONS: HUMAN EVIDENCE - INADEQUATE; ANIMAL EVIDENCE - SUFFICIENT. ECH HAS BEEN REPORTED TO PRODUCE INFERTILITY IN MALE RATS, BUT NO REPRODUCTIVE EFFECTS WERE OBSERVED IN THE FEMALE. SEE SEC VI FOR SUPPLEMENTAL HEALTH INFORMATION. SECTION IV ----------OCCUPATIONAL EXPOSURE LIMITS OSHA NO. PEL/TWA NU. FEL/INA FEL/VELLING ILV/INA ILV/JIEL Σ. SHELL INTERNAL STANDARD - 1 PPM(SKIN) TWA, 3 PPM(SKIN) STEL. ųν EMERGENCY AND FIRST AID PROCEDURES YE CONTACT MEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. INSE CONTINUOUSLY WITH WATER WHILE ON WAY TO GET MEDICAL ATTENTION. AMEDIATELY REMOVE CONTAMINATED CLOTHING OR SHOES, WIPE EXCESS FROM SKIN AND FLUSH WITH PLENTY OF ATTER FOR AT LEAST 15 MINUTES. USE SOAP IF AVAILABLE OR FOLLOW BY WASHING WITH SDAP AND WATER. DO IT REUSE CLOTHING UNTIL THOROUGHLY CLEANED. GET MEDICAL ATTENTION. CONTAMINATED LEATHER ITICLES, INCLUDING SHOES, CANNOT BE DECONTAMINATED AND SHOULD BE DESTROYED TO PREVENT REUSE. MOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL GESTION NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DRDWSY. OTHERWISE, GIVE NO MORE THAN 2 ASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC. IF IPECAC IS AVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK DF VICTIM'S TOAT WEED VICTIM'S HEAD BELOW HIDS WHILE VOMITING GET MEDICAL ATTENTION IMMEDIATELY \* WAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VUMITING BY TOUCHING FINGER TO BACK OF VICE ROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION IMMEDIATELY.\* "E TO PHYSICIAN SYMPTOMS SUCH AS LOSS DF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, TRIC LAVAGE SHOULD BE CONSIDERED FOLLOWING INTUBATION WITH A CUFFED ENDOTRACHEAL TUBE. TION VI -----------SUPPLEMENTAL HEALTH INFORMATION THE SIGNIFICANCE IS UNKNOWN, CHROMOSOMAL CHANGES HAVE BEEN OBSERVED IN HUMAN LYMPHOCYTES. HYDRIN HAS ALSO BEEN FOUND TO BE MUTAGENIC IN IN VITRO ASSAYS AND WITH BACTERIA AND ( ١

6

 $h_{i,i}$ 53

• *		
PRODUCT	NAME :	EPICHLOROHYDRIN

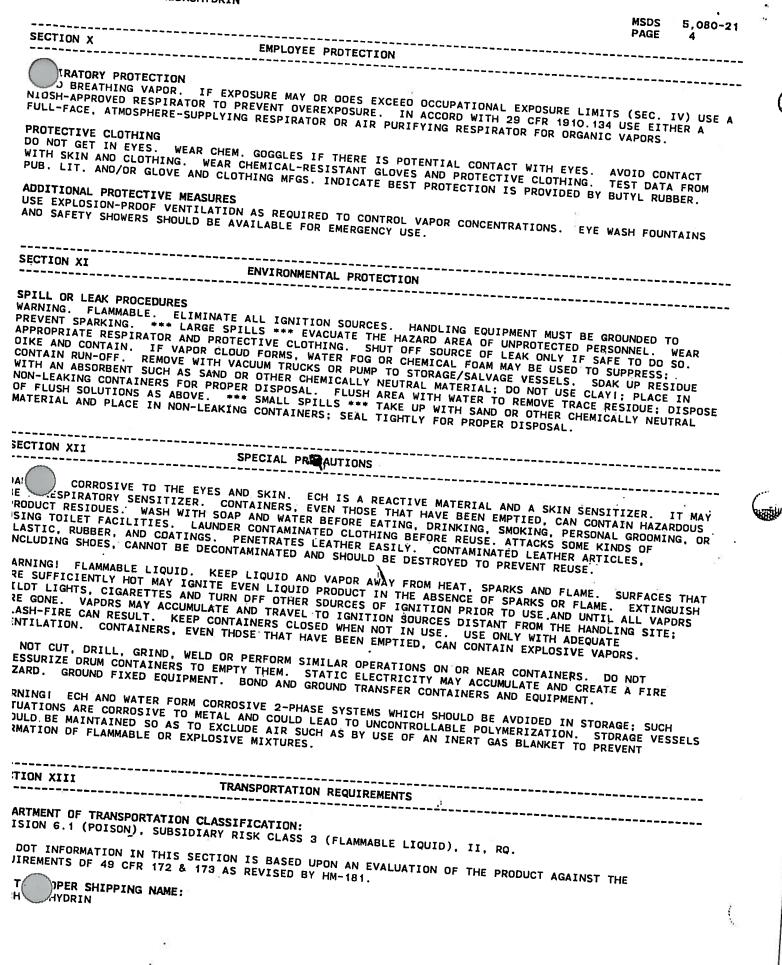
(

34

5

		· · · · · · · · · · · · · · · · · · ·			
		PHYSICAL DATA			
S	ECTION VII			VAPOR PRESSURE:	13 8 070 DEG F
-	OILING POINT: 239	SPECIFIC GRAV (H20=1)	ITY: 1.1B	(MM HG)	
	(DEG F)		6.690 (W)	VAPOR DENSITY: (AIR=1)	3.2
	MELTING POINT: -71 (deg f)	(IN WATER)	68 DEG 1		
E	EVAPORATION RATE (N-BUTYL AC	ETATE = 1): 1.35			
4	APPEARANCE AND ODOR: Colorless, mobile liquid, ir				•
	SECTION VIII	FIRE AND EXPLOS	IUN MALARDS		
	SECTION VIII			ITS /% VOLUME IN AIR	
	FLASH POINT AND METHOD: 87 DEG F TCC		FLAMMABLE LIN Lower: 3.8	UPPER: 21.0	
P	<b>EXTINGUISHING MEDIA</b> USE WATER FOG, FOAM, DRY CH	EMICAL OR CO2.			
	USE WATER FOG, FOAM, OKT OF SPECIAL FIRE FIGHTING PROCE WARNING. FLAMMABLE. CLEAR WITHOUT FULL BUNKER GEAR (H INCLUDING A POSITIVE PRESS CONTAINERS WITH WATER.	URE NIOSH APPROVED S			NITATNEDS EXPOS
	CONTAINERS WITH WATER. UNUSUAL FIRE AND EXPLOSION HANDLE AS A FLÅMMABLE LIQU TO INTENSE HEAT FRDM FIRES COULD RESULT IN CONTAINER COOLED WITH LARGE QUANTITI COMBUSTION MAY PRODUCE TOX GASES CAN CAUSE SEVERE LUN	RUPTURE. CONTAINER ES DF WATER AS NEEDI	ED TO PREVENT WE	NERS WHEN HEATED. BU VENT VAPOR PRESSURE BU D DIRECT FLAME CONTACT AKENING DF CONTAINER S DRIDE (CDRRDSIVE). EX	VILDUP WHICH SHOULD BE STRUCTURE. XPOSURE TO THES
		REACTIVITY		ها ها بي بي ها بي	
	SECTION IX			AND A COUR	
		HAZAF	RDOUS POLYMERIZA	ION: WILL OCCUR	
	STABILITY: STABLE	••••			
	CONDITIONS AND MATERIALS	TO AVOID:	MANES AND OXID	IZING AGENTS. AVOID LI	
	HALIDES) WHICH MAY PRODUC COPPER, MAGNESIUM, ZINC,	CE UNCONTROLABLE PUL LEAD AND THEIR ALLD	YS. AVOID HEAT S	PARKS, FLAMES AND TEM	PERATORIO
	ACID AND BASES SOUTHOUS HALIDES) WHICH MAY PRODUC COPPER, MAGNESIUM, ZINC, 600 DEG F.	CE UNCONTROLABLE PUL LEAD AND THEIR ALLD	YS. AVOID HEAT S	PARKS, FLAMES AND TEM	
	HALIDES) WHICH MAY PRODUC COPPER, MAGNESIUM, ZINC,	CE UNCONTROLABLE PUL LEAD AND THEIR ALLD	YS. AVOID HEAT S	PARKS, FLAMES AND TEM	

14 22



PRODUCT NAME: EPICHLOROHYDRIN		MSDS 5,080-21 PAGE 5
OTHER REQUIREMENTS: UN 2023, GUIDE 30.		
	REGULATORY CONTROLS	
SECTION ATA		
TRACE IMPURITY, CIS- THIS IMPURITY HAS	S NO COMMERCIAL PURPOSE I Case. Ection 313, The Attacheo	AL SUBSTANCES. THE PRODUCT CONTAINS A WHICH IS NOT LISTED ON THE TSCA N EPICHLOROHYDRIN, IT IS EXEMPT FROM ENVIRONMENTAL DATA SHEET (EDS) SHOULD
		RMATION
SECTION XV	STATE REGULATORY INFO	
THE FOLLOWING CHEMICALS ARE SPECIFIC AND SAFETY DATA IN OTHER SECTIONS OF Details on your regulatory requireme	ENTS YOU SHOULD CONTACT T	L STATES; OTHER PRODUCT SPECIFIC HEALTH PLICABLE FOR STATE REQUIREMENTS. FOR HE APPROPRIATE AGENCY IN YOUR STATE. STATE CODE
STATE LISTED COMPONENT	PERCENT	
EPICHLOROHYDRIN (CAS NO: 106-89-8 )	¥ ,100	CA, FL, IL, MA, ME, MN, NJ, PA, RI, CAG5
CIS-1,3-DICHLDROPROPANE (CAS ND: 10061-01-5)	0.04	MA
TRANS-1.3-DICHLDROPROPANE (Cas ND: 10061-02-6)	0.03	CA65
TRICHLOROPROPANE (CAS NO: 96-18-4 )	>0.01	
CA = CALIFORNIA HAZ. SUBST. LIST; C LIST; CT = CONNECTICUT TOX. SUBST. LA = LOUISIANA HAZ. SUBST. LIST; M	2A65 = CALIFORNIA SAFE DR LIST; FL = FLORIDA SUBST A = MASSACHUSETTS SUBST. EW JFRSEY HAZ. SUBST. LIS	INKING WATER AND TOXICS ENFORCEMENT ACT . LIST; IL = ILLINDIS TOX. SUBST. LIST; LIST; ME = MAINE HAZ SUBST. LIST; MN = T; PA = PENNSYLVANIA HAZ. SUBST. LIST;

MINNESOTA HAZ. SUBST. LIST; NJ = NEW JERSEY HA RI = RHODE ISLAND HAZ. SUBST. LIST.

-

THIS PRODUCT CONTAINS A CHEMICAL OR CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR REPRODUCTIVE TOXICITY.

SPECIAL NOTES SECTION XVI

¥ §

1

jî.

•

\_\_\_\_\_

THIS MSDS REVISION HAS CHANGES IN SECTION XIV.

.

NFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE VER. SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO R USE OF THE PRODUCT DESCRIBED HEREIN.	TO US AND IS BELIEVED TO BE CORRECT. The accuracy of these data or the
DATE PREPARED: APRIL 22, 1993	ESPONSIBILITY FOR INJURY FROM THE

٠

BE SAFE

-

READ OUR PRODUCT SAFETY INFORMATION ...AND PASS IT ON (PRODUCT LIABILITY LAW REQUIRES IT) J. C. WILLETT

SHELL OIL COMPANY PRODUCT SAFETY AND COMPLIANCE P. O. BOX 4320 HOUSTON, TX 77210

1

MSDS

PAGE

• •

.

(<sup>...</sup>

5,080-21

1

•

۲,

j,

	DENTIFICATION		R 5
MANUFACTURER • • • • • • • • • • • • • • • • • •	PREPARATION DATE .: 11 DATE MSDS PRINTED .: 7	/26/91 APR 29, 1992 Autor	• • 1
EM SCIENCE DIVISION OF EM INDUSTRIES . BOX 70 J DEMOCRAT RD. GIBBSTOWN, N.J. 08027	INFORMATION PHONE NUM	1BER .: 609-354-9200	
CATALOG NUMBER(S): SX1244 SX1244I SX1242 SX1244 748 732	PC SX1244Y SX1244T	SX1244TP 714	- <b>K</b>
CHEMICAL NAME:SULFURIC ACID TRADE NAME:OIL OF VITRIOL CHEMICAL FAMILY:MINERAL ACID FORMULA		Master File Co Not Remove Whis Copy	
2. COMPOSITION / INFORMATION ON I			
COMPONENT	CAS #	APPR %	
SULFURIC ACID			
	7664-93-9	100%	• 
AZARDS IDENTIFICATION		are a	*
ENCRGENCY OVERVIEW APPEARANCE CLEAR, COLORLESS VISCOUS LIQUID SHARP ODOR		ti tina A tina A	¥8 ⊼
`	,ı -	1 5	
OTENTIAL HEALTH EFFECTS (ACUTE A	ND CHRONIC)		r. ••
SYMPTOMS OF EXPOSURE: MEDICAL COND. AGGRAVATED BY EXPOSI ROUTES OF ENTRY	•••:	А)И - 1 8-0 	
• FIRST AID MEASURES	a synt fift i far	्र हो हो	et a l
• FIRST AID MEASURES	D) - SX1242 PAGE		e <sup>1</sup> , <u>t</u>
• FIRST AID MEASURES	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		2 <sup>1</sup> - 1 - 1
• FIRST AID MEASURES	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		et ., 1 2
• FIRST AID MEASURES	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		2 . L
• FIRST AID MEASURES	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		÷
• FIRST AID MEASURES	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		2.

EMERGENCY FIRST AID:

5. FIRE FIGHTING MEASURES

FIGHTING PROCEDURES: FIRE & EXPLOSION HAZARDS: FIRE FIGHTING MADIA

**6. ACCIDENTAL RELEASE MEASURES** 

SPILL RESPONSE: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE / PERSONAL PROTECTION. ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE FREE FROM EXPLOSION OR FIRE HAZARDS. CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL. COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA. EM SCIENCE RECOMMENDS SPILL-X NEUTRALIZERS AND ABSORBENT AGENTS FOR VARIOUS TYPES OF SPILLS. ADDITIONAL INFORMATION ON THE SPILL-X PRODUCTS CAN BE PROVIDED WROUGH THE EM SCIENCE TECHNICAL SERVICE DEPARTMENT 10 09) 354-9200. THE FOLLOWING EM SCIENCE SPILL-X NEUTRALIZER AND ABSORBENT IS. **RECOMMENDED FOR THIS PRODUCT:** 

7. HANDLING AND STORAGE

HANDLING & STORAGE:

8. EXPOSURE CONTROLS / PERSONAL PROTECTION A PROVIDE METERS

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION WORK / HYGENIC PRACTICES:

λ

й° ь

. 4. 60 W 2

1

145

. 98 U

. . . . 1

..

1. 1. 1. 1

MSDS (CONTINUED) - SX1242 PAGE # 2

EXPOSURE GUIDELINES OSHA - PEL: STEL TWA CL PONENT РРМ MG/M3 РРМ MG/M3 PPM MG/M3 SKIN : SULFURIC ACID 1 · 🔍 ACGIH - TLV: STEL TWA CL COMPONENT PPM PPM MG/M3 PPM MG/M3 MG/M3 SKIN SULFURIC ACID 1 3 λ **9. PHYSICAL AND CHEMICAL PROPERTIES** See. BOILING POINT (C 760 MMHG).:290+C SPECIFIC GRAVITY (H20 = 1).:1.844 60/60F PERCENT VOLATILE BY VOL (%):N/A N DENSITY (AIR = 1) .... : N/A  $E \sim ORATION RATE (BUAC = 1):1$ SOLUBILITY IN WATER (%)....:MISCIBLE APPEARANCE........... CLEAR, COLORLESS VISCOUS LIQUID; SHARP ODOR : 5 10. STABILITY AND REACTIVITY . . . . s., 1.,2 HAZARDOUS POLYMERIZATION: DOES NOT OCCUR HAZARDOUS DECOMPOSITION.: SOX, HYDROGEN (IN PRESENCE OF METALS) CONDITIONS TO AVOID .....: MATERIALS TO AVOID ..... (X)WATER ()ACIDS MSDS (CONTINUED) - SX1242 PAGE # 3

(X)BASES ()CORROSIVES (X)OXIDIZERS (X)OTHER :

TOXICOLOGICAL INFORMATION

TOXICITY DATA: TOXICOLOGICAL FINDINGS:

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS:D002 TREATMENT: SPECIFIED TECHNOLOGY - NEUTRALIZE TO PH 6-9. CONTACT YOUR LOCAL PERMITTED WASTE DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT SITES.

ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

A

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME...: SULFURIC ACID DOT TECHNICAL NAME....: ID NUMBER....:UN1830

14. REGULATORY INFORMATION

. .

SARA EHS (302)		SARA EHS TPQ (LBS)	CERCLA RQ (LBS)
, (and the set of the			
Y		1000	1000
,		** ** ** ** ** ** ** ** ** ** ** ** **	
	EHS	EHS	EHS EHS TPQ (302) (LBS)

OSHA SARA DEMINIMIS MSDS (CONTINUED) - SX1242 PAGE # 4

+ 11.54 - p.1

/

313 V.

ŧ

7

.

		Υ.		20 20	(%)	
SULFURIC ACIO	· * *				· 1.0	
COMMENTS: NONE NFPA HAZARD RATINGS: HEALTH : 3 FLAMMABILITY : 0 REACTIVITY : 2 SPECIAL HAZARDS: W			,¥			
REVISION HISTORY: 08/01/81 08/01/84 0 09/26/88 03/01/91 0	4/17/86 12 5/31/91	/06/86	06/19/87	10/27/87	01/26/	88
- = REVISED SECTION N/A = NOT AVAILABLE N/E = NONE ESTABLISHE			*			
THE STATEMENTS CONTAI ONLY AND ARE BASED UP ACCURATE. IT IS INTEN TECHNICAL SKILL AND A AND MANNER OF USE ARE IMPLIED, OF MERCHA	ON TECHNICA DED FOR USE T THEIR OWN OUTSIDE OU	L DATA TE ONLY BY DESCRET IR CONTRO	HAT EM SCI PERSONS H ION AND RI L, WE MAKE	LENCE BELI HAVING THE ISK• SINCE NO WARRA	EVES TO NECESS CONDIT	BE ARY IONS
PORTIONS COPYRIGHT AR RESTRICTED USE CONDIT INFORMATION IN THIS M RESEARCH CORPORATION' MONITORING SYSTEM (IC SUBJECT TO THE TERMS INDUSTRIES AND ARIEL DISTRIBUTION IS PROHI	IONS APPLY ISDS HAS BEE S INTERNAT RMS). USE C OF THE LICE RESEARCH CC	SELECTE N DERIVE IONAL CHE DF THIS D ENSE AGRE DRPORATIO	D REGULATO D FROM AR MICAL REGU ATA IS PRO EMENT BETU N. FURTHEU	DRY IEL JLATORY. JVIDED · - WEEN EM	<del>1</del> 5	
	msds – s)	(1242	PAGE # !	5		
	1.20					
						:
-		λ				

"ISSUED 05/30/92"

•

٠

#### ATTENTION: PLANT MANAGER OR SAFETY DIRECTOR

10.000

THIS IS TO NOTIFY YOU THAT THE PRODUCT OR PRODUCTS LISTED ABOVE, PROCEEDED BY SARA, CONTAIN CHEMICALS IN QUANTITIES THAT EXCEED THE DEMINIMUS 2002 CONCENTRATION SPECIFIED UNDER SECTION 313 OF THE EMERGENCY PLANNING AND CONCENTRATION SPECIFIED UNDER SECTION 313 OF THE EMERGENCY PLANNING AND CONCENTRATION SPECIFIED UNDER SECTION 313 OF THE EMERGENCY PLANNING AND CONCENTRATION SPECIFIED UNDER SECTION 313 OF THE EMERGENCY PLANNING AND CONCENTRATION SPECIFIED UNDER SECTION 313 OF THE EMERGENCY PLANNING AND CONCENTRATION TO FIGHT-TO-KNOW ACT OF 1986 AND 40 CFR PART 372. THIS PRODUCT O. KODUCTS IS THEREFORE SUBJECT TO THE SECTION 313 REQUIREMENTS FOR REPORTING TOTAL ANNUAL RELEASES OF THE NAMED CHEMICALS BY CERTAIN MANUFACTURING FACILITIES. PLEASE RETAIN THIS INFORMATION TO ASSIST YOU IN MEETING THESE REPORTING REQUIREMENTS.

A

۲.

j.

<sup>1179 1/85</sup> <b>MATERI</b> 6460-10-03-84-540	AL SAFETY DAT	A SHEET	2 DATE June 19	S-frl 1985 GON
PRODUCT NAME	C-1 ANTIFOAM		SUBSIDIARY O	F MERCK & CO., INC.
	SEC	CTION. 1		
MANUFACTURER'S NAME	Calgon Corporation		EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P. O. Box 1346, Pit	tsburgh, Pennsylvani	a 15230	
CHEMICAL NAME AIL	coxylated Alcohol Solution	FORMULA	Polyalkylene Oxide S	Solution

SEC	CTION IF	HAZARDO	US INGRED	ients			
	Allen ander vielen son. I		NAS D D AND SHOULD BE AND			TLV (Units)	
PRINCIPAL HAZARDOUS COMPONENT (S)	CAS #	% BY WEIGHT	ORAL LDs .	DERMAL LD, .	ACGIH	OSHA	OTHER
Chemical Name			• =				·
Common Name							
Chemical Name							
Common Name							
Chemical Name							
Common Name					<u> </u>		
Chemical Name							
Common Name				<u> </u>			<b></b>
Chemicai Name						<u>8</u>	
Common Name				i)		<u> </u>	<u> </u>

\* See Section V - Health Hazard Data for Toxicity Data on the product

BOILING POINT (° F)	> 212	SPECIFIC GRAVITY (H2 O=1)	1.04
VAPOR PRESSURE (mmHg.)	Similar to Water	PERCENT VOLATILE BY VOLUME (%)	~ 65
VAPOR DENSITY (AIR=1)	Similar to Water	pH 1% Solution	6.0
SOLUBILITY IN WATER	Complete	OTHER	•

1

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND

# FIRE AND EXPLOSION HAZARD DATA SH POINT [Method Used] Not Flammable JISHING MEDIA Product is not flammable. TECIAL FIRE FIGHTING -SOCEDURES Exercise caution when fighting any chemical fire. A [f-contained breathing apparatus is essential. JUSUAL FIRE AND -=LOSION HAZARDS None A ÷ŕ. AZARDDA EFFECT OF OVEREXPOSURE A. ACUTE The product would not be considered hazardous through ingestion. 1. INGESTION The acute oral $LD_{50}$ (rats) was found to be 38.4 ml/kg for the active ingredient in the product. Due to the low vapor pressure and inhalation hazard, the product would not be 2. INHALATION present under normal temperatures. However, inhalation testing on mists of compounds similar to the active ingredient in the product showed delayed lung damage and death at 84 mg/m<sup>3</sup> and 450 mg/m<sup>3</sup> (rat - 4 hour). ٩. 3. DERMAL EXPOSURE The product is practically non toxic through dermal absorption. a. TOXIC The acute oral LD<sub>50</sub> (rabbits) is > 20 ml/kg for the active ingredient in the product. ł The active ingredient in the product when applied to rabbit skin produced b. IRRITATION only slight capillary injection in 24 hours.

c. SENSITIZATION

Application of the active ingredient in the product on 50 human subjects produced slight evidence of sensitization in only one subject.

4. EYE IRRITATION

Only slight irritation was observed when the product was instilled in rabbit eyes.

۲.,

e,

B. SUBCHRONIC, CHRONIC, OTHER

No applicable information was found concerning adverse health effects resulting from subchronic and chronic exposure to the product.

# 

5

ι

FIRST AID

A. EYE

Good First Aid should be followed in all cases of exposure. In case of eye contact, flush with plenty of water for at least 15 minutes. If irritation develops, call a physician.

٩.

1

B. SKIN

Not Applicable

. • •

•

C. INGESTION

12

D. INHALATION

Not Applicable

Not Applicable

IMP.ntun - tintor

Y

3			•	
	SI			NAMES IN AN ADDRESS
STAPI' ITY	CONDITIONS			
·ATABILITY lials to Avoid)		g oxidizers		
AZARDOUS DECOMPOS		nal decomposition may pro	duce carbon monoxide and carbon	dioxide
	C S B C S C C C C C C C C C C C C C C C			
EPORTABLE QUANTITI N LBS OF EPA HAZARDO UBSTANCES IN PRODUC	S (RQ)		ΝΟΤΙΕΥ ΕΡΑ (	OF PRODUCT SPILLS
	2		EQUAL TO OR N/A	EXCEEDING
TEPS TO BE TAKEN IN C IATERIAL IS RELEASED R SPILLED	Dispo: as mu vermic	ch sphied material as possib	al, state and federal regulations. Di le. Remove any remaining material rbing material and place in a sealed	by absorbing an
ASTE DISPOSAL METHO	D	À		
	Dispos	e of in a landfill or incinera	te in accordance with local, state ar	•
	SECT	ION' VIII HANDLIN	G/STORAGE	
ROTECTIVE GLOVES			TECTION	
0	Not Re	equired	Not Required	
OTHING		equired		
ESPIRATORY PROTECTIO	N Not Re	quired		
INTILATION	LOCAL EXHAUST	Not Required	OTHER	
Normal	MECHANICAL (General)	Not Required	Not Require	d
ORAGE & HANDLING				
	Wash thoroughly after h	andling.		
	Keep container closed.			
	Exercise caution in the s	storage and handling of all (	hamical substances.	
-				
RECAUTIONS	None			
	None			

-----

.

			32.5		
· >ofe	) at	There is a function	ASHLAND CHE Subsidiary Of Ashia		24-HOUR Emergency
12-	MATERIAL SAFETY	Ashland	P.O. BOX COLUMBUS, OI		Telephone
**	DATA SHEET		(614) 889		(800) 274-5263 or (800) ASHLAND
$\hat{\mathbf{A}}$					
K	001444	POTASS	IUM SORBATE NF/FC	C GRAN	Page:
$\Gamma \bigcirc$			R 1910.1200 (THE HAZARD COMM		-
	*****************	******	*****	*******************	*********
		SORBATE NE/FCC GRAN	-		
	CAS NUMBER: 24634-61	-5	05 50 000 4100770		7524-003.003
	HERCULES INCORPOR	ATED	05 50 Q86 4133770-	Prepared: 11/16/ Supersedes: 08/17/ Print Date: 12/17/	/94
	P O DRAWER 1937 HATTIESBURG	MS 39401	PRODUCT: 3885100	Princ Date: 12/17	
			INVOICE: 032628 INVOICE DATE: 12/13/94		
			TO: HERCULES INCORPORATED	0.00401	
	ATTN: PLANT MGR./	SAFETY DIR.	HATTIESBURG	5 39401	
21		SECTION I	- PRODUCT IDENTIFIC	ATION	
	General or Generic ID:	SALTS			
	<b>4</b>	SEC	TION II - COMPONENTS		
	IF PRESE	NT, IARC, NTP AND OSHA	CARCINOGENS AND CHEMICALS SU III SECTION 313 ARE IDENTIFI	BJECT TO THE REPORT-	
	ING REQU	IREMENTS OF SARA TITLE SEE DEFIN	III SECTION 313 ARE IDENTIFI	ED IN THIS SECTION.	
	INGREDIENT		Percent PEL	TLV	Note
	POTASSIUM 2,4-HEXADIENOA	TE	100		(1)
	CAS #: 24634-61-5				
	Notes:			•	
	( 1) PEL/TLV NOT ESTABLI	SHED FOR THIS MATERIAL		10	
			ON III-PHYSICAL DA	TA	
	Boiling Point	NOT APPLICABLE			
	Vapor Pressure	NOT APPLICABLE			
	Specific Vapor Density	NOT APPLICABLE			<u></u>
$\cap$	Specific Gravity		······		1.360 77.00 Deg F
	Specific dravity			e (	77.00 Deg F 25.00 Deg C)
	Percent Volatiles	NOT APPLICABLE			
	Evaporation Rate	NOT APPLICABLE		<u> </u>	0
			RE AND EXPLOSION I	NFORMATION	
	FLASH POINT NOT APPLIC				
	EXPLOSIVE LIMIT	NOT APPLICABLE			
	EXTINGUISHING MEDIA: WA				340 I
			IC MATERIALS:, CARBON DIOXID	E AND CARBON MONOXIDE,	VARIOUS
	HYDROCARBONS, ETC.				
	FIREFIGHTING PROCEDURES PRESSURE DEMAND MO	: WEAR SELF-CONTAINED B DE WHEN FIGHTING FIRES.	REATHING APPARATUS WITH A FU	LL FACEPIECE OPERATED I	N THE PUSITIVE
	SPECIAL FIRE & EXPLOSIO	N HAZARDS: MATERIAL DEC	OMPOSES AT GREATER THAN 750	DEGREES F.	
	DUST MAY BE AN EXP			,	
	NFPA CODES: HEALTH	- 0 FLAMMABILITY- 1	REACTIVITY- 0		
		SECTI	DN V-HEALTH HAZARD	DATA	
	PERMISSIBLE EXPOSURE LE	VEL: NOT ESTABLISHED.			
	EFFECTS OF ACUTE OVEREX	POSURE:			
			MAS MAY INCLUDE STINGING, TEA N. SYMPTOMS MAY INCLUDE REDN	RING, REDNESS, AND SWEL	LING.
	SKIN - EXPOSURE MAY CAU BREATHING - EXPOSURE TO	SE MILD SKIN IRRITATION DUST IS POSSIBLE.	A. SYMPTOMS MAY INCLUDE REDN	ESS AND BURNING.	
			RACT)- PRE-EXISTING LUNG DISO	RDERS, E.G. ASTHMA-LIKE	CONDITIONS,
	MAY BE AGGRAVATED SWALLOWING - SINGLE DOS	BY EXPOSURE TO THIS MAT E ORAL TOXICITY IS LOW	FERIAL. . SWALLOWING SMALL AMOUNTS D GE AMOUNTS MAY BE HARMFUL.	URING NORMAL HANDLING 1	S NOT LIKELY
	SVMPTOMS MAY INCLUDE.				
	-GASTROINTESTINAL	IRRITATION (NAUSEA, VO	MITING, DIARRHEA)-		
<u></u>	FIRST AID:				
$\bigcirc$	IF ON SKIN: THOROUGHLY CONTAMINATED CLOTH	WASH EXPOSED AREA WITH	SOAP AND WATER. REMOVE CONT	AMINATED CLOTHING. LAU	JNDER
			, LIFTING UPPER AND LOWER LID	S OCCASIONALLY, GET MED	DICAL ATTENTION.
			F WATER AND INDUCE VOMITING E GIVE ANYTHING BY MOUTH TO AN		
	PLACING FINGER AT	BACK OF THROAT. NEVER	GIVE ANYTHING BY MOUTH TO AN	UNCONSCIOUS PERSON. GET	MEDICAL
			CONTINUED ON DACE		

		Subsidiary Ul Ashland Uil, Inc	Emerg	
MATERIAL SAFETY DATA SHEET	Ashland	P.O. BOX 2219 COLUMBUS, OHIO 43216 (614) 889-3333		ohone 274-5263 or ASHLAND
	2	¥2		1 (j. 1
A A		SORBATE NF/FCC GRAN		Page:
	SECTION V-HEALTH	HAZARD DATA (Continued)		
ATTENTION IMMEDIATELY.				
IF BREATHED: IF AFFECTED, REA BREATHING HAS STOPPED GI	NOVE INDIVIDUAL TO FRESH	AIR. IF BREATHING IS DIFFICULT, ADMINIS ON. KEEP PERSON WARM, QUIET AND GET MEDI	CAL ATTENTION.	
PRIMARY ROUTE(S) OF ENTRY:				
INHALATION, SKIN CONTACT	г			
	SECTION V	I - REACTIVITY DATA		
HAZARDOUS POLYMERIZATION: C/	ANNOT OCCUR			
STABILITY: STABLE			1	
INCOMPATIBILITY: NOT APPLIC				
		PILL OR LEAK PROCEDURES		100 C 10 70 80
STEPS TO BE TAKEN IN CASE MAT	Core (2000)			
SMALL SPILL: SWEEP UP MATERIA				
LARGE SPILL: SHOVEL MATERIAL	INTO CONTAINERS. THORO	NGHLY SWEEP AREA OF SPILL TO CLEAN UP AN	IY RESIDUAL MATE	RIAL.
WASTE DISPOSAL METHOD:				
SMALL SPILL: DISPOSE OF IN A	CCORDANCE WITH ALL LOCAL	, STATE AND FEDERAL REGULATIONS.		
		CABLE LOCAL, STATE AND FEDERAL REGULATIC		
		ECTIVE EQUIPMENT TO BE USE		
OR ADMINISTRATIVE CONTR	OLS SHOULD DE IMPLEMENTE	TERMINED OR DOCUMENTED, A NIOSH/MSHA JOIN OPER ENVIRONMENTAL CONTROL. OSHA REGULAT NDITIONS. (SEE YOUR SAFETY EQUIPMENT SUF ED TO REDUCE EXPOSURE.		R T ;RING
VENTILATION: PROVIDE SUFFICI BELOW LEVEL OF OVEREXPO	ENT MECHANICAL (GENERAL SURE (FROM KNOWN, SUSPEC	AND/OR LOCAL'EXHAUST) VENTILATION TO MAI TED OR APPARENT ADVERSE EFFECTS).	INTAIN EXPOSURE	
PROTECTIVE GLOVES: WEAR RESI				
ROTECTION: CHEMICAL SPL REGULATIONS ALSO PERMIT	ASH GOGGLES IN COMPLIANC OTHER TYPE SAFETY GLASS	CE WITH OSHA REGULATIONS ARE ADVISED; HON SES. CONSULT YOUR SAFETY REPRESENTATIVE	WEVER, OSHA •	
		PROLONGED SKIN CONTACT, WEAR IMPERVIOUS (		DTS.
		PRECAUTIONS OR OTHER COMME		mue e
		ADTIED SINCE ENDITED CONTAINEDS DETAIN DE	PODUCT RESTOLIES	

2

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED.SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

,1

MATERIAL SAFETY DATA SHEET



ASHLAND CHEMICAL, INC. Subsidiary of Ashalad Qit, Inc. P.O. BOX 2219 COLUMBUS, OHIO 43216 (614) 889-3333

24-HOUR Emergency Telephone 1 (800) 274-5263 or 1 (800) ASHLAND

#### DEFINITIONS

This definition page is intended for use with Material Safety Data Sheets supplied by the Ashland Chemical Company. Recipients of these data sheets should consult the OSHA Safety and Health Standards (29 CFR 1910), particularly subpart G – Occupational Health and Environmental Control, and subpart I – Personal Protective Equipment, for general guidance on control of potential Occupational Health and Safety Hazards.

λ

### SECTION I PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: Chemical family or product description.

DOT HAZARD CLASSIFICATION: Product meets DOT criteria for hazards listed.

#### SECTION II

#### **COMPONENTS**

Components are listed in this section if they present a physical or health hazard and are present at or above 1% in the mixture. If a component is identified as a CARCINOGEN by NTP, IARC, or OSHA as of the date on the MSDS, it will be listed and footnoted in this section when present at or above 0.1% in the product. Negative conclusions concerning carcinogenicity are not reported. Additional health information may be found in Section V. Components subject to the reporting requirements of Section 313 of SARA Title III are identified in the footnotes in this section, along with typical percentages. Other components may be listed if deemed appropriate.

Exposure recommendations are for components. OSHA Permissible Exposure Limits (PELS) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) appear on the line with the component identification. Other recommendations appear as footnotes.

#### SECTION III

#### PHYSICAL DATA

BOILING POINT: Of product if known. The lowest value of the components is listed for mixtures.

VAPOR PRESSURE: Of product if known. The highest value of the components is listed for mixtures.

**SPECIFIC VAPOR DENSITY:** Compared to AIR = 1. If the Specific Vapor Density of a product is not known, the value is expressed as lighter or greater than air.

**SPECIFIC GRAVITY:** Compared to WATER = 1. If Specific Gravity of product is not known, the value is expressed as less than or greater than water.

pH: If applicable.

**PERCENT VOLATILES:** Percentage of material with initial boiling point below 425 degrees Fahrenheit and vapor pressure above 0.1mm Hg at 68 F.

EVAPORATION RATE: Indicated as faster or slower than ETHYL ETHER, unless otherwise stated.

# SECTION IV

#### FIRE AND EXPLOSION DATA

FLASH POINT: Method identified.

EXPLOSION LIMITS: For product if known. The lowset value of the components is listed for mixtures.

HAZARDOUS DECOMPOSITION PRODUCTS: Known or expected hazardous products resulting from heating, burning or other reactions.

### SECTION IV (cont.)

EXTINGUISHING MEDIA: Following National Fire Protection Association criteria.

FIREFIGHTING PROCEDURES: Minimum equipment to protect firefighters from toxic products of vaporization, combustion or decomposition in fire situations. Other firefighting hazards may also be indicated.

SPECIAL FIRE AND EXPLOSION HAZARDS: States hazards not covered by other sections.

NFPA CODES: Hazard ratings assigned by the National Fire Protection Association.

### SECTION V

#### HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMIT: For product.

THRESHOLD LIMIT VALUE: For product.

<sup>1</sup> EFFECTS OF ACUTE OVEREXPOSURE: Potential local and systemic effects due to single or short term overexposure to the eyes and skin or through inhalation or ingestion.

EFFECTS OF CHRONIC OVEREXPOSURE: Potential local and systemic effects due to repeated or long term overexposure to the eyes and skin or through inhalation or ingestion.

FIRST AID: Procedures to be followed when dealing with accidental overexposure.

PRIMARY ROUTE OF ENTRY: Based on properties and expected use.

#### SECTION VI

#### REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Conditions to avoid to prevent hazardous polymerization resulting in a large release of energy.

STABILITY: Conditions to avoid to prevent hazardous or violent decomposition.

INCOMPATIBILITY: Materials and conditions to avoid to prevent hazardous reactions.

#### SECTION VII

#### SPILL OR LEAK PROCEDURES

Reasonable precautions to be taken and methods of containment, clean-up and disposal. Consult federal, state and local regulations for accepted procedures and any reporting or notification requirements.

### SECTION VIII PROTECTIVE EQUIPMENT TO BE USED

Protective equipment which may be needed when handling the product.

### SECTION IX

### SPECIAL PRECAUTIONS OR OTHER COMMENTS

Covers any relevant points not previously mentioned.

### ADDITIONAL COMMENTS

Containers should be either reconditioned by CERTIFIED firms or properly disposed of by APPROVED firms. Disposal of containers should be in accordance, with applicable laws and regulations. "EMPTY" drums should not be given to individuals. Serious accidents have resulted from the misuse of "EMPTIED" containers (drums, pails, etc.). Refer to Sections IV and IX.

	MATERIAL SAFETY DATA SHEET	PAGE: 01 OF 09
	HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894	KYMENE* 736 Wet strength resin
$(\bigcirc$	Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 595 6152 0200-03
	Supersedes MSDS No.: 595 6152 0200-02	Date: 11/12/93 12/\$/93
	I. PRODUCT IDENTIFICATION	
R	1,3-DICHLOROPROPANOL (1,3 1,3-DCP MAY CAUSE CANCER BA	ATING TO MUCOUS MEMBRANES. DAMAGE. ODUCT CONTAINS LESS THAN 18 -DCP). SED ON ANIMAL AND OTHER LABORATORY
	Risk of cancer depends on d	uration and level of exposure.
	KYMENE* 736 Wet strength resin	HMIS RATINGS: (1)
	CASRN: Mixture	Health hazard: 2 Moderate (2) Flammability hazard: 0 Minimal Reactivity hazard: 0 Minimal
	CHEMICAL & COMMON NAME: Water solution epichlorohydrin	of cationic amine polymer - n adduct
	APPEARANCE AND ODOR: Amber-colored liqu	uid; odorless
	(2) Indicates that there may be chronic of MSDS.	health effects present. See Section V
	* Registered Trademark of Hercules Inco	rporated
		1
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification</li> <li>CASRN: Chemical Abstracts Service Region</li> <li>AIHA WEEL: American Industrial Hygieniss</li> <li>Environmental Exposure Level</li> <li>OSHA: Occupational Safety and Health Addition</li> <li>TLV: Registered trademark of American</li> <li>Hygienists for Threshold Limit Vator</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29)</li> </ul>	on System rating for product as supplied. Stry Number Sts Association - Workplace Mainistration. Conference of Governmental Industrial Alues. 9 CFR 1910.1048, March 1, 1989, revision) 29 CFR 1910.1000, March 1, 1989, rev.)
	C: Ceiling exposure concentration (See SKIN: May be absorbed through skin (See N/A: Not applicable	e 29 CFR 1910.1048, March 1, 1989, rev.)

PAGE: 01 of 09

•

(

Date: 11/12/93

-

N 1 3

II. HAZARDOUS INGREDIENTS & POSURE LI	IMITS
CHEMICAL & COMMON NAMES:	RECOMMENDED AIRBORNE LEVELS(1) OSHA TWA TLV-TWA 1989-90
KYMENE* 736       100         1,3-Dichloropropan-2-ol       < 1	Not established Not established (3)
(3) 1,3-DCP is the principal by-product Although no TLV has been established workplace standard (TLV) of 2 ppm be	applied.
III. TYPICAL PHYSICAL & CHEMICAL CHARAC	TERISTICS
	SOLUBILITY IN WATER: Miscible
VAPOR PRESSURE @ 20 C: Similar to water	SPECIFIC GRAVITY: Not determined
VAPOR DENSITY: Negligible	pH: 2.5 - 3.0
<pre>% VOLATILE (VOL.): Not determined</pre>	EVAPORATION RATE: Similar to water
FREEZING POINT: - 0 C (32 F)	
IV. FIRE, EXPLOSION, & REACTIVITY HAZ	ARD DATA
FLASH POINT: Noncombustible - Water so	•
FLAMMABLE LIMITS: Not determined	
AUTOIGNITION TEMPERATURE: Not determin	ed
EXTINGUISHING MEDIA: None required. Product is dispersed However, water spray, dry chemical, fires involving this product.	in water and as such will not burn. foam, or carbon dioxide may be used on
SPECIAL FIREFIGHTING PROCEDURES: Use s	elf-contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: None	2
STABILITY CONSIDERATIONS: Stable	
INCOMPATIBILITY WITH: None	

. Continued...

4C.)

10

 $^{\circ}i$ 

•

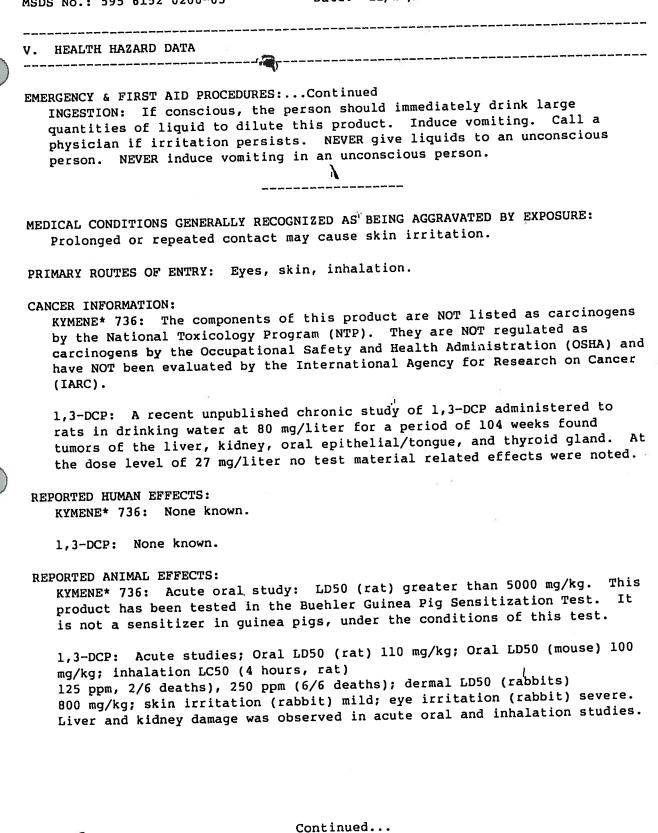
X

\*

DEQ-OPC

IV. FIRE, P	EXPLOSION, & REACTIVITY HAZARD DATA
Continued	
HAZARDOUS DEC	COMPOSITION PRODUCTS: None
This produced to nitrogen	ODUCTS OF COMBUSTION: uct is an aqueous solution that will not support combustion. If decomposition, it may generate carbon monoxide, carbon dioxide, oxides, or hydrogen chloride. Under some fire conditions, small f ammonia and hydrogen cyanide may be formed.
HAZARDOUS PO	LYMERIZATION: Will not occur.
 V. НЕАLTН Н	
WARNING!	PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. MAY CAUSE EYE IRRITATION.
	VAPOR AND MIST MAY BE IRRITATING TO MUCOUS MEMBRANES. MAY CAUSE LIVER AND KIDNEY DAMAGE.
	POSSIBLE CANCER HAZARD. RRODUCT CONTAINS LESS THAN 18
	1,3-DICHLOROPROPANOL (1,3-DCP). 1,3-DCP MAY CAUSE CANCER BASED ON ANIMAL AND OTHER LABORATORY
	STUDIES.
	Risk of cancer depends on duration and level of exposure.
SIGNS & SYM	TOMS OF OVEREXPOSURE IN THE WORKPLACE:
EYES:	May cause stinging and transient redness. Prolonged or repeated contact may cause skin irritation.
SKIN:	See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEIN
	AGGRAVATED BY EXPOSURE. DN: Inhaling vapor or mist may cause nasal and throat irritatio
INHALATI	and coughing.
INGESTIO	
EYES: I: water fo	FIRST AID PROCEDURES: n case of contact, immediately flush with plenty of low-pressure r at least 15 minutes. Remove any contact lenses to ensure flushing. Call a physician.
SKIN: P clothing	romptly wash with soap and running water. Remove contaminated . Wash clothing before reuse.
INHALATI Call a p	ON: Remove to fresh air. Treat any irritation symptomatically. hysician if irritation persists.
	Continued

Date: 11/12/93



Date: 11/12/93

# V. HEALTH HAZARD DATA

# REPORTED ANIMAL EFFECTS:...Continued

Subacute studies: In response to a TSCA test rule, a 13-week oral gavage study with 1,3-DCP was conducted with male and female rats at dose levels of 0.1, 1, 10, and 100 mg/kg body weight/day. The highest level produced decreases in body weight gain, feed consumption, and hematologic parameters, increases in clinical chemistry values and kidney and liver weight ratios. Histopathologic changes were noted in the stomach, kidney, liver, and nasal tissues in both male and female rats. Lesser effects were noted in the 10 mg dose groups; while 1 mg/day was considered a no-observed-adverse-effect level (NOAEL).

Male Wistar rats were exposed orally to 1,3-DCP by gavage at daily doses of 0, 15, or 60 mg/kg for 14 days. Differences between treated and control animals were observed in the appearance of small spermatocele or sperm granulomas in the efferent ducts and/or epididymis. These effects were seen in only a small number of animals and were not dose related. In addition, no morphological, changes were noted in kidneys, testes, or vas deferens. Studies conducted by the Upjohn Co. found 1,3-DCP to have no sterilant activity in male rats.

In an 8(e) submission to the EPA, a report of a two-year chronic feeding study in rats disclosed that tris (1,3-dichloropropan-2-ol) phosphate (CAS No. 13674-87-8) caused a statistically significant increase in malignant liver tumors (hepatocellular carcinomas) at 80 mg/kg/day, the highest dose studied. The significance of this study is that the product rapidly metabolized to 1,3-DCP and partial phosphate esters. Both partial esters were inactive in the Ames bacterial mutagen test in the presence of liver homogenate induction, whereas 1,3-DCP was mutagenic without activation (see below).

#### **OTHER:**

Genotoxicity: 1,3-DCP was active in the Ames salmonella bacteria test both in the presence and absence of a liver metabolizing fraction. It caused sister chromatid exchange and chromosome aberrations in Chinese hamster ovary cells in vitro and a mutation at the TK locus in the L5178Y line of mouse lymphoma cells in vitro. 1,3-DCP was active in all tests with and without activation by S-9 fraction from Aroclor\* induced rat liver.

ā.

\* Aroclor is a registered trademark of Monsanto Company for chlorinated biphenyl.

Continued...

2

V. HEALTH HAZARD DATA

...Continued

ADDENDUM:

Analyses of epichlorohydrin-polyamine and -polyamide resin solutions have consistently shown a very low (ppm) or nondetectable level of residual epichlorohydrin in the products as shipped. These products also contain various amounts of epichlorohydrin hydrolysis products (1,3-dichloropropan-2-ol and 3-chlonopropane-1,2-diol) often at de minimus levels. However, the concentration of these substances in the headspace of storage tanks may sometimes exceed the suggested atmospheric limits (see next paragraph). These tanks should be vented in such a way that epichlorohydrin hydrolysis products do not contaminate the air of the workplace and should be entered only while using an approved tank entry procedure.

Hercules Incorporated recommends that the user of this product establish a monitoring program for airborne levels of epichlorohydrin hydrolysis products. It is recommended that 2 ppm be used as an 8-hour TWA for exposure to each of these products by inhalation if they are found in the tank headspace or in the workplace air. If the user requires information or assistance in establishing a monitoring program, contact Hercules Incorporated for further information.



VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dike to contain and pump into drums for use or disposal. Clean surrounding area with soda ash.

WASTE DISPOSAL METHOD:

Incineration should be in accordance with local, state, and federal regulations. Supplemental fuel may be required.

When the drum is empty, rinse it with plenty of water before discarding.

Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

VII. APPLICABLE CONTROL MEASURES

APPROPRIATE HYGIENIC PRACTICES:

Do not allow eye or skin contact. Avoid breathing mist or vapors. Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse. •

1

*.*•

VII.	APPLICABLE CONTROL MEASURES	
Cc	ontinued	
Sa In Ag co se ma	ONAL PROTECTIVE EQUIPMENT: afety glasses mpervious gloves ppropriate respiratory protection required when exposure to airborne ontaminant is likely to exceed acceptable limits. Respirators should elected and used in accordance with OSHA Subpart I (29 CFR 1910.134) anufacturer's recommendations. ppropriate protective clothing	be and
	PRACTICES: yewash fountains and safety showers should be easily accessible.	
	LING AND STORAGE PRECAUTIONS: eep containers tightly closed.	
	NEERING CONTROLS: dequate ventilation shouling provided to keep mist and vapor oncentrations below acceptable exposure limits. Discharge from the entilation system should comply with applicable air pollution control egulations.	
Co	ECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, piping or vesse refore beginning maintenance or repairs.	ls
	ν	

•

Date: 11/12/93

\_\_\_\_\_

VIII. ENVIRONMENTAL & REGULATORY DATA

\_\_\_\_\_

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME Or Chemical component	CASRN	WT. PERCENT
P	KYMENE* 736 Wet strength resin	Mixture	100
1	1,3-Dichloropropan-2-ol	96-23-1	< 1

B. SARA TITLE III (See footnotes)

Component NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
P	N/A	N/A	HC-1, HC-2, NPH	N/A
1	N/A	N/A	HC-1, HC-2	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. Normal variations in this product may cause its pH to be equal to or less than 2.0. In those cases, the product exhibits the characteristic of CORROSIVITY (D002) as defined in hazardous waste regulation 40 CFR 261, Subpart C, and disposal of unused product must comply with the hazardous waste regulations. State or local hazardous waste regulations may apply if they are different from the federal regulation.

#### E. TSCA STATUS

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

SECTION V HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE Catalyst contains some compounds of platinum.
Platinum compounds can produce asthmatic or dermatitus symptoms in
some persons. Respirators, gloves recommended in handling fresh
EMENGENCY AND FIRST AID PROCEDURES catalyst. Remove any affected person from area and symptoms
disappear. See INSax "Dangerous Properties of Industrial Materials"
3rd edition, p. 1032.

			SECTION VI REACTIVITY DATA
STABILITY '	UNS	TABLE	CONDITIONS TO AVOID
· •	STA	BLE	
	Material	s to avoid)	NONE
HAZARDOUS DECO	APOSITIC	N PRODUCTS	5
HAZARDOUS	•	MAY OCCUR	CONDITIONS TO AVOID
POLYMERIZATION		WILL NOT OCCUP	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MAJERIAL IS RELEASED OR SPILLED

а .

HIGH VALUE PRODUCT - COLLECT ALL SPILLED MATERIAL - BUT NO HAZARD

WASTE DISPOSAL METHOD RETURN TO SUPPLIER FOR PLATINUM RECOVERY

Ň

-SECTION VIII SPECIAL PROTECTION INFORMATION RESPIRATORY PROTECTION (Specify type) TALYST USE RESPIRATOR WITH ACID RESISTANT CARTRIDGE PROVIDE GOOD VENTILATION SPECIAL VENTILATION MECHANICAL (General) OTHER SEE SECTION V . USE IN HANDLING FRESH CATALYST EYE PROTECTION SEE SECTION V ABOVE OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS NO STORAGE INCELLING AND STORING CONTAINERS CLOSED TO AVOID MOISTURE PICKUP. OTHER PRECAUTIONS SEE SECTION V ABOVE. PLATINUM COMPOUNDS CAN PRODUCE ALLERGIC

SYMPTOMS IN A SMALL PERCENTAGE OF PERSONS.



MSDS NO.:	595 6155 0500	REV.: 07
ISSUE DATE:	06/30/94	
SUPERSEDES:	595 6155 0500	REV.: 06
	08/30/91	

Hercules Incorporated Hercules Plaza Wilmington, DE 19894-0001 (302) 594-5000 (24 hrs)

Г

PRODUCT I	NAME:	KYMENE® 557H wet-strength resin	
APPEARAN	ICE: aqueous solution	HMIS RATI	NGS
COLOR:	amber	Health hazard:	2 MODERATE
ODOR:	odorless	Flammability hazard:	0 MINIMAL
	•		~
CASRN:	proprietary	Reactivity hazard:	0 MINIMAL
		n of a cationic amine polymer-epichlorohydrin adduct	
CHEMICAL	DESCRIPTION: aqueous solution	n of a cationic amine polymer-epichlorohydrin adduct	/t. %

1

#### 

Prolonged or repeated contact may cause skin irritation and may cause sensitization in susceptible individuals. May cause eye irritation.

Inhalation of vapor may be irritating to mucous membranes.

Inhalation of mist may be irritating to mucous membranes.

# POTENTIAL HEALTH EFFECTS:

Possible cancer hazard. Product contains 1,3-dichloropropan-2-ol, a component that may cause cancer based on animal and other laboratory studies. Risk of cancer depends on duration and level of exposure. Overexposure may cause kidney or liver damage.

Refer to Section 5 for Hazardous Combustion Products, and Section 10 for Hazardous Decomposition/Hazardous Polymerization Products.

# **SECTION 4: FIRST AID PROCEDURES**

### EYES:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

### SKIN:

Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse.

MSDS NO.:	595 6155 0500	REV.:	07	ISSUE DATE:	06/30/94	PAGE 2 OF 6
, 11000 110	333 0100 0000		•••	IOOOL DIATE.	00100101	

### INHALATION:

Remove to fresh air. Treat any irritation symptomatically. Get medical attention if cough or other symptoms evelop.

### **INGESTION:**

If conscious, drink large quantities of water. Induce vomiting. Get immediate medical attention. NEVER give anything by mouth to an unconscious person. NEVER induce vomiting in an unconscious person.

# **SECTION 5: FIRE HAZARDS**

### FIRE FIGHTING PROCEDURES:

This material is an aqueous dispersion and will not support combustion. Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear when fighting fires involving this product.

### **EXTINGUISHING MEDIA:**

Water spray, dry chemical, foam, carbon dioxide or halon may be used on fires involving this product.

### **CONDITIONS TO AVOID:**

None known.

### **HAZARDOUS COMBUSTION PRODUCTS:**

If heated to decomposition, the following substances may be formed: carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen chloride, ammonia and hydrogen cyanide.

# CTION 6: ACCIDENTAL RELEASE MEASURES

Add absorbent, sweep up and discard. For large spills, dike to contain and pump into drums for use or disposal. Clean surrounding area with soda ash.

jî,

In case of accidental spill or release, refer to Section 8, Personal Protective Equipment and General Hygiene Practices.

# **SECTION 7: HANDLING AND STORAGE**

### **GENERAL MEASURES:**

Keep container closed when not in use.

### MATERIALS OR CONDITIONS TO AVOID:

Avoid freezing.

# SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### **GENERAL HYGIENIC PRACTICES:**

Avoid breathing vapor or mists.

Avoid contact with eyes, skin, and clothing.

Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse.

JOMMENDED EXPOSURE LIMITS:



ł

ISSUE DATE:

06/30/94

1

			······································
Hazardous Component	Wt. %	Limit	Basis
dichloropropan-2-ol	0.5-5.0	2 ppm	Hercules recommended 8 hr. TWA
SONAL PROTECTIVE FOUR			

# SONAL PROTECTIVE EQUIPMENT: 🦓

# Impervious gloves

Safety glasses

Appropriate respiratory protection is required when exposure to airborne contaminants may exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations.

## WORK PRACTICES AND ENGINEERING CONTROLS:

Eyewash fountains and safety showers should be easily accessible.

Enter confined space only after assuring that concentrations of hazardous ingredients are within the allowable limits or while using NIOSH-approved, supplied-air breathing apparatus.

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

### **PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:**

Completely isolate and thoroughly clean all equipment, piping, or vessels before beginning maintenance or repairs.

# **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

pH:	4.6-4.9 (increases with age)				
Solids, %:	12.5	.1			
Solubility in Water:	miscible with water				
pecific Gravity:	1.03				
Vapor Pressure:	similar to water				
Vapor Density:	lighter than air				
<b>Evaporation Rate:</b>	similar to water				
<b>Boiling Point:</b>	212 º F	100 º C			
Freezing Point:	32 ° F	0 ° C			

# SECTION 10: STABILITY AND REACTIVITY

### **GENERAL STABILITY CONSIDERATIONS:**

Stable under recommended handling and storage conditions.

### **INCOMPATIBLE MATERIALS:**

None known

### HAZARDOUS DECOMPOSITION PRODUCTS:

None anticipated under normal or recommended handling and storage conditions.

### HAZARDOUS POLYMERIZATION:

Not anticipated under normal or recommended handling and storage conditions.

ISSUE DATE:

# SCTION 11: TOXICOLOGICAL INFORMATION

# REPORTED HUMAN EFFECTS:

PRODUCT/SIMILAR PRODUCT - This product may have sensitization potential at higher concentrations but does not produce an allergic response in more dilute concentrations. Repeated insult patch test of a 12% solution elicited a sensitization response in 2 of 52 subjects. A previous study using a 5% solution on 50 subjects produced neither irritation nor sensitization.

07

### **REPORTED ANIMAL EFFECTS:**

PRODUCT/SIMILAR PRODUCT - Acute oral LD50 (rat): 6834 mg/kg; Acute inhalation (4 hrs, rat): > 11.2 mg/liter. Eye irritation (rabbit): unwashed, moderate conjunctivitis through seven days, normal at 14 days; washed, all eyes normal by two days. Dermal irritation (rabbit): moderate (Draize score, 3/8). Not a skin irritant by FHSA standards. Acute oral LD50 (mouse) on 5% solution: > 2500 mg/kg; eye irritation (rabbit): mild conjunctivitis, normal in 48 hrs.

COMPONENT - 1,3-dichloropropan-2-ol Acute studies: Oral LD50 (rat) 110 mg/kg. Oral LD50 (mouse) 100 mg/kg. Inhalation LC50 (4 hrs, rat) 125 ppm, (2/6 deaths); 250 ppm (6/6 deaths). Dermal LD50 (rabbits) 800 mg/kg. Skin irritation (rabbit) mild; eye irritation (rabbit) severe. Liver and kidney damage was observed in acute oral and inhalation studies. Subacute studies: 13-week oral gavage (rat). Dose level of 100 mg/kg/day produced decreases in body weight gain, feed consumption, and hematologic parameters, increases in clinical chemistry values, and kidney and liver weight ratios. Doses of 1 mg/day considered as no-observed-adverse-effect level (NOAEL).

### CARCINOGENICITY INFORMATION:

PRODUCT/SIMILAR PRODUCT - Not listed as a carcinogen by NTP; Not regulated as a carcinogen by OSHA; and Not evaluated by IARC.

COMPONENT - 1,3-dichloropropan-2-ol: Chronic drinking water study in rats caused liver, kidney, oral and thyroid tumors at 80 mg/liter. No effect noted at 27 mg/liter.

### **MUTAGENICITY/GENOTOXICITY INFORMATION:**

PRODUCT/SIMILAR PRODUCT - No mutagenicity studies have been carried out with this product.

COMPONENT - 1,3-dichloropropan-2-ol: Active in the Ames test. Caused sister chromatid exchange and chromosome aberrations in Chinese hamster ovary cells and mutation of mouse lymphoma cells.

# **SECTION 12: ECOLOGICAL INFORMATION**

### ECOTOXICITY:

PRODUCT/SIMILAR PRODUCT - Cationic polymers, in general, exhibit high toxicity to aquatic organisms when tested in purified laboratory water. However, when tested in water supplemented with organic acids at a level simulating natural water conditions, the results demonstrated a 100-fold decrease in toxicity.

### Aquatic:

COMPONENT - polyamide resin: Acute aquatic 96-hour static LC50 values fall within the moderately toxic range of 1-10 mg/L. Fathead minnows and rainbow trout were the species tested. Salmon parr were also tested and the 96-hour static LC50 value was within the slightly toxic range of 10-100 mg/L.

COMPONENT - polyamide resin: Acute aquatic 48-hour static EC50 value falls within the moderately toxic range of 1-10 mg/L.

### -Biodegradability:

COMPONENT - polyamide resin: This product is not biodegradable.

# SECTION 13: DISPOSAL CONSIDERATIONS

# STE DISPOSAL METHOD:

Incineration in accordance with applicable regulations is the recommended disposal method. Supplemental fuel may be required. Wastewater containing this product can be considered for treatment in an acclimated biological treatment system.

# SECTION 14: TRANSPORTATION INFORMATION

For information regarding transportation of this product, please contact Hercules Transportation at (302) 594-7356.

# SECTION 15: REGULATORY INFORMATION

# CHEMICAL INVENTORIES:

U. S. TSCA Status: Included on TSCA inventory.

# SARA TITLE III

# Sections 302 and 304:

This product is not an Extremely Hazardous Substance subject to reporting under 40CFR355.

# Sections 311 and 312:

HC-1: Acute health hazard; HC-2: Chronic health hazard NPH: Not a physical hazard

# Section 313:

This product does not contain any chemicals subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40CFR372.

# CERCLA

This product does not contain any chemicals subject to reporting as a CERCLA Hazardous Substance under 40CFR302.4.

### RCRA

This product is not a hazardous waste as listed in 40CFR261.33. It does not exhibit any of the hazardous characteristics listed in 40CFR261, Subpart C.

# **SECTION 16: OTHER INFORMATION**

LIST OF ACRONYMS: ACGIH: American Conference of Governmental Industrial Hygienists AICS: Australian Inventory of Chemical Substances AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level ANSI: American National Standards Institute C: Ceiling CASRN: Chemical Abstracts Service Registry Number CERCLA: Comprehensive Emergency Response, Compensation and Liability Act **DSL: Domestic Substances List (Canadian)** EINECS: European Inventory of Existing Commercial Chemical Substances HMIS: Hazardous Materials Identification System RC: International Agency for Research on Cancer TI: Ministry of International Trade and Industry (Japanese) N/A: Not Applicable NDSL: Non-domestic Substances List (Canadian) NOR: Not Otherwise Regulated

ISSUE DATE:

1

NTP: National Toxicology Program OSHA: Occupational Safety and Health Administration PEL: OSHA Permissible Exposure Limit RA: Resource Conservation and Recovery Act : Reportable Quantity SARA: Superfund Amendment Reauthorization Act STEL: Short-Term Exposure Limit TLV: Threshold Limit Values (registered trademark of ACGIH) TPQ: Threshold Planning Quantity TSCA: Toxic Substances Control Act TWA: Time Weighted Average

The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with our products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

1

۴.

,ì

1

•



MSDS NO .:	595 6155 0600	REV.: 06
ISSUE DATE:	09/23/94	••••
SUPERSEDES:	595 6155 <b>060</b> 0	REV.: 05
	06/10/93	

rercules incorporated Hercules Plaza Wilmington, DE 19894-0001 (302) 594-5000 (24 hrs)

SECTION	SECTION 1: PRODUCT IDENTIFICATION											
PRODUCT	NAME:	KYMENE® 55	KYMENE® 557LX wet-strength resin									
APPEARAN	CE: liquid		HMIS RATI	NGS								
COLOR:	light amber		Health hazard:	1 SLIGHT								
ODOR:	odorless		Flammability hazard:	O MINIMAL								
CASRN:	proprietary	ý	<b>Reactivity hazard:</b>	O MINIMÁL								
CHEMICAL	DESCRIPTION:	aqueous solution of a cationic amin	e polymer-epichlorohydrin adduct									

# **SECTION 2: HAZARDOUS COMPONENT INFORMATION**

This product is not a health hazard according to the OSHA Hazard Communication Standard 29CFR1910.1200. The hazards identified for this product are based on pH.

# **CTION 3: HAZARDS IDENTIFICATION**

EMERGENCY OVERVIEW: CAUTION!

May cause eye irritation. May cause mild skin irritation. Inhalation of vapor may cause respiratory tract irritation. Inhalation of mist may cause respiratory tract irritation.

Refer to Section 5 for Hazardous Combustion Products, and Section 10 for Hazardous Decomposition/Hazardous Polymerization Products.

à.

SECTION 4:	FIRST AID PROCEDURES
EYES:	Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.
SKIN:	Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse.
INHALATION:	Remove to fresh air. Treat any irritation symptomatically. Get medical attention if cough or other symptoms develop.
INGESTION: -	If conscious, drink large quantities of water. Induce vomiting. Get immediate medical attention. NEVER give anything by mouth to an unconscious person. NEVER induce vomiting in an unconscious person.

# SECTION 5: FIRE HAZARDS

### **TIKE FIGHTING PROCEDURES:**

This material is an aqueous dispersion and will not support combustion. Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear when fighting fires involving this product.

### **EXTINGUISHING MEDIA:**

Water spray, dry chemical, foam, carbon dioxide or halon may be used on fires involving this product.

### **CONDITIONS TO AVOID:**

None known.

### **HAZARDOUS COMBUSTION PRODUCTS:**

If heated to decomposition, the following substances may be formed: carbon monoxide, carbon dioxide, smoke, nitrogen oxides, ammonia, hydrogen chloride, or hydrogen cyanide.

# SECTION 6: ACCIDENTAL RELEASE MEASURES

Add absorbent, sweep up and discard. For large spills, dike to contain and pump into drums for use or disposal. Clean surrounding area with soda ash.

In case of accidental spill or release, refer to Section 8, Personal Protective Equipment and General Hygiene Practices.

# SECTION 7: HANDLING AND STORAGE

### **GENERAL MEASURES:**

There are no unusual hazards associated with handling of this product.

# **MATERIALS OR CONDITIONS TO AVOID:**

None known

#### - Ť.

1

# SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### **GENERAL HYGIENIC PRACTICES:**

Avoid breathing vapor or mists. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling, and before eating, drinking or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse.

#### **RECOMMENDED EXPOSURE LIMITS:**

This product is not considered to present an inhalation health hazard under reasonably anticipated conditions of use.

#### PERSONAL PROTECTIVE EQUIPMENT:

Impervious gloves

## WORK PRACTICES AND ENGINEERING CONTROLS:

Eyewash fountains and safety showers should be easily accessible.

### PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

Sompletely isolate and thoroughly clean all equipment, piping, or vessels before beginning maintenance or repairs.

 $\overline{V}_{ik}$ 

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

pH:	2.8-3.2			
Solids, %:	12.5			
Solubility in Water:	miscible with water			
Specific Gravity:	1.03			
Vapor Pressure:	similar to water			
Vapor Density:	lighter than air			
Evaporation Rate:	similar to water			
<b>Boiling Point:</b>	212 º F	7	100 ° C	
Freezing Point:	32 ° F	1	0 ° C	

# SECTION 10: STABILITY AND REACTIVITY

### **GENERAL STABILITY CONSIDERATIONS:**

Stable under recommended handling and storage conditions.

### **INCOMPATIBLE MATERIALS:**

None known

### **ARDOUS DECOMPOSITION PRODUCTS:**

None anticipated under normal or recommended handling and storage conditions.

### HAZARDOUS POLYMERIZATION:

Not anticipated under normal or recommended handling and storage conditions.

# SECTION 11: TOXICOLOGICAL INFORMATION

### **REPORTED HUMAN EFFECTS:**

PRODUCT/SIMILAR PRODUCT - No human toxicity studies have been carried out with this product.

COMPONENT - polyamide resin: This product may have sensitization potential at Higher concentrations but does not produce an allergic response in more dilute concentrations. Repeated insult patch test of a 12% solution elicited a sensitization response in 2 of 52 subjects. A previous study using a 5% solution on 50 subjects produced neither irritation nor sensitization.

.1

### **REPORTED ANIMAL EFFECTS:**

PRODUCT/SIMILAR PRODUCT - No animal toxicity studies have been carried out with this product.

COMPONENT - polyamide resin: Acute oral LD50 (rat): 6834 mg/kg; Acute inhalation (4 hrs, rat): > 11.2 mg/liter. Eye irritation (rabbit): unwashed, moderate conjunctivitis through seven days, normal at 14 days; washed, all eyes normal by two days. Dermal irritation (rabbit): moderate (Draize score, 3/8). Not a skin irritant by FHSA standards. Acute oral LD50 (mouse) on 5% solution: > 2500 mg/kg; eye Irritation (rabbit): mild conjunctivitis, normal in 48 hrs.

### RCINOGENICITY INFORMATION:

PRODUCT/SIMILAR PRODUCT - Not listed as a carcinogen by NTP. Not regulated as a carcinogen by OSHA. Not evaluated by IARC.

06

**ISSUE DATE:** 09/23/94

# **MUTAGENICITY/GENOTOXICITY INFORMATION:**

PRODUCT/SIMILAR PRODUCT - No mutagenicity studies have been carried out with this product.

# ECTION 12: ECOLOGICAL INFORMATION

### **ECOTOXICITY:**

PRODUCT/SIMILAR PRODUCT - Cationic polymers, in general, exhibit high toxicity to aquatic organisms when tested in purified laboratory water. However, when tested in water supplemented with organic acids at a level simulating natural water conditions, the results demonstrated a 100-fold decrease in toxicity.

### **Aquatic:**

COMPONENT - polyamide resin: Acute aquatic 96-hour static LC50 values fall within the moderately toxic range of 1-10 mg/L. Fathead minnows and rainbow trout were the species tested. Salmon parr were also tested and the 96-hour static LC50 value was within the slightly toxic range of 10-100 mg/L.

COMPONENT - polyamide resin: Acute aquatic 48-hour static EC50 value, in the Daphnia, falls within the moderately toxic range of 1-10 mg/L.

### **Biodegradability:**

Based upon data from this or similar materials, this product cannot be regarded as readily biodegradable; however, it may be slowly biodegradable.

# SECTION 13: DISPOSAL CONSIDERATIONS

### WASTE DISPOSAL METHOD:

ncineration in accordance with applicable regulations is the recommended disposal method. Supplemental fuel may be required. Wastewater containing this product can be considered for treatment in an acclimated biological treatment system.

# **SECTION 14: TRANSPORTATION INFORMATION**

For information regarding transportation of this product, please contact Hercules Transportation at (302) 594-7356.

# **SECTION 15: REGULATORY INFORMATION**

### **CHEMICAL INVENTORIES:**

U. S. TSCA Status: Included on TSCA inventory.

### SARA TITLE III

Sections 302 and 304:

This product is not an Extremely Hazardous Substance subject to reporting under 40CFR355.

Sections 311 and 312:

HC-1: Acute health hazard NPH: Not a physical hazard

### ection 313:

This product does not contain any chemicals subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40CFR372.

MSDS NO.:	595 6155 0600	REV.: 06	ISSUE DATE:	09/23/94	PAGE 5 OF 5		
CERCLA		ý					
This produ	uct does not contain any 2.4.	chemicals subject to	reporting as a CER	CLA Hazardous S	ubstance under		

### RCRA

This product is not a hazardous waste as listed in 40CFR261.33. It does not exhibit any of the hazardous characteristics listed in 40CFR261, Subpart C.

# **SECTION 16: OTHER INFORMATION**

### LIST OF ACRONYMS:

ACGIH: American Conference of Governmental Industrial Hygienists AICS: Australian Inventory of Chemical Substances AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level ANSI: American National Standards Institute C: Celiing CASRN: Chemical Abstracts Service Registry Number CERCLA: Comprehensive Emergency Response, Compensation and Liability Act **DSL: Domestic Substances List (Canadian)** EINECS: European inventory of Existing Commercial Chemical Substances HMIS: Hazardous Materials Identification System IARC: International Agency for Research on Cancer MITI: Ministry of international Trade and industry (Japanese) N/A: Not Applicable NDSL: Non-domestic Substances List (Canadian) NOR: Not Otherwise Regulated NTP: National Toxicology Program OSHA: Occupational Safety and Health Administration PEL: OSHA Permissible Exposure Limit RCRA: Resource Conservation and Recovery Act **RQ: Reportable Quantity** SARA: Superfund Amendment Reauthorization Act TEL: Short-Term Exposure Limit LV: Threshold Limit Values (registered trademark of ACGIH) TPQ: Threshold Planning Quantity **TSCA:** Toxic Substances Control Act TWA: Time Weighted Average

The information and recommendations contained in this Material Safety Data Sheet have been complied from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either aione or in combination with our products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

1

A

۲.

				đ
٨	MATERIAL SAF	ETY DATA SHEET	· .	PAGE: 01 of 09
A	HERCULES INC Hercules Pla Wilmington,	za	KYMENE* 109 Wets	trength resin
		02) 594-5000 (24 hrs)	MSDS No.: 595 615	5 0503-01
	Supersedes M	SDS #: 595 6152 0100-03	Date: 01/24/92	Master
	I. PRODUC	T IDENTIFIC TION		Nor P
۶r.		PROLONGED OR REPEATED CONT SENSITIZATION (ALLERGIC MAY CAUSE MILD, TEMPORARY	SKIN REACTION).	ITATION OR
N.S		POSSIBLE CANCER HAZARD. K 1,3-DICHLOROPROPANOL (1, 1,3-DCP MAY CAUSE CANÇER B STUDIES. Risk of cancer depends on	3-DCP). ASED ON ANIMAL AND OTH	ER LABORATORY
	XXMENE * 100		HMIS RATINGS: (1)	exposure.
$\langle \bigcirc$	CASRN: Mixt	Wet strength resin ure	Health hazard: Flammability hazard: Reactivity hazard:	
	CHEMICAL & C	OMMON NAMES: Aqueous solut epichlorohydr		amide-
	APPEARANCE A	ND ODOR: Pale amber liquid	; odorless	
	* Registered	Trademark of Hercules Inco	rporated	
	of MSDS.	s there may be chronic heal	·	
	(1) Explanati HMIS: Hazard CASRN: Chem AIHA WEEL: A E OSHA: Occupa TLV: Regist Hygien TWA: Time W STEL: Short C: Ceiling e	on of acronyms: lous Materials Identificatio nical Abstract Substance Reg merican Industrial Hygienis invironmental Exposure Level ational Safety and Health Ad sered trademark of American nists for Threshold Limit Va leighted Average term exposure limit (See 29 exposure concentration (See absorbed through skin (See	n System rating for pr istry Number ts Association - Workp ministration. Conference of Governme lues. CFR 1910.1048, March 29 CFR 1910.1000, Marc	oduct as supplied. lace ntal Industrial 1, 1989, revision) h 1, 1989, rev.)

I	ISDS No.: 595 6155 0503-01			PAGE: 02 of 09			
	I. HAZARDOUS INGREDIENTS & EXPOSU	RE LIM	ITS				
)	CHEMICAL & COMMON NAMES:	%	RECOMMENDED	AIRBORNE LEVELS(1) TLV-TWA 1989-90			
		100 < 1		stablished stablished (3)			
	(3) 1,3-DCP is the principal by-product Although no TLV has been establis workplace standard (TLV) of 2 ppr	shed,	Hercules recommend pplied.	s that the			
	III. TYPICAL PHYSICAL & CHEMICAL CH	ARACTE		<u>^</u>			
	BOILING POINT: 100 C (212 F)		SOLUBILITY IN WATE				
	VAPOR PRESSURE @ 20 C: Similar to water SPECIFIC GRAVITY: 1.03						
	VAPOR DENSITY: Lighter than air		pH: 4.6 - 4.9 (in	creases with age)			
	% VOLATILE (VOL.): 87 (water)		EVAPORATION RATE:	Similar to water			
)	FREEZING POINT: O C (32 F)						
	IV. FIRE, EXPLOSION, & REACTIVITY		) DATA				
	FLASH POINT: Non-flammable			α.			
	FLAMMABLE LIMITS: N/A						
	AUTOIGNITION TEMPERATURE: N/A						
	EXTINGUISHING MEDIA: Product is dispersed in water and spray, dry chemical, foam, or car this product.	as su bon d	uch will not burn. ioxide may be used	However, water on fires involving			
	SPECIAL FIREFIGHTING PROCEDURES: Us	e sel	f-contained breath	ing apparatus.			
	UNUSUAL FIRE & EXPLOSION HAZARDS: N	lone		÷			
	STABILITY CONSIDERATIONS: Stable						
	INCOMPATIBILITY WITH: None 🥷						
)	HAZARDOUS DECOMPOSITION PRODUCTS: N	lone					
9	Cor	ntinue	d				

•

. . ( :

( (

y

MSDS No.: 595 6155 0503-01

1V.	FIRE, E	EXPLOSION, & REACTIVITY HAZARD DATA
••••	Continued	
-     	This produ heated to smoke. De chloride o	DDUCTS OF COMBUSTION: Loct is an aqueous solution which will not support combustion. If decomposition, it may evolve carbon monoxide, carbon dioxide and apending on conditions, some nitrogen oxides, ammonia, hydrogen or hydrogen cyanide also may be formed. LYMERIZATION: Will not occur.
v.	HEALTH	HAZARD DATA
	WARN I NG !	PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION OR SENSITIZATION (ALLERGIC SKIN REACTION) MAY CAUSE MILD, TEMPORARY EYE IRRITATION.
		POSSIBLE CANCER HAZARD. KYMENE* 109 CONTAINS LESS THAN 1% 1,3-DICHLOROPROPANOL (1,3-DCP). 1,3-DCP MAY CAUSE CANCER BASED ON ANIMAL AND OTHER LABORATORY STUDIES. Risk of cancer depends on duration and level of exposure.
SIG	NS & SYMP	TOMS OF OVEREXPOSURE IN THE WORKPLACE:
	EYES: SKIN:	May cause stinging and temporary redness. Prolonged or repeated contact may cause skin irritation or sensitization (allergic skin reaction). See below: Medical conditions generally recognized as being
	INHALATIO	aggravated by exposure. N: Inhaling vapor or mist may cause nasal and throat irritation and coughing.
,	EYES: In water for	FIRST AID PROCEDURES: case of contact, immediately flush with plenty of low-pressure at least 15 minutes. Remove any contact lenses to ensure flushing. Call a physician.
		omptly wash with soap and running water. Remove contaminated Wash clothing before reuse.
		N: Remove to fresh air. Treat any irritation symptomatically. ysician if irritation persists.
	quantitie physician	: If conscious, the person should immediately drink large s of liquid to dilute this product. Induce vomiting. Call a if irritation persists. NEVER give liquids to an unconscious NEVER induce vomiting in an unconscious person.

	MSDS No.: 595 6155 0503-01		01/24/92			
/	Continued					
	MEDICAL CONDITIONS GENERALLY RECOGNIZ Prolonged or repeated contact may (allergic skin reaction.) (See di	cause	skin irritation or	BY EXPOS sensit	URE: izat	ion
	PRIMARY ROUTES OF ENTRY: Eyes, skin					
	CANCER INFORMATION: KYMENE* 109: The components of th by the National Toxicology Program carcinogens by the Occupational Sa have NOT been evaluated by the Int (IARC).	(NTP) fety a	. They are NOT rend Health Administ	egulated cration	as (0SH	A) and
	1,3-DICHLOROPROPAN-2-OL (1,3-DCP): 1,3-DCP administered to rats in dr of 104 weeks found tumors of the 1 thyroid gland. At the dose level effects were noted.	inking iver,	water at 80 mg/li kidney, oral epith	iter for nelial/t	a p ongu	eriod e, and
)	REPORTED HUMAN EFFECTS: KYMENE* 109: When tested on 52 hu test, KYMENE* 109 (12.5% solids) e subjects during both the induction	licite	d a sensitization	respons	e in	two
	In previous studies similar produc 200 subjects in the Schwartz patch Shelanski repeated insult procedur sensitization.	test	procedure and on (	65 subj€	cts	on, on in the
	KYMENE* 109 diluted with sodium bi concentrations ranging from 2% to tested in a 50 human subject repea treatment on heads of over 700 wom sensitization. A similar formulat salons on over 50,000 subjects wit	10%, w ited in ien wit ion ha	vith pH adjusted to nsult test and app th no evidence of as been used in com	o 6.5, h lied as irritati nmercial	a ha a ha on c bea	een ir or
	The above studies suggest that KYM at higher concentrations but does dilute concentrations.	NENE* 1 not pr	109 may have sensi oduce an allergic	tizatior respons	n pot se ir	ential more
	Many studies and years of commerci weight) added to paper and subsequ irritation nor sensitization.	al use uently	e have shown that dried causes neit	1% to 2% her skin	៥ (dr ា	·у
	1,3-DICHLOROPROPAN-2-OL (1,3-DCP):	: None	e known.			

.

REPORTED ANIMAL EFFECTS:

KYMENE\* 109: (Some of the reported studies have been carried out with products very similar to KYMENE\* 109).

Continued...

\_\_\_\_\_\_

# V. HEALTH HAZARD DATA

# \_\_\_\_\_

REPORTED ANIMAL EFFECTS:...Continued

Acute Oral LD50 (rat) 6834 mg/kg; Acute inhalation (4 hour, rat) greater than 11.2 mg/l (nominal concentration) with no abnormal symptoms noted during exposure or the 14-day post-exposure observation period and no gross pathological findings. Eye irritation (rabbit): unwashed, moderate conjuntivitis through seven days, normal at 14 days; washed, all eyes normal by 2 days. Dermal irritation (rabbit) moderate (Draize score, 3/8). Not a skin if that by FHSA standards. The following studies were conducted with 5% solids dilution: Acute oral LD50 (mouse) greater than 2500 mg/kg; eye irritation (rabbit) mild conjunctivitis, normal in 48 hours.

A four-week subacute inhalation study was conducted with rats and rabbits using ground paper samples produced from paper treated with 0.75% Kymene\* 109 resin (solids) and cured. No signs or symptoms of irritation were noted at dust concentrations<sup>10</sup> of 0.16 mg/l (greater than 80% of the particles were in the respirable range, 1-5 microns).

1,3 DICHLOROPROPAN-2-OL: Acute studies; Oral LD50 (rat) 110 mg/kg; Oral LD50 (mouse) 100 mg/kg; inhalation LC50 (4 hours, rat) 125 ppm, 2/6 deaths), 250 ppm (6/6 deaths); dermal LD50 (rabbits) 800 mg/kg; skin irritation (rabbit) mild; eye irritation (rabbit) severe. Liver and kidney damage was observed in acute oral and inhalation studies.

Subacute studies: In response to a TSCA test rule, a 13-week oral gavage study with 1,3-DCP was conducted with male and female rats at dose levels of 0.1, 1, 10, and 100 mg/kg body weight/day. The highest level produced decreases in body weight gain, feed consumption, and hematologic parameters, increases in clinical chemistry values and kidney and liver weight ratios. Histopathologic changes were noted in the stomach, kidney, liver, and nasal tissues in both male and female rats. Lesser effects were noted in the 10 mg dose groups; while 1 mg/day was considered a no-observed-adverse-effect level (NOAEL).

Male Wistar rats were exposed orally to 1,3-DCP by gavage at daily doses of 0, 15, or 60 mg/kg for 14 days. Differences between treated and control animals were observed in the appearance of small spenmatocele or sperm granulomas in the efferent ducts and/or epididymis. These effects were seen in only a small number of animals and were not dose related. In addition, no morphological changes were noted in kidneys, testes, or vas deferens. Studies conducted by the Upjohn Co. found 1,3-DCP to have no sterilant activity in male rats.

Chronic studies, see above: CANCER INFORMATION.

In an 8(e) submission to the EPA, a report of a two-year chronic feeding study in rats disclosed that tris (1,3-dichloropropan-2-ol) phosphate (CAS No. 13674-87-8) caused a statistically significant increase in malignant liver tumors (hepatocellular carcinomas) at 80 mg/kg/day, the highest dose Date: 01/24/92

\_\_\_\_\_\_

-------

## V. HEALTH HAZARD DATA

# . HEALIH HAZARU DATA

# REPORTED ANIMAL EFFECTS:...Continued

studied. The significance of this study is that the product rapidly metabolized to 1,3-DCP and partial phosphate esters. Both partial esters were inactive in the Ames bacterial mutagen test in the presence of liver homogenate induction, whereas 1,3-DCP was mutagenic without activation (see below).

#### **OTHER:**

Genotoxicity: 1,3-DCP was active in the Ames salmonella bacteria test both in the presence and absence of a liver metabolizing fraction. It caused sister chromatid exchange and chromosome aberrations in Chinese hamster ovary cells in vitro and a mutation at the TK locus in the L5178Y line of mouse lymphoma cells in vitro. 1,3-DCP was active in all tests with and without activation by S-9 fraction from Aroclor\* induced rat liver.

Aquatic: KYMENE\* 109 (12.5% solids) was tested to determine its acute toxicity to fish and daphnids. Following are the reported 96-hour static acute LC50s:

Salmon parr	1.6	ppm
Rainbow trout	2.7	ppm
Fathead minnows	6.2	ppm
Daphnia pulex	1.7	ppm

### ADDENDUM:

Hercules Incorporated has conducted extensive studies on the levels of epichlorohydrin hydrolysis products in a variety of paper mills when Kymene products have been used. The amounts of hydrolysis products in the air, in the paper, and in the process water are either undetectable or so low that they do not present any health concerns. The one exception is air above Kymene in storage tanks. It may contain epichlorohydrin hydrolysis products (1,3-dichloro-2-propanol and 3-chloro-1,2-dihydroxypropane) at levels considerably in excess of suggested limitations (see next paragraph). These tanks should be vented in such a way that epichlorohydrin hydrolysis products do not contaminate the air of the workplace and should be entered only while using an approved tank entry procedure.

Hercules Incorporated recommends that the user of this product establish a monitoring program for airborne levels of epichlorohydrin hydrolysis products. It is recommended that 2 ppm be used as an 8-hour TWA for exposure to each of these products by inhalation if they are found in the tank headspace or in the workplace air. If the user requires information or assistance in establishing a monitoring program, contact Hercules Incorporated for further information.

\* Aroclor is a registered trademark of Monsanto Company for chlorinated biphenyl.

VI. SPILL PROCEDURES & WASTE DISPOSAL	
SPILL PROCEDURES: Small Spills: Add absorbent, sweep up, and discard. Large Spills: D to contain and pump into drums for use or disposal. Clean surrounding with soda ash.	
WASTE DISPOSAL METHOD: Incineration of combustible wastes in permitted facilities is the pref disposal method. Use additional fuel if necessary.	erred
This product is biodegradable. Wastewater containing this product can considered for treatment in an acclimated biological treatment system adequate capacity.	
Refer to Section VIII for specific Federal Environmental and Regulator Data regarding use or disposal of this product.	У
VII. APPLICABLE CONTROL MEASURES	
APPROPRIATE HYGIENIC PRACTICES: Do not allow eye or skin contact. Avoid breathing vapor or mist. Y. Wash thoroughly after handling, and before eating, drinking or smoking Remove contaminated clothing promptly and clean thoroughly before reus	
PERSONAL PROTECTIVE EQUIPMENT: Safety glasses Impervious gloves Appropriate respiratory protection is required when exposure to an air contaminant is likely to exceed acceptable limits. Respirators should selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) manufacturer's recommendations. Appropriate protective clothing	be
WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible.	
HANDLING AND STORAGE PRECAUTIONS: Keep containers closed. Store above 4 C (40 F). Avoid storage temperatures above 32 C (90 F).	
ENGINEERING CONTROLS: Adequate ventilation should be provided to keep mist or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.	
PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Enter confined space only after assuring that concentrations of hazard ingredients are within the allowable limits or while using NIOSH-appro- supplied-air breathing apparatus. Completely isolate and thoroughly clean all equipment, piping or vesse before beginning maintenance or repairs.	ved,

MSDS No.: 595 6155 0503-01

Date: 01/24/92

VIII. ENVIRONMENTAL & REGULATORY DATA

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

\_\_\_\_\_

## A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT
Р	KYMENE* 109	Mixture	100
1 *	Wet strength resin 1,3-Dichloropan-2-ol	96-23-1	< 1

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
P	N/A	N/A	HC-1, HC-2, NPH	NO
1	N/A	N/A	HC-1, HC-2, NPH	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

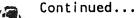
This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

Nonê



• • •	Continu	ued
FOC	TNOTES	:
	SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
	N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
	SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
•	N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ),
	-	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements rd Categories" HC-1 Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard.
	SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
	NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
	N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 1406s

HERCULES INCORPORATED	HERCULES* POLYMER 567
Hercules Plaza	Aminopolyamide solution
Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 595 6251 0100-01
Supersedes MSDS No.: 920 6251 000-02	
I. PRODUCT IDENTIFICATION	
WARNING! MAY CAUSE EYE A	ND SKIN IRRITATION.
HERCULES* POLYMER 567 Aminopolyamide solution	HMIS RATINGS: (1)
CASRN: Mixture .	Health hazard: 2 Moderate Flammability hazard: 0 Minimal Reactivity hazard: 0 Minimal
CHEMICAL & COMMON NAME: Aminopolyamide so	lution
APPEARANCE AND ODOR: Light amber, cloudy	liquid; amine odor
* Registered Trademark of Hercules Incorpo	rated
II. HAZARDOUS INGREDIENTS & EXPOSURE LIM	ITS
CHEMICAL AND COMMON NAMES:	RECOMMENDED AIR-BORNE LEVELS(1) OSHA PEL TLV-TWA 1991-92
Aminopolyamide polymer	Not established
<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification S CASRN: Chemical Abstract Substance Regist AIHA WEEL: American Industrial Hygienists Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Admin TLV: Registered trademark of American Con Hygienists for Threshold Limit Value TWA: Time Weighted Average STEL: Short term exposure limit (See 29 CF C: Ceiling exposure concentration (See 29</li> </ul>	ystem rating for product as supplied. ry Number Association - Workplace istration. iference of Governmental Industrial es. R 1910.1048, March 1, 1989, revision)
	<pre>Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs) Supersedes MSDS No.: 920 6251 0100-02</pre>

.

MSDS No.: 595 6251 0100-01 Date: 01/31/92

-

٠ (

(

(

BOILING POINT: 100 C (212 F)	SOLUBILITY IN WATE	R: Miscible
VAPOR PRESSURE AT 20 C: Similar to water	SPECIFIC GRAVITY:	1.09
VAPOR DENSITY: Lighter than air	pH: 9.0 - 10.0	
VOLATILE (VOL.),%: 47	EVAPORATION RATE:	Similar to water
FREEZING POINT: O C (32 F)		a n
IV. FIRE, EXPLOSION, & REACTIVITY HAZARD		
FLASH POINT: Nonflammable		
FLAMMABLE LIMITS: N/A		
AUTOIGNITION TEMPERATURE: N/A		
EXTINGUISHING MEDIA:	dioxide, or halon	
SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS: None		
STABILITY CONSIDERATIONS: Stable		
INCOMPATIBILITY WITH: Acids		
HAZARDOUS DECOMPOSITION PRODUCTS: None		
HAZARDOUS PRODUCTS OF COMBUSTION: This product is an aqueous solution that heated to decomposition, it may generate and nitrogen oxides.		
HAZARDOUS POLYMERIZATION: Will not occur.		

.

DEQ-OPC

V. HEALTH HA	ZARD DAT	
	WARNING! MAY CAUSE EYE AN	ND SKIN IRRITATION.
CLONE AND EVMDT		
EYES:	OMS OF OVEREXPOSURE IN THE N Redness, stinging	NURRPLACE:
	Redness, itching	
INHALATION:	(Mist) May cause irritatio tract.	on of nose, throat, and respiratory
INGESTION:	None known.	
EYES: In cas water for at	•	flush with plenty of low pressure any contact lenses to ensure
SKIN: Wash w	with soap and running water	
INHALATION: Call a physic		t any irritation symptomatically.
	<u> </u>	
MEDICAL CONDITI None known.	ONS GENERALLY RECOGNIZED AS	BEING AGGRAVATED BY EXPOSURE:
PRIMARY ROUTES	OF ENTRY: Eyes, skin	
National Tox by the Occup	components of this product a icology Program (NTP). They ational Safety and Health Ad	are listed as carcinogens by the y are not regulated as carcinogens dministration (OSHA) and have not ncy for Research on Cancer (IARC).
REPORTED HUMAN None known.	EFFECTS:	*
REPORTED ANIMAL None known.	EFFECTS:	₽ .
VI. SPILL PRO	CEDURES & WASTE DISPOSAL	
absorbent, s	: Flush to industrial sewe	r with excess water, or add e Spills: Dike to contain and pump
	Continued	

MSDS No.: 595 6251 0100-01 Date: 01/31/92 PAGE: 04 of 06

(

••	. Continued
WA	STE DISPOSAL METHOD: Incineration of combustible waste material in a permitted facility in accordance with local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility equipped with leachate collection is a suitable alternative.
	This product is biodegradable. Wastewater containing this product can be considered for treatment in an acclimated biological treatment system of adequate capacity.
	Refer to Section VIII for specific Federa! Environmental and Regulatory Data regarding use or dispesal of this product.
 VI	I. APPLICABLE CONTROL MEASURES
AP	PROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Avoid breathing vapor and mist. Wash thoroughly after handling, and before eating, drinking, or smoking.
PE	RSONAL PROTECTIVE EQUIPMENT: Safety glasses Impervious gloves
WO	RK PRACTICES: Eyewash fountains and safety showers should be easily accessible.
HA	NDLING AND STORAGE PRECAUTIONS: This product may react with acids and should not be stored near such materials.
EN	GINEERING CONTROLS: .' / Provide adequate ventilation.
PR	OTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.

MSDS	No.: 595 6251 0100	-01	Date:	01/31/92		PAGE:	05	of 06
VIII	. ENVIRONMENTAL & I	REGULATORY DAT	`A					
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<b>A</b> ,						
of th oblig	following environmen his product in defin gations. PRODUCT COMPOSITION	ntal and regul ning their reg	atory ( ulator)	data are p y environm	rovided t ental com	o assi: plianco	stu e	sers
1	PRODUCT (P) or COMPONENT NO.	TRADE NAME OF			CASNUMB	S ER WI	Г. Р	ERCENT
í	p	HERCULES* POL Aminopolyam	-	•	Mixtur	e	10	00

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
Р	N/A	N/A	HC-1, NPH	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

None

Continued...

2,

MSDS No.: 595 6251 0100-01

Date: 01/31/92

VIII. ENVIRONMENTAL REGULATORY DATA
Continued
FOOTNOTES:
SEC. 302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification
regulations) N/A: This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC. 304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A: This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
<pre>SEC. 311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard Categories"     HC-1 Immediate (acute) health hazard     HC-2 Delayed (chronic) health hazard     HC-3 Fire hazard     HC-4 Sudden release of pressure hazard     HC-5 Reactive hazard     NHH Not a health hazard     NPH Not a physical hazard</pre>
SEC. 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO: This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES: This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A: This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.
HERCULES INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE RELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS

PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL

Doc. No. 1837s

OR STATE LAWS.

Marubeni AMERICA CORPORATION 200 Park Avenue New York, NY 10166 Emergency Phone: (212) 599-3969 Call CHEMTREC 24 hrs 1-800-424-9300 For Chemical Emergency, Spill, Leak, Fire, Exposure or Accident,

## MATERIAL SAFETY DATA SHEET

e 6:----

Effective Date: 6/10/91 Date Printed: 6/10/91

## 1. IDENTIFICATION

Product Name: EPICHLOROHYDRIN

Ϋ.,

Synonyms: 1-chloro-2,3,-epoxy propane chloro propylene oxide chloro methylene oxide oxirane-chloromethyl ECH EPI

**Chemical Family:** Epoxy, oxlrane

> Formula: C3H2OCI

> > >99%

Э.

Manufacturer: Asahl Glass Co., Ltd., Japan

Concentration:

CAS # 106-89-8

2. PHYSICAL DATA:

241°F, 116°C **BOILING POINT:** 

13 mmHg @ 20°C VAP PRESS:

3.2 **VAP DENSITY:** 

8.6% @ 25°C, 77°F SOL. IN WATER:

1.173 @ 25/25°C SP. GRAVITY: Water white liquid APPEARANCE: Sweet, pungent

ODOR:

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 88°F, 31°C METHOD USED: TCC

## EXTINGUISHING MEDIA:

Water fog, CO2, dry chemical, alcohol resistant foam

FIRE-FIGHTING EQUIPMENT: Use a positive-pressure, self-contained breathing apparatus and full protective clothing.

FLAMMABLE LIMITS:

LFL: 3.8 Vol. % UFL: 21.0 Vol %

FIRE AND EXPLOSION HAZARDS: Epichlorohydrin and hydrogen chloride vapors

1

1

v.	HEALTH HAZARD DATA

A. MOLTEN product

DANGER! MOLTEN RESIN. CAUSES SEVERE BURNS ON CONTACT.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

- EYES: Burns can cause irreversible eye injury and blindness. Smoke or fumes from rosin products may cause eye irritation with redness, tearing and discomfort.
- SKIN: Serious burns will result from contact with molten product. Repeated or prolonged contact may cause an allergic skin reaction (sensitization) in susceptible individuals. See MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.
- INHALATION: Breathing smoke or fumes from molten rosin products may produce breathing discomfort, coughing and sore throat. INGESTION: None known

EMERGENCY & FIRST AID PROCEDURES:

EYES: Cool burns with plenty of low-pressure water. Get medical attention immediately.

SKIN: Immediately cool burn area with cold water and cold packs for at least 15 minutes. Do NOT put ice directly on the skin. Do NOT attempt to remove solidified resin from the skin as severe tissue damage may result. Get medical attention.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen and soften the material.

\_\_\_\_\_\_

B. SOLID product

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: EYES: Dust may cause irritation by mechanical abrasion. SKIN: See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE. INHALATION: None known. None expected. INGESTION: None known.

EMERGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician. V. HEALTH HAZARD DATA

B. SOLID product...Continued

EMERGENCY & FIRST AID PROCEDURE: SKIN: Wash with soap and running water.

NOTE TO PHYSICIAN: Material should not be forcibly pulled from the skin. Mineral oil may be used to loosen the material.

\_\_\_\_\_

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

#### CANCER INFORMATION:

The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

#### **REPORTED HUMAN EFFECTS:**

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). SEE SECTION II.

### **REPORTED ANIMAL EFFECTS:**

ACUTE ORAL LD50: rats, 4,100 mg/kg; mice, 4,100 mg/kg; guinea pigs, 3,700 mg/kg. In a subacute 90-day study, rats fed 5 percent resin in the diet refused food, lost weight, and died during the first few days. No histopathologic changes were noted. At 1 percent, the food consumption and weight gain were temporarily depressed and livers were enlarged; all other parameters were normal with no histologic findings. No effects were observed at 0.2, 0.05, and 0.01 percent levels. A chronic 2-year study was conducted with rats and dogs at 1 percent and 0.05 percent. At 1 percent, the same temporary weight loss was noted with rats and liver enlargement noted with both species. No histologic findings were seen in any of the organs or tissue and no resin-related effect noted on tumor incidence for either species at either feeding level.

#### OTHER:

Dehydroabietic acid was negative in the Ames test with and without activation.



VI.	SPILL PROCEDURES & WASTE DISPOSAL
	LL PROCEDURES: If material is not contaminated, scoop into clean containers for use. If contaminated, scoop into containers for disposal.
WAS	TE DISPOSAL METHOD: Incineration of combustible waste material in a permitted facility in accordance with local, state, and federal regulations is the recommended disposal method. Landfilling in a licensed facility is a suitable alternative.
	Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.
 VII	APPLICABLE CONTROL MEASURES
	PROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Avoid breathing dust or vapor. Wash thoroughly after handling, and before eating, drinking, or smoking. MOLTEN product - PERSONAL PROTECTIVE EQUIPMENT:
	Face shield, safety glasses and hard hat Long-sleeve protective shirt, long pants and work shoes Long-cuff lined gloves Lined rain suit with protective hood or shoulder shroud or full aluminized or thermal suit with hood Protective clothing should be made of six-ounce (6 oz) or greater fabric; polyester should be avoided. Appropriate respiratory protection required when exposure to airborne contaminant is likely to exceed acceptable limits. Respirators should be
	selected and used in accordance with OSHA Subpart I (29 CFR 1910.134) and manufacturer's recommendations.
в.	SOLID product - PERSONAL PROTECTIVE EQUIPMENT: Safety glasses Impervious gloves
	Appropriate respiratory protection is required when exposure to an airbor contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) an manufacturer's recommendations. Personnel exposed to hot not the material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rai suit (or other heat resistant material), and lined impervious gloves are recommended.

Date: 04/02/93

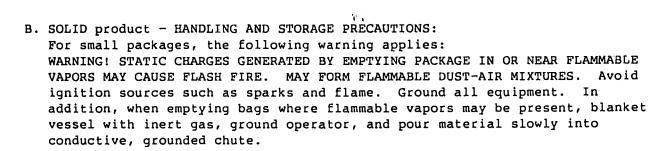
VII. APPLICABLE CONTROL MEASURES

...Continued

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

A. MOLTEN product - HANDLING AND STORAGE PRECAUTIONS: If allowed to solidify to solid or flake form, this product can exhibit the characteristics of solid or flake resin, and may form flammable dust-air mixtures. See HANDLING AND STORAGE PRECAUTIONS for solid product below. Water contact with hot molten resin may result in foaming or spattering which can cause burns upon skin or eye contact.



For large bags (1,000 lbs. or greater, the following warning applies: WARNING! STATIC CHARGES GENERATED BY EMPTYING PACKAGE MAY IGNITE FLAMMABLE VAPORS OR DUST-AIR MIXTURES. MAY FORM FLAMMABLE DUST-AIR MIXTURES. avoid ignition sources such as sparks and flame. Ground all equipment and the bag. In addition, when emptying where flammable vapors may be present, blanket vessel with an inert gas. ATTENTION! A GROUNDING CABLE MUST BE ATTACHED TO THE BAG GROUND CONNECTION! Avoid dust accumulations and suspending dust in air. Flake forms are prone to gradual oxidation. Control inventory. Use oldest material first.

\_\_\_\_\_\_

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep dust or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

Eliminate ignition sources.

Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs. Keep area clean. Product will burn.

Date: 04/02/93

\_\_\_\_\_

VIII. ENVIRONMENTAL & REGULATORY DATA

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

\_\_\_\_\_\_

#### A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME Or Chemical component	CASRN	WT. PERCENT
p	HERCULES* RESIN 731D <sup>,1</sup> Disproportionated rosin	8050-09-7	100

#### B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
p	N/A	N/A	NHH, HC-3 (dust)	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) – i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. TSCA STATUS

~

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

۸.

Contir	nued
FOOTNOTES	3:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not the test. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
SEC.	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements
	ard Categories"
	HC-l Immediate (acute) health hazard
	HC-2 Delayed (chronic) health hazard
	HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard
	NPH Not a physical hazard
SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of
	Section 313 of Title III of the Superfund Amendments and
	Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical
WDQ .	Reporting requirements. This component is subject to the reporting requirements of Section
YES:	313 of Title III of the Superfund Amendments and Reauthorization Ac
	of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	Percent composition (or estimated range) is listed above.
N/A:	This product is a mixture. As such, it is not listed as a Toxic
	Chemical under 40 CFR 372, Sect. 313 reporting requirements.
	Reportable constituents are listed individually where they exceed
	threshold concentration limits.

HERCULES INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE RELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 2249s

PAGE: 01 of 05 MATERIAL SAFETY DATA SHEET HERCULES INCORPORATED HERCULES\* RESIN 861 λ Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs) 7.MSDS No.: 853 2176 0100-02 Date: 10/06/89 Supersedes MSDS #: 853 2176 0100-01 PRODUCT IDENTIFICATION Ι. STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE WARNING VAPORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. (FOR BAGS 1000 LBS. OR GREATER, SEE SECTION VII FOR ADDITIONAL HAZARDS). .1 HERCULES\* RESIN 861 Synthetic resin HMIS RATINGS:(1) Health hazard: 0 Minimal Flammability hazard: 1 Slight Reactivity hazard: 0 Minimal APPEARANCE AND ODOR: Amber-colored solid; typical rosin odor \* Registered Trademark of Hercules Incorporated. \_\_\_\_\_\_ HAZARDOUS INGREDIENTS & EXPOSURE LIMITS II. Note: The ingredients in this product are not listed in 29 CFR 1910, Subpart Z, nor do they appear in "Threshold Limit Values for Chemical Substances in the Work Environment Adopted by ACGIH" for 1989-90. If these materials are used in a manner that could generate particulates (dust), Hercules recommends that the resin dust be treated as a NUISANCE PARTICULATE according to the American Conference of Governmental Industrial Hygienists (ACGIH). FOOTNOTES (1) Explanation of acronyms: HMIS: Hazardous Materials Identification System rating for product as supplied. N/A: Not applicable \_\_\_\_\_\_ Hercules Incorporated has compiled the information and recommendations contained in this Material Safety Data Sheet from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. 'A warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws. λ

Y ..

	MSDS No.: 853 2176 0100-02 Date:	: 10/06/89	PAGE: 02 of 05		
1	III. TYPICAL PHYSICAL & CHEMICAL CHARACT	ERISTICS			
	BOILING POINT: N/A	SOLUBILITY IN WATE	R: Negligible		
	VAPOR PRESSURE AT 20 C: Not determined.	SPECIFIC GRAVITY:	1.06		
	VAPOR DENSITY: N/A	pH: N/A			
	VOLATILE (VOL.),%: Negligibl	EVAPORATION RATE:	Slower than butyl acetate		
	SOFTENING POINT: 74 C (165 F)				
	IV. FIRE, EXPLOSION, & REACTIVITY HAZAR				
	WARNING) STATIC CHARGES GENERATED BY E VAPORS MAY CAUSE FLASH FIRE MAY FORM FLAMMABLE DUST-AIR M (FOR BAGS 1000 LBS. OR GREATE HAZARDS).	I. IIXTURES.			
	FLASH POINT: 216 C (420 F)				
	FLAMMABLE LIMITS: Not determined.				
	AUTOIGNITION TEMPERATURE: Not determined.				
	EXTINGUISHING MEDIA: Water spray, dry c	nemical, foam, carb	on dioxide, or halon		
	SPECIAL FIREFIGHTING PROCEDURES: None				
	UNUSUAL FIRE AND EXPLOSION HAZARDS: Non	e			
	STABILITY CONSIDERATIONS: Stable				
	INCOMPATIBILITY WITH: None				
	HAZARDOUS DECOMPOSITION PRODUCTS: None		1		
	HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide and s aliphatic aldehydes and carboxylic ac	moke. Depending of ids also may be fo	n conditions, some rmed.		
	allphaete allenges i				

-----

ж. Х

-

Date: 10/06/89

.

V. HEALTH HAZ	ARD DATA	
	<i>y</i>	
SIGNS AND SYMPTO EYES: SKIN:	MS OF OVEREXPOSURE IN THE WORK Dust may cause irritation by Prolonged and repeated contac	mechanical abrasion. ct may cause a skin sensitizatio
	reaction in susceptible indiv CONDITIONS GENERALLY RECOGNIN EXPOSURE").	viduals (see below - "MEDICAL ZED AS BEING AGGRAVATED BY
INHALATION: INGESTION:	None known. None expected. None known.	. 3
EYES: In cas water for at	T AID PROCEDURES: e of contact, immediately flu: least 15 minutes. Remove any hing. Call a physician.	sh with plenty of low-pressure contact lenses to ensure
material come water. Do NC	ith soap and running water. I s in contact with the skin, co T attempt to remove the resin ere tissue damage. Get medic	ool under a running stream of from the skin. Removal could
	CIAN: Material should not be ay be used to loosen the mate	forcibly pulled from the skin. rial.
This product derivatives h (sensitization exposure cond sensitized to contact. Her industrial ex search of Her sensitization	ave been reported to cause an n) in susceptible individuals itions of repeated and prolon rosin derivatives may also r cules is unaware of any aller posure to this product or sim cules medical records has dis	ivative. Rosin and some of its allergic skin reaction under certain non-industrial ged skin contact. Individuals eact to this product after skin gic skin reactions caused by ilar materials. A thorough closed no case of skin from industrial exposure in our
PRIMARY ROUTES C	F ENTRY: Eyes, skin	1
	s of this product are NOT lis	ted as carcinogens by the re not regulated as carcinogens

National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

\_\_\_\_\_\_

λ

P.

~

÷

.

í

Date: 10/06/89

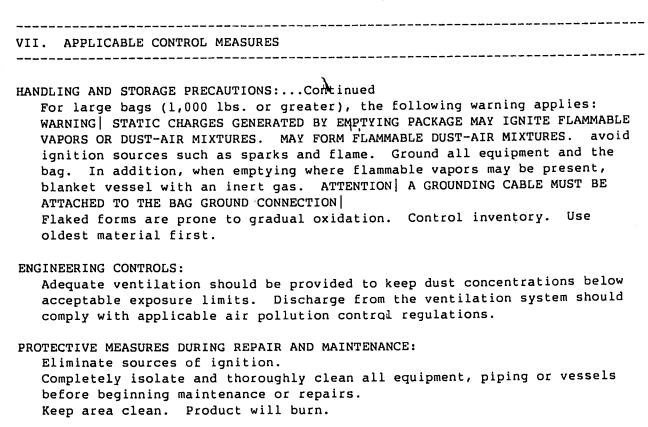
•

VI.	SPILL PROCEDURES & WASTE DISPOSAL
I	L PROCEDURES: f material is not contaminated, scoop into clean containers for use. If ontaminated, scoop into containers for disposal.
I 1	E DISPOSAL METHOD: ncineration of waste material in a permitted facility in accordance to ocal, state, and federal regulations is the recommended disposal method. andfilling in a licensed facility is a suitable alternative.
4 c h h	his product is not listed the federal hazardous waste regulation O CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are onsidered hazardous if they become wastes. It does not exhibit any of the azardous characteristics listed in 40 CFR 261, Subpart C. State or local azardous waste regulations may apply if they are different from the ederal regulation.
	d
VII.	APPLICABLE CONTROL MEASURES
W PERS I S A C S m S b m	void breathing dust. ash thoroughly after handling, and before eating, drinking or smoking. ONAL PROTECTIVE EQUIPMENT: mpervious gloves afety glasses ppropriate respiratory protection is required when exposure to an airborn ontaminant is likely to exceed acceptable limits. Respirators should be elected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and anufacturer's recommendations. Personnel exposed to hot molten material hould wear protective clothing that provides protection from thermal urns. Full face shield, lined rain suit (or other heat resistant aterial), and lined impervious gloves are recommended.
	PRACTICES: / yewash fountains and safety showers should be easily accessible.
F W V i a v	LING AND STORAGE PRECAUTIONS: or small packages, the following warning applies: ARNING  STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE APORS MAY CAUSE FLASH FIRE. MAY FORM FLAMMABLE DUST-AIR MIXTURES. Avoid gnition sources such as sparks and flame. Ground all equipment. In ddition, when emptying bags where flammable vapors may be present, blanke essel with inert gas, ground operator, and pour material slowly into onductive, grounded chute.

MSDS No.: 853 2176 0100-02

Date: 10/06/89

.



\_\_\_\_\_\_\_

1

Doc. No. 2267s

$\cdot$	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 08				
	HERCULES INCORPORATED	HERCULES* ROSIN RESIDUE				
	Hercules Plaza					
	Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 999 0420 3011-01				
	Phone #: (302) 394-3000 (24 m s)	NSUS NO.: 999 0420 5011 01				
	Supersedes MSDS #: OR 524	Date: 05/15/92				
	I. PRODUCT IDENTIFICATION					
÷						
ал С	WARNING! MAY CAUS CAUS CAUS	•				
	PROLONGED OR REPEATED CO	NTACT MAY CAUSE SKIN IRRITATION OR				
	SENSITIZATION (ALLERGI					
	CONTAINS I TO 3 PERCENT I CANCER BASED ON ANIMAL	FORMALDEHYDE WHICH MAY CAUSE SKIN				
	COMBUSTIBLE LIQUID.	5				
	2	h are rest File				
	HERCULES* ROSIN RESIDUE	HMIS RATINGS: (1)				
	V,	Health hazard: 2 Moderate /				
	CASRN: Mixture	Health hazard: 2 Mode <u>rate</u> Flammability hazard: 2 Moderate				
		Reactivity hazard: 0 Minimal				
	CHEMICAL & COMMON NAME: Blended rosin-based distillation fractions					
	······································					
	APPEARANCE AND ODOR: Dark, viscous liquid; typical rosin or phenolic odor					
	AFFEARANCE AND UDUR: DAFR, VISCOUS HIQUIG; LYPICAL FOSIN OF PHENOLIC ODOF					
	54.	· · ·				
	* Registered Trademark of Hercules Inco	rporated				
	(1) Explanation of acronyms:	1				
140	HMIS: Hazardous Materials Identification System rating for product as supplied.					
	CASRN: Chemical Abstract Substance Reg					
	AIHA WEEL: American Industrial Hygienists Association - Workplace					
-	Environmental Exposure Level.					
	OSHA: Occupational Safety and Health Administration.					
	TLV: Registered trademark of American Conference of Governmental Industrial · Hygienists for Threshold Limit Values.					
	TWA: Time Weighted Average					
	STEL: Short term exposure limit (See 29	CFR 1910.1048, March 1, 1989, revision)				
	G: Ceiling exposure concentration (See	29 CFR 1910.1000, March 1, 1989, rev.)				
320	SKIN: May be absorbed through skin (See	29 CFR 1910.1048, March 1, 1989, rev.)				
<u>`</u>	N/A: Not applicable					

, O

į

MSDS No.: 999 0420 3011-01 , 🚗 Date: 05/15/92 PAGE: 02 of 08 11. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS CHEMICAL & COMMON NAMES CASRN WT. % RECOMMENDED AIRBORNE LEVELS (1) 1991-1992 À OSHA TWA TLV-TWA Rosin Residue 100 v. Not established Mixture Phenols, alkylated Mixture 1-5 Not established Formaldehyde 50-00-0 1-3 1 ppm(A2) (2) (skin) l ppm STEL-2 ppm STEL-2 ppm(A2) (skin) If this product is heated to temperatures sufficient to produce smoke or fumes, the TLV-TWA of 0.1 mg/m3 (as formaldehyde), for rosin core solder pyrolysis products should be observed. (2) A2 Classification = Industrial substances' which are suspected human carcinogens. III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS BOILING POINT (INITIAL): 104 C (220 F) SOLUBILITY IN WATER: Negligible VAPOR PRESSURE AT 20 C: Not determined SPECIFIC GRAVITY: 1.03 VAPOR DENSITY: Not determined pH: N/A VOLATILE (WT.), %: Negligible @ 20 C EVAPORATION RATE: Slower than butyl acetate FREEZING POINT: Not determined FIRE, EXPLOSION, & REACTIVITY HAZARD DATA 11. 1 CAUTION1 COMBUSTIBLE LIQUID FLASH POINT: Above 92 C (198 F) Cleveland Open Cup FLAMMABLE LIMITS: N/A AUTOIGNITION TEMPERATURE: Not determined EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide, or halon SPECIAL FIREFIGHTING PROCEDURES: Cool containers with water if exposed to fire. Use self-contained breathing apparatus.

\_\_\_\_\_ FIRE, EXPLOSION, & REACTIVITY HAZARD DATA 1V. \_\_\_\_\_ ...Continued UNUSUAL FIRE AND EXPLOSION HAZARDS: None STABILITY CONSIDERATIONS: Stable INCOMPATIBILITY WITH: None HAZARDOUS DECOMPOSITION PRODUCTS: None HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide and carbon dioxide, and undetermined pyrolytic (smoke) decomposition products. Depending on conditions, some carboxylic acids and aliphatic aldehydes, including formaldehyde, also may be formed. HAZARDOUS POLYMERIZATION: Will not occur. V. HEALTH HAZARD DATA \_\_\_\_\_ ю 1 WARNING! MAY CAUSE EYE IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION OR SENSITIZATION (ALLERGIC SKIN REACTION). CONTAINS 1 TO 3 PERCENT FORMALDEHYDE WHICH MAY CAUSE SKIN CANCER BASED ON ANIMAL DATA. SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: Liquid may cause redness, tearing and discomfort. Smoke or EYES: fumes from decomposition of rosin products heated to high temperatures may also cause irritation. May cause irritation. See below: MEDICAL CONDITIONS SKIN: GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE. None known. Breathing smoke or fumes from decomposition of " INHALATION: rosin products heated to high temperatures may produce breathing discomfort, coughing and sork throat. INGESTION: None known. EMERGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician. SKIN: Wash with soap and running water. INHALATION: Remove to fresh air. Call a physician if irritation persists.

Date: 05/15/92

V. HEALTH HAZARD DATA

#### ...Continued

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers. However, since formaldehyde and certain alkylated phenols are known skin sensitizers, skin contact should be avoided.

PRIMARY ROUTES OF ENTRY:

Eyes, skin, inhalation (at decomposition temperatures)

CANCER INFORMATION:

FORMALDEHYDE is regulated as a carcinogen by OSHA. Formaldehyde gas is listed on the NTP list of carcinogens. Formaldehyde gas has been determined to be carcinogenic in animals by IARC. Controversial epidemiological studies of formaldehyde-exposed workers have indicated little or no additional cancer risk related to their exposure.

The other components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

## **REPORTED HUMAN EFFECTS:**

See above- MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.

Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.

In general, the toxicity of ALKYLATED PHENOLS follows that of phenol, but decreases as the size and complexity of the molecule increases. They are less corrosive and produce less irritation of the skin, but the simpler ones may share phenol's ability to penetrate intact skin.

At the maximum possible concentrations of FORMALDEHYDE in this product, the most likely effect would be skin irritation or an allergic skin reaction, with eye and mucous membrane irritation at elevated temperatures.



## V. HEALTH HAZARD DATA

#### ...Continued

## **REPORTED ANIMAL EFFECTS:**

Hercules Incorporated has not conducted animal testing with this product. Data from studies on components or similar materials indicate that this product probably has a low order of acute toxicity by mouth or by skin contact and may produce irritation following skin contact. Subchronic administration of major components in the diet of rats led to liver enlargement without pathologic abnormalities at 1%. There were no significant effects noted below dietary levels of 1%.

An inhalation study of thermal decomposition products was conducted by heating a related product to 180 C (356 F). Rats were exposed to vapor and/or decomposition products for 6 hours. No deaths or significant adverse reactions were noted.

In a chronic study, may ts exposed to FORMALDEHYDE vapor at 2 ppm developed benign nasal tumors and changes in the cell structure of the nasal passages. It is not tetratogenic in mice and rats.

VI.	SPILL	PROCEDURES	3	WASTE	DISPOSAL	
					λ	

SPILL PROCEDURES:

Scrape up and salvage in metal containers. Soak up small spills with earth or sand. Wash area with detergent and water.

WASTE DISPOSAL METHOD:

Incineration of combustible wastes in permitted facilities is the preferred disposal method.

Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

VII. APPLICABLE CONTROL MEASURES

**APPROPRIATE HYGIENIC PRACTICES:** 

Do not allow eye or skin contact.

Wash thoroughly after handling, and before eating, drinking, or smoking. Remove contaminated clothing promptly and clean thoroughly before reuse. Dispose of contaminated shoes and other leather articles.

MSDS No.: 999 0420 3011-01 Date: 05/15/92 PAGE: 06 of 08

.

•

(

•	Continued
Ρ	ERSONAL PROTECTIVE EQUIPMENT: Safety glasses Impervious gloves Appropriate protective clothing Appropriate respiratory protection is required when exposure to an airborned contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations. Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are recommended.
W	YORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. Use of appropriate personal protective devices, including respirator (in accordance with OSHA Subpart I, 29 CFR 1910.134), face shield, and body covering, is recommended when handling this product at elevated temperatures. Keep floors clean and dry.
Н	ANDLING AND STORAGE PRECAUTIONS: Keep away from heat and flame.
E	NGINEERING CONTROLS: Adequate ventilation should be provided to keep mist or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
Ρ	ROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Eliminate ignition sources. Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs. Keep area clean. Product will burn.

\_\_\_\_\_

#### Date: 05/15/92

VIII. ENVIRONMENTAL & REGULATORY DATA

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

#### A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME or CHEMICAL COMPONENT	CASRN	WT. PERCENT
Р	HERCULES* ROSIN RESIDUE	Mixture	100
1	Phenols, alkylated	Mixture	1-5
2	Formaldehyde	50-00-0	1-3

#### B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (1657)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
Р	N/A	N/A	HC-1, HC-2, NPH	N/A
1	N/A	N/A	HC-1	NO
2	1000	500	HC-1, HC-2	YES

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

HERCULES\* ROSIN RESIDUE contains FORMALDEHYDE which is a "Hazardous Substance" listed in 40 CFR 302.4. FORMALDEHYDE has a "Reportable Quantity" of 1,000 lbs.

D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

None



9 P •

Conti	nued
OOTNOTE	S: ·
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	
	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements ard Categories"
"Haz	HC-1 Immediate (acute) health hazard
	HC-2 Delayed (chronic) health hazard
	HC-3 Fire hazard HC-4 Sudden release of pressure hazard HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
SEC	. 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES	
N/A	
	· · · · · · · · · · · · · · · · · · ·
CONTAIN RELIABL WHEN TH	S INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS ED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE E AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT E MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE HE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS

AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 3350s

	ETY DATA SHEET
	HAMLER
NATIONAL NATIONAL	H (BB)
	BUTORS: INDUSTRIES
TANNER IND	USTRIES, INC.
NATIONAL AMMONIA - N	ORTHEASTERN AMMONIA
	WER AMMONIA & CHEMICAL , PHILADELPHIA, PA-19135
	ER: 215-535-7530 CHEMTREC (CMA) 800-424-9300
DESC	RIPTION
CHEMICAL NAME: Ammonia, anhydrous SYNONYMS: Ammonia, liguefied	CAS REGISTRY NO .: 7664-41-7
CHEMICAL FAMILY: Ammonia COMPOSITION: 99+% ammonia	FORMULA: NH <sub>3</sub> MOL WT.: 17.03
	a
	HEALTH HAZARD e, respiratory tract and mucous membranes. May cause severe
burns, eye and lung injuries. Skin and respiratory related Not recognized by OSHA as a carcinogen.	diseases aggravated by exposure.
Not listed in the National Toxicology Program annual repor Not listed as a carcinogen by the International Agency for	t. Research on Cancer.
EXPOSURE LIMITS: Vapor - OSHA - 35 ppm, 27 mg/r 25 ppm, 18 mg/r	n3 STEL, 15 minutes
ACGIH 25 ppm, 18 mg/i	m3 TLV, 8 hour TWA m3 STEL, 15 minutes
	TREATMENT
Contact of liquid with skin freezes the tissue, then proc result in severe irritation of the respiratory tract, glottal	a, blindness. Skin: irritation, corrosive burns, blister formation. Juces a caustic burn. Inhalation: heavy, acute exposure may edema, bronchspasm, pulmonary edema, respiratory arrest. om) can cause immediate death from spasm, inflammation or
eyeball to ensure thorough rinsing. SPEED AND THOR PREVENTING LATENT PERMANENT INJURIES. Inhala tion if necessary. Skin: flush affected area with copious	ater for 15 min. Eyelids should be held open and away from OUGHNESS IN RINSING THE EYE IS MOST IMPORTANT IN tion: move to fresh air. Administer oxygen or artificial respira- amount of water for 15 min. Remove contaminated clothing ply ointments to skin burns. SEEK IMMEDIATE MEDICAL
NOTE TO PHYSICIAN: Eye injury may appear as delay bronchitis. Supportive treatment; with necessary v sideration.	ved phenomenon. Pulmonary edema may follow chemical entilatory actions, including oxygen, may warrant con-
	AL DATA
BOILING PT.: -33°C (-28°F) VAPOR PRESSURE: @ 25.7°C: 10 atm SPECIFIC GRAVITY: 0.618	FREEZING PT.: -78°C (-108°F) VAPOR DENSITY (Air=1): 0.6 SOLUBILITY IN WATER: 0°C: 89.9g/100cc;
PERCENT VOLATILE: 100%	100°C: 7.4g/100cc EVAPORATION RATE (Water=1): faster than water if in
APPEARANCE AND ODOR: Colorless gas, pungent odor.	liquid form
FIRE AND EXPLOS	ION HAZARD DATA
FLASH POINT: None	AUTOIGNITION TEMP: 651 °C (1204 °F) catalyzed by iron; 850 °C (1562 °F) uncatalyzed
FLAMMABLE RANGE IN AIR: 16% to 25% by Volume EXTINGUISHING MEDIA: Water spray or tog SPECIAL FIRE-FIGHTING PROCEDURES: Must wear prot EQUIPMENT. Stop source if possible. Cool fire-exposed knock down vapor and dilute. Let fire burn.	ective clothing and respiratory protection. See PROTECTIVE containers with water spray. Stay upwind and use water spray to
UNUSUAL FIRE AND EXPLOSION HAZARDS: Not genera storage containers may become explosion hazards. C	
	Revision: April 1992

# WATERIAL SALETT DATA SHEET

ANHYDROUS AMMONIA (Continued)

## CHEMICAL REACTIVITY

STABILITY: Stable at room temperature. Exothermic reaction with acids.

CONDITIONS TO AVOID: Avoid mixing with chlorine bleach, sulfuric or other strong mineral acids; contact with galvanized steel, copper, brass, bronze, gold, mercury, silver, strong oxidizers, hypochlorites and halogens.

See EXPLOSION HAZARDS.

HAZARDOUS DECOMPOSITON PRODUCTS: Hydrogen and nitrogen gases above 450°C.

## SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN: Wear respiratory protection and protective clothing; see PROTECTIVE EQUIPMENT. Shut off source if possible. Stay upwind from spills or leaks. Use water spray to absorb ammonia gas and dilute. Caution: Adding water to large spills may increase volatilization of ammonia, thus may increase possibility for exposure.

WASTE DISPOSAL: Listed as hazardous substance under CWA: (40 CFR 116.4, 40 CFR 117.3 Reportable Quantity, 100#/45.4kg.). Classed as a hazardous waste under RCRA (40 CFR 261.32 Corrosive, No. D002). Comply with all regulations. Spill will evaporate. Contaminated water may be used on agricultural land as fertilizer. Keep spill from entering streams or lakes.

## SPECIAL PROTECTION AND PROCEDURES

- RESPIRATORY PROTECTION: MSHA/NIOSH approved air-purilying type with full facepiece for work purposes; selfcontained breathing apparatus for entry and escape in emergencies. Refer to 29 CFR 1910.134 and ANSI: Z88.2 for requirements and selection.
- VENTILATION: Engineering control to 25 ppm or less. Respiratory protection for higher vapor concentration. Refer to 29 CRF 1910.134 and ANSI: Z9.2 for requirements and selection.
- PROTECTIVE EQUIPMENT: Gas-tight chemical goggles, respiratory protection, impervious outer clothing, gloves, overshoes as needed. Cotton work clothes recommended. Refer to 29 CRF 1910.132 to 1910.136 for requirements.

## SPECIAL PRECAUTIONS

HANDLING AND STORING: Store in cool, well-ventilated area with containers tightly closed. OSHA 29 CFR 1910.111 prescribes handling and storage requirements for anhydrous ammonia as a hazardous material.

WORKPLACE PROTECTIVE EQUIPMENT as discussed above should be near, but outside of ammonia area. Eyewash and safety shower in immediate vicinity. See 29 CFR 1910.141 for workplace requirements.

DISPOSAL: Anhydrous ammonia is listed under RCRA and FWPCA. See WASTE DISPOSAL. Suitably diluted, ammonia may be disposed of on agricultural land as a fertilizer.

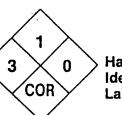
PERSONAL: Check availability of emergency equipment. Follow proper procedures. Wear needed protective equipment. Do not wear contact lenses.

## LABELING AND SHIPPING

HAZARD CLASS 2.2 (Nonflammable Gas), PROPER SHIPPING NAME: Ammonia Anhydrous (Inhalation Hazard), 2.2 (Non-Flammable Gas), UN 1005, RQ PLACARD: Nonflammable Gas

**IDENTIFICATION NO.: UN 1005** 

National Fire Protection Assoc. Hazard Rating:



Hazardous Materials Identification System Label:

ANHYDROUS AMMONIA	
HEALTH	3
FLAMMABILITY	1
REACTIVITY	0
PERSONAL PROTECTION	Η

#### **OTHER REGULATORY REQUIREMENTS**

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Title III, Section 304, any accidental environmental release of this chemical equal to or over the reportable quantity of 100 lbs. must be reported promptly to the National Response Center, Washington, D.C. (1-800-424-8802). Any consumer product containing 5% or more ammonia requires a POISON label under FHSA (16 CFR 1500.129(1).

This material is subject to the reporting requirements of Section 313, Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40CFR372.

EPCBA extremely hazardous substance, 40CFR355, Title III, Section 302 - Ammonia. EPA Hazard Catagories - Immediate: Yes; Delayed: No; Fire: No; Sudden Release: Yes; Reactive: No

The information, data, and recommendations in this material salety data sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process. The information, data, and recommendations set forth herein are believed by us to be accurate. We make no warranties, either expressed or implied, with respect thereto and assume no liability in connection with any use of such information, data, and recommendations.



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

. .

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

IDENTIFICATION					
PRODUCT NAME: Hydrogen )	CHEMICAL FAMILY: Inorganic Flammable Gas				
SYNONYMS: Water Gas, Normal Hydrogen	DOT HAZARD CLASS: Flammable gas				
CAS NUMBER: 1333-74-0	DOT IDENTIFICATION NUMBER: UN 1049				
CHEMICAL FORMULA: H <sub>2</sub>	CHEMTREC: 800-424-9300				

## HEALTH HAZARD DATA

#### TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

Hydrogen is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. (ACGIH, 1984-85), no OSHA PEL.

### SYMPTOMS OF EXPOSURE:

Inhalation: High concentrations of hydrogen so as to exclude an adequate supply of oxygen to the lungs causes dizziness, deeper breathing due to air hunger, possible nausea and eventual unconsciousness.

#### TOXICOLOGICAL PROPERTIES:

Hydrogen is inactive biologically and essentially nontoxic; therefore, the major property is the exclusion of an adequate supply of oxygen to the lungs.

.

\*\*\*

## RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO HYDROGEN. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

Bydrogen is flammable over a very wide range in air.

PHYSICAL DATA

Boiling Point: = -432°F (-252.8°C)

Liquid Density @ Boiling Point: 4.43 lb/ft<sup>3</sup> (70.96 kg/m<sup>3</sup>)

Vapor Pressure @ 70°F (21.1°C): above the critical temp. of -399.8°F (-239.9°C)

Specific Gravity @ 70°F, 1 atm (Air=1): 0.070

Solubility in Water: Very slightly

Freezing Point: -434.6°F (-259.2°C)

Appearance and Odor: Colorless, odorless gas

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): Gas

Auto Ignition Temperature: 1058°F (570°C)

LEL: 4

UEL: 74.5

Extinguishing Media: Water, carbon dioxide, dry chemical

Electrical Classification: Class 1, Group B

Special Fire Fighting Procedures: If possible, stop the flow of hydrogen. Cool surrounding containers with water spray. Hydrogen burns with an almost invisible flame of relatively. Now thermal radiation.

Unusual Fire and Explosion Hazards: Hydrogen is very light and rises very rapidly in air. Should a hydrogen fire be extinguished and the flow of gas continue, increase ventilation to prevent an explosion hazard, particularly in the upper portions of buildings or sheds where the gas might "collect".

λ

Ϋ,

Stability: Stable

Incompatibility (Materials to Avoid): Oxizers

Hazardous Decomposition Products: None

Hazardous Polymerization; Will not occur

Conditions to Avoid: None

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. IF leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

## Waste Disposal Method:

Do not attempt to dispose of residual or unused quantities. Return in the shipping container <u>properly labeled and valve protection cap in place</u> to Airco for proper disposal.

ł

12.1

#### SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: Hood with forced ventilation.

Local Exhaust: To prevent accumulation above the LEL.

Special: N/A

Mechanical (Gen.): In accordance with electrical codes.

Other: N/A

Protective Gloves: Plastic or rubber.

Eye Protection: Safety goggles or glasses.

Other Protective Equipment: Safety shoes, safety shower.

1.

#### Special Labeling Information:

DOT Shipping Name: Hydrogen or Hydrogen, Compressed

DOT Hazard Class: Flammable Gas

DOT Shipping Label: Flammable gas

#### I.D. No.: UN 1049

## Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (< 3000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional recommendations, consult Compressed Gas Association Pamphlets G-5, P-1, P-14, and Safety Bulletin SB-2. OSHA 1910-Subpart H

#### Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130F (54C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association Pamphlets G-5, P-1, P-14, and Safety Bulletin SB-2. OSHA 1910 - Subpart H

#### Special Packaging Recommendations:

Hydrogen is noncorrosive and may be used with any common structural material.

#### Other Recommendations or Precautions:

Earth-ground and bond all lines and equipment associated with the hydrogen system Electrical equipment should be nonsparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

Safety Data-G-4A

y.

14-86

Ca.	MATERIAL :	SAFETY D	ATA SHEET		MSDS: DATE:	ÖR 026C 9/21/83
HERCULES IN	CORPORATED				PAGE:	$\frac{3721}{05}$ 1 of 2
	DELAWARE, 19894				I MOL .	1 01 2
PHONE NUMBE	RS: Regular - 302-594-5000					
2	After Normal Business I	lours an	d Only for Em	argencies in	volving	Safety
	and Health - 302-995-30	200	2			
·						
	r IDENTIFICATION	· · · · · · · · · · · · · · · · · ·			<i>t</i> )	
		tylamine	acetate past	e		
	amily: Amine salt		CAS No:			
Formula:	C <sub>22</sub> H <sub>29</sub> O <sub>2</sub> N,		Molecular	Weight: Chio	ef compo	nent, 345
Trade Name:	AMINE DTM ACETATE 70%					
					· ·	
	<b>.</b>	1				
		<u>N</u>	X(		·····	
II. HAZARD	DOUS INGREDIENTS					
محمد برج جی میں برج محمد وجے ہوگی	Material	. %	TLV-TWA VAL	UES ADOPTED	BY ACGI	H 1983-84
					32 1	
III. PHYSI	ICAL DATA					
Boiling Poi		Freez	ing Point:	Viscosity	increase	<u> </u>
	sure: Not determined		fic Gravity:	1.03	21102 000	
Vapor Densi	ty: 2.0		nt Volatile:	30		
(Air=1)		the family of the second second	Volume)			
	in Water @ 20°C: up to 50%	Evapo	ration Rate:	Slower; le	ss than	1
<u>pH</u> :	6.9	(Buty	1 Acetate=1)		5	
Appearance	and Odor: Tan, pasty solid;	; vinega	r-like odor.			
12						
	<i></i>					
	48					
	ND EXPLOSION HAZARD DATA		·····		I	
Flash Point						
	on Temperature: Not establis				. •	
	imits In Air, % by Volume: N			1	•	( <b>1</b> )
Extinguishi	ng Media: Water spray, dry	chanica	1 form on a	and a market	- ·	
		cire.arca	I, IUam, OF Ca	arbon dioxid	e.	
Special Fir	e-Fighting Procedures: Cocl	. contai	ners with wate	er if expose	d to fin	ce.

Unusual Fire and Explosion Hazards: See SECTION VI REACTIVITY DATA.

Notes: NA = Not Applicable.

-

The information contained herein is furnished without warranty of any kind. Product users should make independent judgments of suitability of this information to ensure proper use and protect the health and safety of employes.

4

V. HEALTH HAZARD DATA Threshold Limit Value: Not established - See Section 11
Effects of Overexposure: Causes burns of eyes and skin.
S: In case of contact, immediately flush with plenty of water for at least 15
minutes. Call a physician. SKIN: Wash with soap and running water. Remove contaminated clothing.
Wash clothing before reuse.
VI. REACTIVITY DATA Stable, Conditions to Avoid: None
Incompatibility (Materials to Avoid): None
Hazardous Decomposition Products: Exposure to heat may cause liberation of acetic acid vapors. Burning liberates CO, CO2, NH3, and smoke.
Hazardous Polymerization Will Not Occur.
VII. SPILL OR LEAK PROCEDURES
Steps to be Taken if Material is Released or Spilled: Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dike to contain and pump into drums for use or disposal
disposal.
Waste Disposal Method: Dispose of in accordance with local, state, and Federal . regulations.
.111. SPECIAL PROTECTION INFORMATION
Respiratory Protection: None required in normal use. Ventilation Local Exhaust: Special:
Mechanical: Recommended Other:
(General) <u>Protective Gloves</u> : Solvent resistant <u>Eye Protection</u> : Chemical goggles
Other Protective Equipment: Face shield, eyewash and safety shower
IX. SPECIAL PRECAUTIONS
Precautionary Labeling:
DANGER! CAUSES BURNS OF EYES AND SKIN
Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or mist.
Wear goggles, face shield, and rubber gloves when handling.
Keep containers closed. Use with adequate ventilation.
Wash thoroughly after handling.
FIRST AID:
EYES - In case of contact, immediately flush with plenty of water for at least 15 minutes. Call a physician.
SKIN - Wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse.
Other Handling and Storage Conditions: None

Ņ.

.

Y



### UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC. Industrial Chemicals Division

## MATERIAL SAFETY DATA SHEET

## EFFECTIVE DATE: 08/01/90

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

## I. IDENTIFICATION

λ

PRODUCT NAME: ETHYLENE	<u>OXI</u> DE
------------------------	---------------

CHEMICAL NAME: Ethylene Oxide

CHEMICAL FAMILY: Oxides

FORMULA: C2H4O

MOLECULAR WEIGHT: 44.05

SYNONYMS: Dimethylene oxide, Dihydrooxirene, EO, Oxidoethane, ETO, Eto,

CAS # and 75-21-8 CAS NAME: Oxirane

#### **II. PHYSICAL DATA** (Determined on typical material)

А.

Ϋ.

BOILING POINT, 760 mm Hg: 10.4 C (50.7 F)

FREEZING POINT: -111.7C; (-169F)

SPECIFIC GRAVITY(H2O = 1): 0.8719 at 20/20 C VAPOR PRESSURE AT 20'C: 1,095 mm Hg

VAPOR DENSITY (air = 1): 1.52

SOLUBILITY IN WATER by wt: Completely miscible

1

EVAPORATION RATE (Butyl Acetate = 1): 72

APPEARANCE AND ODOR: See Section IX. Other precautions.

Copyright 1987, 1988, 1989, 1990 Union Carbide Chemicals & Plastics Technology Corp. UNION CARBIDE is a Trademark of Union Carbide Corporation EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times) or 304-744-3487

> UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC. Industrial Chemicals Division 39 Old Ridgebury Road, Danbury, CT. 06817-0001

**PRODUCT NAME:** ETHYLENE OXIDE

.

4

		INGREDIENTS	
MATERIAL	%	TLV (Units)	HAZARD
Ethylene Oxide (CAS# 75-21-8)	100	1 ppm TWA8 – OSHA; 0.5 ppm Action Level – OSHA;	See Section V
		5 ppm (15 minute) Excursion level - OSHA;	
		1 ppm TWA8 - ACGIH	
IV. F	RE ANI	DEXPLOSION HAZAF	RD DATA
FLASH POINT (test method(s)):	<0 F, <0 F,	Tag closed cup, ÁSTM D 56 Tag open cup, ÁSTM D 1310	
FLAMMABLE LIMITS IN AIR, % by volume:		LOWER: 3 UPPER: 100 (via decom	nposition)
EXTINGUISHING MEDIA:		er spray or carbon dloxide fo film-forming characteristics	r small fires; use alcohol foams with for large fires.
SPECIAL FIRE FIGHTING PROCEDURES:	and prot tank car water sj risk. So dilution r extinguis	ective clothing. Withdraw imm safety valve. Keep equipme bray from maximum distance. lutions of Ethylene Oxide in w atio of 100/1 of water to Eti	atus operated in the pressure demand mor nediately in case of rising sound from nt containing Ethylene Oxide cool with Move containers away from fire if withou ater can remain flammable down to a hylene Oxide by volume. Be aware to relgnite in an explosive manner. ossible.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Ethylene prompt of (i.e. for 1 Oxide m other file or other Vapor in static of be prom spontan vessels	e Oxide-containing vessel is b evacuation of the surrounding maximum safety, evacuate 50 ay travel or be moved by air ames, smoking, sparks, heater ignition sources at locations air has a very low ignition en- other low energy ignition sou ptiy evacuated after a releas eously ignite in insulation. Thi	ecomposition, in any incident where an being exposed to fire, there should be population within an appropriate radius 000 feet in all directions). Ethylene currents and be ignited by pliot lights, s, electrical equipment, static discharge distant from product handling point. hergy level (0.06 mJ) and is prone to arces. For personnel safety, areas must e has occurred. Ethylene Oxide leaks ma s may expose material inside insulated the decomposition temperature of Ethyle
	Oxide. V	. HEALTH HAZARD D	ΑΤΑ
TLV AND SOURCE:	0.5 ppm 5 ppm (	WA8 - OSHA; TWA8 Action Level - OSHA; 15 minute) Excursion Limit - ( WA8 - ACGIH.	
EFFECTS OF SINGLE OVER	E COSL	JRE:	
SWALLOWING:	ulceratio		Vill cause severe irritation and bdominal pain, nausea, vomiting,
SKIN ABSORPTION:	Sustain dizzines	ed contact with the skin is uni s, nausea and vomiting. A dik	ikely, but can cause headache, ite solution may penetrate skin,

producing a chemical burn.				
May be fatal if inhaled in high concentrations. Causes irritation of the respiratory tract. Depending on the degree of exposure, there may be stinging of the nose and throat, coughing, chest tightness, headache, nausea, vomiting, diarrhea, light-headed feeling, dizziness, weakness, drowsiness, cyanosis, loss of coordination, convulsions and coma. May cause lung injury and delayed onset pulmonary edema.				
With liquid or solutions in water, there may occur a local erythema, edema, and formation of vesicles. There may be a latent period of several hours prior to the onset of these signs. Large volumes of ethylene oxide spilled onto the may produce a frostbite-like effect.				
Severe irritation with corneal injury from liquid. Moderate irritation from high concentrations of vapor.				
OVEREXPOSURE: Allergic contact dermatitis may occur in a small proportion of exposed workers. In various reports involving recurrent exposures to high concentrations of Ethylene Oxide vapor, peripheral neurotoxic effects, and, in come cases, Indications of central nervous system toxicity, were described. In most cases, there was marked improvement on removal from further exposure. A few cases of cataract, formation have also been linked to such exposures. Although				
one epidemiological study has suggested that Ethylene Oxide exposed women ma have an increased incidence of abortions, the laboratory findings indicate that, if adverse reproductive effects are produced by Ethylene Oxide, these occur only at high exposure concentrations. Several studies on Ethylene Oxide exposed workers have demonstrated an increased incidence of chromosomal aberrations and sister chromatid exchanges; the relevance of such effects to human health hazard evaluation is currently uncertain. OSHA considers that, at excessive levels, Ethylene Oxide may present reproductive, mutagenic, genotoxic, neurologic and sensitization hazards.				
GRAVATED BY OVEREXPOSURE: No evidence of adverse effects from available information.				
Y DATA WITH POSSIBLE RELEVANCE TO HUMAN TION: Ethylene Oxide has been shown to produce mutagenic and cytogenic effects a variety of test systems. Animals exposed to Ethylene Oxide vapor for up to two years have shown an increase in the incidence of certain malignant tumors in comparison to non-exposed controls. In humans, an increased occurrence of leukemia and stomach cancer has been reported by one group of investigators who pooled results from three Swedish facilities producing or using Ethylene Oxide, among other materials. Based on experimental and observational data Ethylene Oxide is a suspect cancer hazard, and should be treated as possibly causing cancer in humans. Laboratory studies with mice have shown that acute exposure to Ethylene Oxide vapor at concentrations of 300 ppm and above cause testicular injury as evidenced by concentration- related increased embryonic deaths following the mating of exposed males to nonexposed females (Dominant Lethal Test). Also, a one-generation reproduction study in rats showed decreased numbers of pups at 100 but not at 33 ppm. Inhalation teratology studies have shown fetotoxicity at 100 ppm and above, but no evidence for birth defects.				
Carcinogenic and Mutagenic Assessment: Ethylene Oxide Is considered by OSHA, IARC and NTP as a potential human carcinogen and mutagen. See above for further OSHA assessment.				
· · · · · · · · · · · · · · · · · · ·				

SWALLOWING:

Give at least two glasses of water. Do not induce vomiting. Call a physician.

SKIN:

Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Wash skin with soap and water. Call a physician.

PRODUCT NAME:

-44)

.

INHALATION:	Remove to fresh air, and administer oxygen if breathing is difficult. If breathing stops, start artificial respiration. Call a physician.			
EYES:	Flush immediately with water and continue for at least 15 minutes. The help of an ophthalmologist should be sought urgently.			
NOTES TO PHYSICIAN:	<ol> <li>Persons exposed to Ethylene Oxide may develop severe and intractable vomiting, requiring the use of antiemetics given intravenously.</li> <li>Prolonged or high vapor concentration exposure may result in the development of pulmonary edema after a latent phase of several hours. Also, respiratory tract injury caused by Ethylene Oxide may predispose to the development of a secondary respiratory infection. Individuals exposed to moderately high vapor concentrations of Ethylene Oxide should be retained for observation.</li> <li>Following skin contamination, primary Irritation and blister formation may be delayed in onset.</li> </ol>			
	VI. REACTIVITY DATA			
STABILITY: Stable				
CONDITIONS TO AVOID:	Pure Ethylene Oxide will decompose violently if exposed to a high enough temperature, commonly accepted to be above 560 degrees C at atmospheric pressure. This temperature can vary depending upon time, pressure, and conditions of the system. The temperature required for decomposition is reduced as pressure and volume-to-surface ratios are increased. Ethylene Ox is stable at ordinary conditions of temperature and pressure and in ordinary use, handling, and storage.			
INCOMPATIBILITY (materials	s to avoid): Because of the highly reactive nature of Ethylene Oxide, dangerous runaway reactions can result from contamination with alkalies, acids, water, or a wide variety of organic and inorganic materials.			
HAZARDOUS COMBUSTION	OR DECOMPOSITION PRODUCTS: Burning can produce carbon monoxide and/or carbon dioxide.			
HAZARDOUS POLYMERIZAT	ION: May Occur			
CONDITIONS TO AVOID:	Ethylene Oxide will polymerize violently if contaminated with aqueous alkalies, amines, mineral acids, metal chlorides, or metal oxides. Avoid contamination of Ethylene Oxide with trace amounts of other materials. Avoid exposing stored Ethylene Oxide to heat or sources of ignition. Ethylene Oxide will not polymerize spontaneously under normal conditions of temperature, pressure, etc.			
V	II. SPILL OR LEAK PROCEDURES			
STEPS TO BE TAKEN IF MA	TERIAL IS RELEASED OR SPILLED: Warning: Forms explosive mixtures with air. Immediately evacuate all personnel from danger areas. Wear self-contained breathing apparatus operated in the pressure demand mode and suitable protective equipment. Remo all sources of ignition. Reduce vapors with fog of fine water spray. Flood the spill with water spray. Shut off leak and ventilate area. Neither pure Ethylene Oxide nor its aqueous solutions should be discharged to streams or sewers.			
	not turn on any ignition source until the area is determined to be			

Discharge of unreacted aqueous mixtures containing Ethylene Oxide into sewers may result in vapor releases exposing personnel or creating flammable mixtures remote from spill locations. With proper control, aqueous solutions, where the Ethylene Oxide has gradually converted to ethylene glycol, are amenable to biological waste treatment. Observe all government regulations.

### **VIII. SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECT	ION (specify type): If personnel exposure exceeds exposure limits, select respiratory equipment in accordance with 29CFR1910.134 and t9t0.1047. Positive pressure, full facepiece supplied air respirator is recommended for use up to 2000 ppm. Refer to 29CFR1910.1047 for further respirator selection specifications.				
VENTILATION:	When handling Ethylene Oxide indoors cannot be avoided, extra attention should be given to avoiding leaks and providing adequate ventilation. If personnel exposure exceeds exposure limits, apply local exhaust ventilation at points of vapor and liquid release.				
PROTECTIVE GLOVES:	Butyl rubber gloves. After contact with liquid Ethylene Oxide, these gloves have a lifetime of approximately one-half to one hour.				
EYE PROTECTION:	Monogoggies; contact lenses should not be worn.				
OTHER PROTECTIVE EQU	JIPMENT: Eye bath, safety shower, and chemical suits and other appropriate protective clothing are recommended where there is significant potential for skin contact. Exposure must be held to the PEL/TLV standard by appropriate engineering and procedural safeguards. Do not allow protective equipment to become contaminated with Ethylene Oxide.				
	IX. SPECIAL PRECAUTIONS				
PRECAUTIONS TO BE TAI	<ul> <li>KEN IN HANDLING AND STORAGE: DANGER! Extremely flammable and explosive Causes eye and skin burns. Harmful if inhaled., Harmful if swallowed. May cause respiratory system and nervous system damage. Reproductive hazard. Cancer hazard.</li> <li>Keep away from heat, sparks and flame. Do not get in eyes, on skin, on clothing. Do not breathe vapor.</li> <li>Do not breathe vapor.</li> <li>Do not swallow.</li> <li>Keep container closed.</li> <li>Use with adequate ventilation.</li> <li>Vapors form from this product and may travel or be moved by air currents and Ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point.</li> <li>Do not contaminate. Wash thoroughly after handling. Ground all lines during liquid and vapor transfers.</li> </ul>				
OŢHER PRECAUTIONS:	<ul> <li>APPEARANCE AND ODOR: Shipped and stored under nitrogen pressure as a liquid Colorless gas; nonresidual, ether-like odor above 500ppm. Odor not detectable until well above exposure level.</li> <li>OSHA regulations are in force that limit personnel exposure to ethylene oxide (29CFR 1910.134 and 1910.1047). These must be strictly adhered to. Provision must be made for safe discharge of vented material and for destruction of liquid wastes. Discharge of aqueous solutions of ethylene oxide must be regarded as constituting both personnel and inflammability hazards. Because of the potential for violent decomposition, containers of ethylene oxide must have proper inert gas blanketing and be given extraordinary protection against fire exposure. Extreme care is appropriate in avoiding contamination of ethylene oxide that could lead to runaway reactions. Contingency planning is</li> </ul>				

**PRODUCT NAME:** 

## ETHYLINE OXIDE

necessary for potential emergencies from spills, fire exposure, or contamination.

WARNING: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingrest of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "ignition Hazards of Organic Chemical Vapors."

## X. REGULATORY INFORMATION

#### STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

### FEDERAL EPA'

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL Ethylene Oxide

UPPER BOUND CAS NUMBER **CONCENTRATION %** 75-21-8 100.00

#### Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL Ethylene Oxide		CAS NUMBER 75-21-8	UPPER BOUND CONCENTRATION % 100.00	
Cittylene Oxide	•	70-21-0	100.00	

#### Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are: UPPER BOUND CHEMICAL CAS NUMBER **CONCENTRATION %** Ethylene Oxide 75-21-8 100.00

#### STATE RIGHT-TO-KNOW

**CALIFORNIA Proposition 65** 

This product contains ETHYLENE OXIDE and trace levels of FORMALDEHYDE. ACETALDEHYDE, ETHYLENE DICHLORIDE, VINYL CHLORIDE, DIOXANE, and PROPYLENE OXIDE which the state of California has found to cause cancer, birth defects or other reproductive harm.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %	
Formaldehyde	50-00-0	.0003	
Ethylene Chlorohydrin	107-07-3	.0003	
Acetaldehyde	75-07-0	.0002	7
Ethylene Dichloride	t07-06-2	.0001	
Ethylene Oxide	75-21-8	100.00	
<sup>o</sup> ropylene Oxide	75-56-9	.0030	

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

SPECIAL HAZARDOU	S SUBSTANCES ( =:	> 0.01%)
		UPPER BOUND
CHEMICAL	CAS NUMBER	CONCENTRATION % t00.00
Ethylene Oxide	75-21-8	t 00.00

Toxic Substances Control Act(TSCA) STATUS: The ingredients of this product are on the TSCA inventory.

#### CALIFORNIA SCAQMD RULE 443.1 VOC'S: Not presently available

### NOTE ----

12.

The opinions expressed herein are those of qualified experts within Union Carbide Chemicals and Plastics Company. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product. REVISED SECTIONS:

This MSDS has been revised from its previous edition as follows: Section II: PHYSICAL DATA - Freezing Point; Specific Gravity; and Solubliity In Water Section IV: FIRE & EXPLOSION HAZARD DATA - Special Fire Fighting

Procedures; and Unusual Fire and Explosion Hazards Section V: HEALTH HAZARD DATA - Effects of Single Overexposure for

Inhalation; and Emergency and First Aid Procedures for Skin Section VI: REACTIVITY DATA - Conditions to Avoid re Stability; and Conditions to Avoid re Hazardous Polymerization Section VII: SPILL OR LEAK PROCEDURES - Waste Disposal Method Section Vili: SPECIAL PROTECTION INFORMATION - Other Protective Equipment Section IX: SPECIAL PRECAUTIONS - Precautions to be Taken in Handling and Storage; and Warning

1

PC: 45950 F NUMBER: NO161A

		•
	MATERIAL SAFETY DATA SH 🕄 T	PAGE: 01 of 07
2	HERCULES INCORPORATED Hercules Plaza	POLYRAD* 0515 Ethylene oxide adduct
	Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	MSDS No.: 856 2187 0400-03
	Supersedes MSDS No.: 856 2187 0400-02	Date: 09/03/93
	I. PRODUCT IDENTIFICATION	
	WARNING! CAUSES SEVERE EYE E	BURNS AND SKIN IRRITATION.
	POLYRAD* 0515 Ethylene oxide adduct	HMIS RATINGS: (1)
	CASRN: Mixture	Health hazard: 2 Moderate Flammability hazard: 1 Slight Reactivity hazard: 0 Minimal
	CHEMICAL AND COMMON NAME: Ethoxylated ,(5	5 mole) technical hydroabietylamine
	APPEARANCE AND ODOR: Amber, viscous liqu	uid; slight ammonia odor
	* Registered Trademark of Hercules Incorp	porated
$(\bigcirc$	II. HAZARDOUS INGREDIENTS & EXPOSURE LI	IMITS
19. A	CHEMICAL AND COMMON NAMES: CASRN	WT % RECOMMENDED AIR-BORNE LEVELS(1) OSHA PEL TLV-TWA 1992-1993
	Amines, rosin, ethoxylated 61791-17-1	85 Not established
	Amines, rosin 61970-47-4	15 Not established
	If this product is heated to temperatures fumes, the TLV-TWA of 0.1 mg/m3 (as forma pyrolysis products should be observed.	
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification CASRN: Chemical Abstracts Service Regist AIHA WEEL: American Industrial Hygienists Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Admi JLV: Registered trademark of American Co Hygienists for Threshold Limit Value TWA: Time Weighted Average</li> <li>STEL: Short term exposure limit (See 29 C C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 20 N/A: Not applicable 20</li> </ul>	System rating for product as supplied. try Number s Association - Workplace inistration. onference of Governmental Industrial ues. CFR 1910.1048, March 1, 1989, revision) 9 CFR 1910.1000, March 1, 1989, rev.)
	WAN NOT APPLICADIS (M)	

MSDS No.: 856 2187 0400-03	Date:	09/03/93	PAGE:	02 of 07
III. TYPICAL PHYSICAL & CHEMICAL	CHARACTER	<pre>{ ST CS</pre>		
BOILING POINT: Above 372 C (700 F	)	SOLUBILITY IN WAT	ER: Les	s than 5%
VAPOR PRESSURE AT 20 C: Above 1 m	nm Hg	SPECIFIC GRAVITY:	1.06	
VAPOR DENSITY: Not established		pH: N/A		
VOLATILE (VOL.),%: Less than 1		EVAPORATION RATE:		
FREEZING POINT: Viscosity increas	es		buty	l acetate
IV. FIRE, EXPLOSION, & REACTIVIT				
FLASH POINT: 213 C (416 F) SETAFL		d Cup		
FLAMMABLE LIMITS: Not established				
AUTOIGNITION TEMPERATURE: Not est	ablished			
EXTINGUISHING MEDIA: Water spray,	dry) chem	ical, foam, carbo	n dioxid	e, or halon
SPECIAL FIREFIGHTING PROCEDURES: Cool containers with water if e Use self-contained breathing ap	xposed to	fire.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	: None			
STABILITY CONSIDERATIONS: Stable				
INCOMPATIBILITY WITH: Oxidizers				
HAZARDOUS DECOMPOSITION PRODUCTS:	None			
HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide cyanide. Depending on conditio be formed.	, nitroge ns, aldeh	י. n oxides, ammonia ydes and carboxyl	and hyd i¢ acids	rogen also may

-

٠

÷

(

(

HEALTH HAZARD DATA

WARNING! CAUSES SEVERE EYE BURNS AND SKIN IRRITATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	Redness, pain, swelling, blurred vision
SKIN:	Redness, itching. See MEDICAL CONDITIONS GENERALLY
	RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE.
INGESTION:	Not a likely route of industrial exposure.
INHALATION:	Not likely. The product is a viscous liquid with very low
	vapor pressure.

EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Promptly wash with soap and running water. Remove contaminated clothing. Wash clothing before reuse.

INGESTION: If conscious, the person should immediately drink large quantities of liquid to dilute this product. Induce vomiting. Call a physician. Never give liquids to an unconscious person. Never induce vomiting in an unconscious person.

------

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

None of the components of this product are listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

T

**REPORTED HUMAN EFFECTS:** 

Human studies indicate that short contact time with the skin should not produce injury.



MSDS No.: 856 2187 0400-0	3	Date:	09/03/93	PAGE: 04 of 07
V. HEALTH HAZARD DATA		· <b></b>		
	smoke or f tation wit exposure m	th throat	discomfort,	ating this product may coughing or breathing ry sensitization
REPORTED ANIMAL EFFECTS: Animal studies with a oxide adduct gave an solution was a severe	pproximate	e lethal	dose in rats	of 940 mg/kg. The
VI. SPILL PROCEDURES &			·	
SPILL PROCEDURES: Salvage liquid in meta or dilute acetic acid	l containe	ers. Was	h contaminat	
WASTE DISPOSAL METHOD: Incineration of combu disposal method.	tible wast	:es∖in pe	ermitted faci	lities is the preferred
Refer to Section VIII Data regarding use or				ntal and Regulatory
VII. APPLICABLE CONTROL	MEASURES			
APPROPRIATE HYGIENIC PRA Do not allow eye or s Avoid breathing vapor Wash thoroughly after Remove contaminated c	TICES: in contact or mist. handling,	and befo	ore eating, d	rinking, or smoking.
contaminant is likely selected and used in manufacturer's recomm Personnel exposed to	e clothing y protecti to exceed accordance endations. not molten on from th	acceptab with OSH material hermal bu	ole limits. HA, Subpart H Should wear Urns. Full f	ace shield, lined rain

•

Ĺ

Continue		14			
WORK PRACTI Eyewash	CES: fountains and sa	afety showers	shoul	d be easil	y accessible.
	D STORAGE PRECAU duct may react v s.		s and	should be	not stored near suc
concentra	ventilation sho ations below acc ion system shoul	eptable expo	sure l	imits. Di	or mist scharge from the pollution control
Complete	AEASURES DURING by isolate and t eginning mainter	horoughly cl	ean al		, piping or vessel

.

353

i

(

**t**2

MSDS No.: 856 2187 0400-03

4

VIII. ENVIRONMENTAL & REGULATORY DATA

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance obligations.

# A. PRODUCT COMPOSITION

	RODUCT (P) or DMPONENT NO.	TRADE NAME or Chemical component	CASRN	WT. PERCENT
Ρ		POLYRAD* 0515 Ethylene oxide adduct	Mixture	100
1		Amines, rosin, ethoxylated	61971-17-1	85
2		Amines, rosin	61790-47-4	15

B. SARA TITLE III (See foot attes)

COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)
Р	N/A	N/A	HC-1, NPH	N/A
1	N/A	N/A	HC-1	NO
2	N/A	N/A	HC-1	NO

\*\*

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

#### D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

# E. TSCA STATUS

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

a v 147 ]	,					
	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 06				
K	HERCULES INCORPORATED Hercules Plaza	HERCULES* AR-150 Surfactant				
$(\bigcirc$	Wilmington, DE 19894 Phone #: (302) 594-500😋,(24 hrs)	MSDS No.: 856 2188 0200-02				
	Supersedes MSDS No.: 856 2188 0200-01	11 aster Do				
	I. PRODUCT IDENTIFICATION	THAN STORE				
	Ϋ́,	CODY				
	HERCULES* AR-150 Surfactant	HMIS RATINGS: (1)				
	CASRN: 8050-33-7	Health hazard: O Minimal Flammability hazard: l Slight Reactivity hazard: O Minimal				
	CHEMICAL AND COMMON NAME: Ethylene oxide	e derivative of wood rosin				
	APPEARANCE AND ODOR: Clear amber liquid	to soft waxy solid; typical rosin odor				
	* Registered Trademark of Hercules Incorporated					
	II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS					
	As Hercules interprets the U.S. Occupation Regulations, including the Hazard Communidated August 24, 1987, this product should	cation Standard 29 CFR 1910.1200				
	If this product is heated to temperatures fumes, the TLV-TWA of 0.1 mg/m3 (as forma pyrolysis products should be observed.	aldehyde), for rosin core solder				
	<pre>(1) Explanation of acronyms:</pre>					
	HMIS: Hazardous Materials Identification CASRN: Chemical Abstracts Service Regist AIHA WEEL: American Industrial Hygienists	ry Number				
	Environmental Exposure Level. OSHA: Occupational Safety and Health Admi TLV: Registered trademark of American Co Hygiopiets for Throshold Limit Valu	onference of Governmental Industrial				
	Hygienists for Threshold Limit Valu TWA: Time Weighted Average					
$\bigcirc$	STEL: Short term exposure limit (See 29 C C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 2 N/A: Not applicable	) CFR 1910.1000, March 1, 1989, rev.)				

ł.

				· · ·
MSDS No.: 856 2188 0200-02	Date:	01/29/93	PAGE:	02 of 06
III. TYPICAL PHYSICAL & CHEMICAL C	HARACTER	ISTICS		
BOILING POINT: Not determined				
				mprete
VAPOR PRESSURE AT 20 C: Not determ				
VAPOR DENSITY: Heavier than air		pH of 1% SOLUTI	ON: 9	
VOLATILE (WT.),%: Not determined FREEZING POINT: Not determined		EVAPORATION RAT		r than acetate
IV. FIRE, EXPLOSION, & REACTIVITY	HAZARD	DATA		
FLASH POINT: 132 C (270 F) Pensky-1	Martens			
FLAMMABLE LIMITS: N/A				
AUTOIGNITION TEMPERATURE: Not deter	rmined			
EXTINGUISHING MEDIA: Water spray, c	dry chem	ical, foam, carb	on dioxid	e, or halon
SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing appa Cool containers with water if exp		fire.		
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None			OVEN
STABILITY CONSIDERATIONS: Stable	וען	JAN 2	3 1996	
INCOMPATIBILITY WITH: None		DEO	000	
HAZARDOUS DECOMPOSITION PRODUCTS: N	N/A		DEQ-	OPC
HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide, carbon dioxide, aliphatic aldehydes and carboxyli	and smo ic acids	ke. Depending o also may be for	n conditio med.	ons, some
HAZARDOUS POLYMERIZATION: Will not	occur.	.1		
V. HEALTH HAZARD DATA				
SIGNS AND SYMPTOMS OF OVEREXPOSURE I EYES: May cause irritation SKIN: Prolonged and repeation in suscept CONDITIONS GENERALL EXPOSURE).	IN THE Wordshift on with ated con tible inc	ORKPLACE: redness and itch tact may cause s dividuals (see b	ing. kin sensit elow - MEI	tization DICAL

۹.

Ć

(

	MSDS No.: 856 2188 0200-02 Date: 01/29/93 PAGE: 03 of 06
$(\bigcirc$	V. HEALTH HAZARD DATA
	SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:Continued INHALATION: None kappyon. None expected. INGESTION: None known.
	EMERGENCY & FIRST AID PROCEDURES: EYES: In case of contact, immediately flush with plenty of low pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physicial.
	SKIN: Wash with soap and running water.
	INGESTION: If swallowed, do NO节 induce vomiting. Call a physician.
$(\bigcirc$	MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact. Hercules Incorporated is unaware of any allergic skin reactions caused by industrial exposure to this product or similar materials. A thorough search of Hercules medical records has disclosed no case of skin sensitization to rosin or its derivatives from industrial exposure in our workers. None have been reported by our customers.
<u> </u>	PRIMARY ROUTES OF ENTRY: Eyes, skin
	CANCER INFORMATION: Not listed as a carcinogen by NTP (National Toxicology Program); not regulated as a carcinogen by OSHA (Occupational Safety & Health Administration); not evaluated by IARC (International Agency for Research on Cancer).
	REPORTED HUMAN EFFECTS: None known.
	Prolonged exposure to smoke or fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or breathing difficulty. Repeated exposure may lead to respiratory sensitization (asthma). See SECTION II.
	REPORTED ANIMAL EFFECTS: No toxicological studies have been conducted with HERCULES* AR-150 Surfactant. Acute oral and subchronic dietary studies in rats with resins of similar composition showed that these materials are relatively nontoxic. Based on these studies, Hercules does not expect HERCULES AR-150 Surfactant to pose any significant toxicological hazards.
í	

•

MSDS No.: 856 2188 0200-02 Date: 01/29/93 PAGE: 04 of 06 \_\_\_\_\_ SPILL PROCEDURES & WASTE DISPOSAL SPILL PROCEDURES: Scrape up and salvage in metal containers. Soak up small spills with earth or sand. Wash area with detergent and water. WASTE DISPOSAL METHOD: Incineration of combustible wastes in permitted facilities is the preferred disposal method. Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product. VII. APPLICABLE CONTROL MEASURES **APPROPRIATE HYGIENIC PRACTICES:** Do not allow eye or skin contact. Avoid breathing vapor or mist. Remove contaminated clothing promptly and clean thoroughly before reuse. Wash thoroughly after handling, and before eating, drinking or smoking. PERSONAL PROTECTIVE EQUIPMENT: Chemical goggles Impervious gloves Appropriate protective clothing Appropriate respiratory protection is required when exposure to an airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart 1 (29 CFR 1910.134) and manufacturer's recommendations. Υ. Personnel exposed to hot molten material should wear protective clothing that provides protection from thermal burns. Full face shield, lined rain suit (or other heat resistant material), and lined impervious gloves are recommended. WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. Handle in areas with adequate ventilation. Use a respirator in accordance with OSHA Subpart I (29 CFR 1910.134), if mist or vapor levels are excessive. 1 HANDLING AND STORAGE PRECAUTIONS: None **ENGINEERING CONTROLS:** Adequate ventilation should be provided to keep mist or vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations. PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs.

i			•		
MSDS No.: 856	2188 0200-02	Da	te: 01/29/93	PAG	E: 05 of 06
VIII. ENVIRON	MENTAL & REGU	JLATORY DATA			
The following of this produc obligations.	environmental t in defining	and regulat their regul	ory data are atory environ	provided to a mental compli	ssist users ance
A. PRODUCT CC	MPOSITION (				
PRODUCT (F COMPONENT	P) or TRA NO. CHE	DE NAME or MICAL COMPON	ENT	CASRN	WT. PERCENT
Р	HERCU	LES* AR-150	Surfactant	8050-33-7	100
		À			
B. SARA TITLE	III (See foo	tnotes) <sub>v.</sub>			
COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)		312 SEC EGORY CHEM	C. 313 TOXIC ICAL (YES, NO)
Р	N/A	N/A	NHH, NPH		NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

# D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulations 40 CFR 261.33 paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261 Subpart C. State or local hazardous waste regulations may apply if different from the federal.

# E. TSCA STATEMENT

-

The components of this product are included on the EPA TSCA Chemical Substance Inventory.

Continued...

4

••	.Conti	nued
FO	OTNOTE	5:
	SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
	N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
	⇒ SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
	N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
	SEC. "Haza	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements ard Categories" HC-1 Immediate (acute) health hazard
		HC-1 Thinled Table (acule) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
		HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
		NHH Not a health hazard NPH Not a physical hazard
	656	
	SEC.	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
	NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and
		Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
	YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
	N/A:	This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

RELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT WHEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

Doc. No. 2746s

1ATERIAL SAFETY DATA SHEET PAGE: 01 OF 07 ES INCORPORATED 1E17 NEUPHOR\* 535 IE. CLES PLAZA JILMINGTON, DE 19894 HONE #: (302) 594-5000 (24 HRS) MSDS NO.: 285 8012 0100-04 285 8012 0100-03 DATE: 03/10/89 JUPERSEDES MSDS NO.: -PRODUCT IDENTIFICATION CAUTION! MAY CAUSE EYE IRRITATION. CONTAINS LESS THAN 0.5% METHYLENE CHLORIDE, A SUSPECTED HUMAN CARCINOGEN. IEUPHOR\* 535 ANIONIC EMULSION SIZE , HMIS RATINGS: (1) HEALTH HAZARD: 1 SLIGHT FLAMMABILITY HAZARD: 0 MINIMAL REACTIVITY HAZARD: 0 MINIMAL HEMICAL & COMMON NAME: ROSIN DISPERSION PPEARANCE AND ODOR: WHITE MILKY LIQUID; SWEET ODOR RESISTERED TRADEMARK OF HERCULES INCORPORATED OOTNOTES 1) EXPLANATION OF ACRONYMS: MIS: HAZARDOUS MATERIALS IDENTIFICATION SYSTEM RATING FOR PRODUCT AS SUPPLIED. SHA PEL: OCCUPATIONAL SAFETY AND HEALTH STANDARDS PERMISSIBLE EXPOSURE LIMIT. LV: REGISTERED TRADEMARK OF AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS FOR THRESHOLD LIMIT VALUES. WA: TIME WEIGHTED AVERAGE /A: NOT APPLICABLE

ERCULES INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS ONTAINED IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE ELIABLE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT HEN THE MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE S TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS RODUCT MUST DECIDE FOR ITSELF WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY SE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS.

DATE: 03/10/89 ISDS NO.: 285 8012 0100-04 PAGE: 02 OF 07 \_\_\_\_\_ WHAZARDOUS INGREDIENTS & EXPOSURE LIMITS HEMICAL & COMMON NAMES: RECOMMENDED AIRBORNE LEVELS(1) OSHA PEL TLV-TWA 1988-89 ETHYLENE CHLORIDE (75-09-2) 500 PPM (2) 50 PPM, A2 (3) 2) FOR NEUPHOR 535, THE TIME WEIGHTED AVERAGE FOR AN 8-HOUR SHIFT IS 500 PPM. THE ACCEPTABLE CEILING CONCENTRATION IS 1000 PPM. THE OSHA ACCEPTABLE MAXIMUM PEAK ABOVE THE ACCEPTABLE CEILING CONCENTRATION FOR AN 8-HOUR SHIFT IS 2000 PPM FOR 5 MINUTES IN ANY 2 HOURS. 3) A2 CLASSIFICATION = INDUSTRIAL SUBSTANCES SUSPECTED OF CARCINOGENIC POTENTIAL FOR MAN. II. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS OILING POINT: 100 C (212 F) SOLUBILITY IN WATER: DISPERSIBLE APOR PRESSURE AT 20 C: SAME A WATER SPECIFIC GRAVITY: 1.04 APR DENSITY: LIGHTER THAN AIR PH: 5.5 - 6.5 OLATILE (VOL.),%: 65 EVAPORATION RATE: SAME AS WATER REEZING POINT: 0 C (32 F) A. \_\_\_\_\_ V. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA \_\_\_\_\_ LASH POINT: NONFLAMMABLE LAMMABLE LIMITS: N/A 1 UTOIGNITION TEMPERATURE: N/A XTINGUISHING MEDIA: NONE REQUIRED. PRODUCT IS A WATER EMULSION AND AS SUCH WILL NOT BURN. HOWEVER, WATER SPRAY, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE MAY BE USED ON FIRES INVOLVING THIS PRODUCT. PECIAL FIREFIGHTING PROCEDURES: NONE INUSUAL FIRE AND EXPLOSION HAZARDS: NONE

CONTINUED...

ISDS NO.: 285 8012 0100-04 DATE: 03/10/89 PAGE: 03 OF 07 FIRE, EXPLOSION, & REACTIVITY HAZARD DATA .. CONTINUED TABILITY CONSIDERATIONS: STABLE NCOMPATIBILITY WITH: NONE AZARDOUS DECOMPOSITION PRODUCTS: NONE AZARDOUS PRODUCTS OF COMBUSTION: PRINCIPALLY CARBON, CARBON MONOXIDE, AND CARBON DIOXIDE. AZARDOUS POLYMERIZATION: WILL NOT OCCUR. . HEALTH HAZARD DATA CAUTIONI MAY CAUSE EYE IRRITATION. CONTAINS LESS THAN 0.5% METHYLENE CHLORIDE, A SUSPECTED HUMAN CARCINOGEN. IGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE: ES: MAY CAUSE MILD REDNESS AND ITCHING. KIN: PROLONGED OR REPEATED CONTACT MAY CAUSE IRRITATION. MERGENCY & FIRST AID PROCEDURES: EYES: IN CASE OF CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES. REMOVE ANY CONTACT LENSES TO ENSURE THOROUGH FLUSHING. CALL A PHYSICIAN. SKIN: WASH WITH SDAP AND RUNNING WATER. \_\_\_\_\_ EDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: THIS MATERIAL CONTAINS A ROSIN DERIVATIVE. ROSIN AND SOME OF ITS DERIVATIVES HAVE BEEN REPORTED TO CAUSE SKIN SENSITIZATION IN SUSCEPTIBLE INDIVIDUALS. INDIVIDUALS SENSITIZED TO ROSIN DERIVATIVES MAY ALSO REACT TO THIS RESIN. · 🔍 RIMARY ROUTES OF ENTRY: EYES, SKIN

· ·

CONTINUED...

-

Υ.

ISDS NO.: 285 8012 0100-04

- 1		1						
1						 	 	 •
· ۱	-	HEALTH	HAZARD	DATA				
				_				
					*	 	 	 •

..CONTINUED

CANCER INFORMATION: THIS PRODUCT CONTAINS LESS THAN 0.5% METHYLENE CHLORIDE.

METHYLENE CHLORIDE HAS BEEN GIVEN A 28 CLASSIFICATION (SUFFICIENT ANIMAL DATA, INADEQUATE HUMAN DATA) BY IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER). THE FIFTH ANNUAL REPORT OF NTP (NATIONAL TOXICOLOGY PROGRAM) WILL LIST METHYLENE CHLORIDE AS A SUSPECT CÄRCINOGEN. METHYLENE CHLORIDE IS NOT REGULATED AS A CARCINOGEN BY OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS.)

THE OTHER COMPONENTS OF THIS PRODUCT ARE NOT LISTED AS CARCINOGENS BY THE NATIONAL TOXICOLOGY PROGRAM (NTP). THEY ARE NOT REGULATED AS CARCINOGENS BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND HAVE NOT BEEN EVALUATED BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC).

# REPORTED HUMAN EFFECTS:

METHYLENE CHLORIDE - EXPOSURE TO METHYLENE CHLORIDE VAPOR CAUSES NAUSEA, DIZZINESS, AND CENTRAL NERVOUS SYSTEM DEPRESSION (LIGHTHEADEDNESS, DROWSINESS, AND DEPRESSION OF MOTOR SKILLS SUCH AS HAND AND EYE ORDINATION) AT LEVELS THAT GREATLY EXCEED THE TLV VALUES. METHYLENE LORIDE IS METABOLIZED TO CARBON MONOXIDE WHICH CAN FORM CARBOXYHEMOGLOBIN WHICH REDUCES THE OXYGEN CARRYING CAPACITY OF BLOOD. LIQUID METHYLENE CHLORIDE MAY CAUSE EYE AND SKIN IRRITATION AND EXPOSURE TO HIGH CONCENTRATIONS OF METHYLENE CHLORIDE VAPORS CAN CAUSE RESPIRATORY IRRITATION WHICH COULD LEAD TO A DELAYED PULMONARY EDEMA, BUT ALL SYMPTOMS ARE EXPECTED TO BE TRANSIENT. LIMITED EPIDEMIOLOGY STUDIES OF OCCUPATIONALLY EXPOSED WORKERS FAILED TO SHOW ANY EFFECTS THAT COULD BE DIRECTLY ATTRIBUTED TO METHYLENE CHLORIDE.

# EPORTED ANIMAL EFFECTS:

NO TOXICITY STUDIES HAVE BEEN CONDUCTED WITH THE FORMULATED PRODUCT.

METHYLENE CHLORIDE - ACUTE EXPOSURE OF ANIMALS TO RELATIVELY HIGH CONCENTRATIONS OF METHYLENE CHLORIDE GENERALLY CAUSES CENTRAL NERVOUS SYSTEM DEPRESSION. VERY HIGH CONCENTRATIONS HAVE BEEN REPORTED TO CAUSE HEART EFFECTS. CHRONIC ANIMAL STUDIES SHOWED LIVER AND KIDNEY CHANGES. SEVERAL CHRONIC STUDIES HAVE SHOWN THAT METHYLENE CHLORIDE IS A POTENTIAL ANIMAL CARCINOGEN. THE NATIONAL TOXICOLOGY PROGRAM HAS REVIEWED THEIR INHALATION STUDY AND CONCLUDED THAT IT IS A CARCINOGEN IN RODENTS. STUDIES IN MICE AND RATS SHOWED NO CLEAR EVIDENCE OF TERATOGENIC EFFECTS BEING ASSOCIATED WITH EXPOSURE TO METHYLENE CHLORIDE.

CONTINUED...

ISDS NO.: 285 8012 0100-04 DATE: 03/10/89 PAGE: 05 OF 07

12.

# ...CONTINUED

ORAL LD50 (RATS) C. 2,000 MG/KG; INHL LC50 (RATS/8 HOURS) C. 15,000 PPM (WITH SLIGHT NARCOSIS AT 4,000 TO 6,100 PPM). IN RABBITS, A MILD EYE AND SKIN IRRITANT (BUT WILL CAUSE SKIN BURNS WHEN OCCLUDED). ACUTE AND SUBACUTE STUDIES SHOW A SEX AND SPECIES DIFFERENCE: WHEN EXPOSED AT 5,000 PPM, 7 HOURS/DAY, FOR 6 MONTHS, GUINEA PIGS SHOWED A DEPRESSED GROWTH RATE NOT OBSERVED WITH DOGS AND RABBITS. AT 10,000 PPM, 4 HOURS/DAY, FOR 7.5 WEEKS, DOGS AND GUINEA PIGS DEVELOPED LIVER INJURY WHICH WAS NOT FOUND IN MONKEYS, RATS, OR RABBITS. IN CHRONIC STUDIES, HAMSTERS WERE NOT AFFECTED AT 3,500 PPM, 6 HOURS/DAY, 5 DAYS/WEEK FOR 2 YEARS, AND MALE RATS WERE NOT AFFECTED AT 500 PPM 6 HOURS/DAY, 5 DAYS/WEEK, FOR 2 YEARS. HOWEVER, FEMALE RATS AT THE 500 PPM LEVEL SHOWED EXPOSURE RELATED EFFECTS IN THE LIVER AND MAMMARY TISSUE.

IN THE NTP STUDY, RATS OF BOTH SEXES WERE EXPOSED AT 4,000, 2,000, AND 1,000 PPM AND MICE OF BOTH SEXES WERE EXPOSED AT 4,000 AND 2,000 PPM 6 HOURS/DAY, 5 DAYS/WEEK, FOR 2 YEARS.

# THER:

METHYLENE CHLORIDE IS A MUTAGEN IN BACTERIA BUT NOT IN MAMMALIAN CELLS. IT N CAUSE CHROMOSOME ABERRATIONS IN CULTURED CELLS BUT NOT IN LIVING IMALS; IT DOES NOT INDUCE MICRONUCLEI IN LIVING ANIMALS. GENERALLY SCE STUDIES HAVE GIVEN NEGATIVE RESULTS.

I. SPILL PROCEDURES & WASTE DISPOSAL

PILL PROCEDURES:

DIKE LARGE SPILLS AND PUMP TO SALVAGE CONTAINER. WASH DOWN SMALL SPILLS. SCRUB RESIDUE WITH WATER AND STRONG DETERGENT.

ASTE DISPOSAL METHOD:

INCINERATION IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. SUPPLEMENTAL FUEL MAY BE REQUIRED.

THIS PRODUCT IS BIODEGRADABLE. WASTEWATER CONTAINING THIS PRODUCT CAN BE CONSIDERED FOR TREATMENT IN AN ACCLIMATED BIOLOGICAL TREATMENT SYSTEM OF ADEQUATE CAPACITY.

Υ.

A

1.2

ISDS NO.: 285 8012 0100-04 DATE: 03/10/89 PAGE: 06 OF 07 APPLICABLE CONTROL MEASURES Л PPROPRIATE HYGIENIC PRACTICES: AVOID BREATHING VAPOR. AVOID CONTACT WITH EYES, SKIN, AND CLOTHING. WASH THOROUGHLY AFTER HANDLING, AND BEFORE EATING, DRINKING OR SMOKING. ERSONAL PROTECTIVE EQUIPMENT: IMPERVIOUS GLOVES SAFETY GLASSES APPROPRIATE RESPIRATORY PROTECTION IS REQUIRED WHEN EXPOSURE TO AN AIRBORNE CONTAMINANT IS LIKELY TO EXCEED ACCEPTABLE LIMITS. RESPIRATORS SHOULD BE SELECTED AND USED IN ACCORDANCE WITH OSHA, SUBPART I (29CFR1910.134) AND MANUFACTURER'S RECOMMENDATIONS. ORK PRACTICES: EYEWASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE EASILY ACCESSIBLE. ANDLING AND STORAGE PRECAUTIONS: STORE AT ROOM TEMPERATURE. NGINEERING CONTROLS: ADEQUATE VENTILATION SHOULD BE PROVIDED TO KEEP VAPOR CONCENTRATIONS BELOW ACCEPTABLE EXPOSURE LIMITS. DISCHARGE FROM THE VENTILATION SYSTEM SHOULD PAMPLY WITH APPLICABLE AIR POLLUTION CONTROL REGULATIONS. ÷. 

1

OC. NO. 15345

ISDS NO.: 285 8012 0100-04

DATE: 03/10/89

N ...

# I ENVIRONMENTAL REGULATORY DATA

Y.

HIS PRODUCT DOES CONTAIN A CHEMICAL THAT MAY BE SUBJECT TO A FEDERAL NVIRONMENTAL PROTECTION AGENCY REGULATORY REPORTING REQUIREMENT UNDER THE OMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT CERCLA), THE RCRA HAZARDOUS WASTE MANAGEMENT REGULATIONS, OR SARA TITLE III MERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986. THE FOLLOWING NVIRONMENTAL DATA ARE PROVIDED TO ASSIST USERS OF THIS PRODUCT IN DEFINING HEIR REGULATORY ENVIRONMENTAL COMPLIANCE OBLIGATIONS. IT IS THE USER'S ESPONSIBILITY TO DETERMINE HIS/HER COMPLIANCE OBLIGATIONS UNDER THESE AND THER FEDERAL OR STATE STATUTES.

# . PRODUCT COMPOSITION

PRODUCT (P) OR COMPONENT NO.	TRADE NAME OR CHEMICAL COMPONENT	CAS NUMBER	PERCENT
P 1	PRODUCT METHYLENE CHLORIDE	75-09-2	0.5 (MAX)

# SARA TITLE III

SEC 313 - 40 CFR 372 TOXIC CHEMICAL RELEASE REPORTING REQUIREMENTS

IS PRODUCT CONTAINS A TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372 TOXIC CHEMICAL REPORTING REQUIREMENTS.

COMPONENT NO.

1

CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

 $\mathcal{T}_{\alpha \beta}$ 

NEUPHOR\* 535 CONTAINS METHYLENE CHLORIDE THAT IS A "HAZARDOUS SUBSTANCE" LISTED IN 40 CFR 302.4. NEUPHOR 535 HAS A "REPORTABLE QUANTITY" OF 250,000 LBS.

RCRA INFORMATION

THIS PRODUCT IS NOT LISTED IN FEDERAL HAZARDOUS WASTE REGULATION 40CFR261.33, PARAGRAPH (E) (F) - I.E., CHEMICAL PRODUCTS THAT ARE CONSIDERED HAZARDOUS IF THEY BECOME WASTES. IT DOES NOT EXHIBIT ANY OF THE HAZARDOUS CHARACTERISTICS LISTED IN 40CFR261, SUBPART C. STATE OR LOCAL HAZARDOUS WASTE REGULATIONS MAY APPLY IF THEY ARE DIFFERENT FROM THE EDERAL REGULATION.

.....<u>A</u>\_\_\_\_\_

IC. NO. 1534S

202400 a	•	10/11/11
an a a a a a a a a a a a a a a a a a a	MATERIAL SAFETY DATA SHEET	PAGE: 01 of 07
- A	HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894 Phone #: (302) 594-5000 (24 hrs)	Hi-pHase* 35 Cationic dispersed size MSDS No.: 285 7011 0401-06
	Supersedes MSDS No.: 285 7011 0401-05	
	I. PRODUCT IDENTIELCATION	
2•	CAUTION! MAY CAUSE	E EYE IRRITATION.
	Hi-pHase* 35 Cationic dispersed size	HMIS RATINGS: (1)
	CASRN: Mixture	Health hazard: I Slight Flammability hazard: O Minimal Reactivity hazard: O Minimal
	CHEMICAL & COMMON NAME: Dispersed rosin	size
)	APPEARANCE AND ODOR: Creamy white liquid * Registered Trademark of Hercules Incorp	Do Not Remove /
$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$	II. HAZARDOUS INGREDIENTS & EXPOSURE LI	MITS
	CHEMICAL & COMMON NAMES: %	RECOMMENDED AIRBORNE LEVELS (1)
	$I^{\mu}$ , $\tilde{I}^{\mu}$ , $\tilde{I}^{$	1989-1990 OSHA TWA TLV-TWA
	Hi-pHase* 35 100	Not established
	Aluminum Sulfate < 5	2 mg/m3 (as Al) 2 mg/m3 (as Al)
	· · · · · · · · · · · · · · · · · · ·	
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Identification CASRN: Chemical Abstract Substance Regis AIHA WEEL: American Industrial Hygienists Environmental Exposure Level.</li> <li>OSHA: Occupational Safety and Health Admi TLV: Registered trademark of American Co Hygienists for Threshold Limit Valu</li> </ul>	try Number Association,- Workplace nistration. nference of Governmental Industrial
	TWA: Time Weighted Average STEL: Short term exposure limit (See 29 C C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 2 N/A: Not applicable	FR 1910.1048, March 1, 1989, revision) CFR 1910.1000, March 1, 1989, rev.)
	TWA: Time Weighted Average STEL: Short term exposure limit (See 29 C C: Ceiling exposure concentration (See 29 SKIN: May be absorbed through skin (See 2	FR 1910.1048, March 1, 1989, revision) CFR 1910.1000, March 1, 1989, rev.)

r F B B F

Ň			•			
e K	MSDS No.: 285 7011 0401-06		10/01/91		02 of 07	Í
	III. TYPICAL PHYSICAL & CHEMICAL	CHARÀCTE	RISTICS			
$\bigcirc$	BOILING POINT: 100 C (212 F)	<b>-</b> -	SOLUBILITY IN WAT	ER: Dis	persible	
	VAPOR PRESSURE @ 20 C: Similar to	o water	SPECIFIC GRAVITY:	Not de	termined	
	VAPOR DENSITY: Lighter than air		pH: 2.2 - 3.2			
	VOLATILE (VOL.),%: 65	·	EVAPORATION RATE:	Similar	• to water	
	FREEZING POINT: -8 C (15 F)		j <sup>e</sup> e			
	IV. FIRE, EXPLOSION, & REACTIVIT					
	FLASH POINT: Non-flammable					
	FLAMMABLE LIMITS: N/A			•		
	AUTOIGNITION TEMPERATURE: N/A	23				
	EXTINGUISHING MEDIA: Product is dispersed in water a spray, dry chemical, foam, carb involving this product.	nd as suc on dioxid	h will not burn. e, or halon may be	However, used on	water fires	
.0	SPECIAL FIREFIGHTING PROCEDURES:	Use.self-	contained breathin	g appara	tus.	
	UNUSUAL FIRE AND EXPLOSION HAZARDS	÷	· · · · ·		78	
	STABILITY CONSIDERATIONS: Stable. Store at room temperatu	re, as co	ol as possible but	above 4	C (40 F).	
	INCOMPATIBILITY WITH: Strong alka				•	
	HAZARDOUS DECOMPOSITION PRODUCTS:	None				
ę	HAZARDOUS PRODUCTS OF COMBUSTION: This product is an aqueous solut heated to decomposition, it may smoke. Depending on conditions, acids, hydrogen cyanide, nitroge	tion whic evolve c some a n oxides	arbon monoxide, ca liphatic aldehydes or ammonia also ma	bon dio	(ide 'and	
	HAZARDOUS POLYMERIZATION: Will not		ಗಳು ಬೆಳೆ ಸಂಗ ಗಾವಿಗಿದ್ದಳಿ			
	- 5		Jedia I		×.	
		1 - A - A - A - A - A - A - A - A - A -		·	•	
		λ	9 8 <sup>6</sup>			
1	<b>K</b> 12	γ.				

. . .

· ·

" MSDS No.: 285 7011 0401-06

# V. HEALTH HAZARD DATA

# CAUTION! MAY CAUSE EYE IRRITATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:EYES:Redness, pain, tearingSKIN:None expected (See below: MEDICAL CONDITIONS GENERALLY<br/>RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE).INHALATION:Inharring vapor or mist may cause respiratory irritation.INGESTION:None known.

# EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.

SKIN: Wash with soap and running water.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician if irritation persists.

INGESTION: If conscious, the person should immediately drink large quantities of liquid to dilute this product. Induce vomiting. Call a physician if irritation persists. NEVER give liquids to an unconscious person. NEVER induce vomiting in an unconscious person.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This material contains a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals under certain non-industrial exposure conditions of repeated and prolonged skin contact. Individuals sensitized to rosin derivatives may also react to this resin after skin contact. Hercules is unaware of any allergic skin reactions caused by industrial exposure to rosin or its derivatives.

PRIMARY ROUTES OF ENTRY: Eyes, skin

CANCER INFORMATION:

HI-PHASE\* 35: The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

MSDS No.: 285 7011 0401-06	Date: 10/01/91	PAGE: 04 of 0	7
V. HEALTH HAZARD DATA	7		
Continued	······································		 ,
REPORTED HUMAN EFFECTS: HI-PHASE* 35: None known.		:	
ALUMINUM SULFATE: Ingestion of gingival necrosis and hemorrhag accompanied by incoordination, nephritis.	lic dastroenteritis The	so offerte may be	
REPORTED ANIMAL EFFECTS: HI-PHASE* 35: None known.	٩.		
ALUMINUM SULFATE: The acute or is 2,812 mg/kg (or 228 mg/kg as anhydrous material is 6,207 mg/ LD50 (rabbit) is greater than 2 (0.47/8), and the acute eye irr conjunctival membranes. In a 2 diet (hydrated material), rats intoxication. At autopsy, a mi kidneys were noted at all dieta	AI), while that reported kg (or 980 mg/kg as AI). 1.4 g/kg. Rabbit skin in itation was moderate and 8-day feeding study at 10 showed no grossly observa 1d incidence of enlarged	I for mice for the The acute dermal ritation was mild was confined to th 0,000 ppm in the ble signs of and/or cystic	ie
VI. SPILL PROCEDURES & WASTE DIS	POSAL		
SPILL PROCEDURES: Small Spills: Add absorbent, sw to contain and pump into drums t	weep up, and discard la	rge Spills: Dike	 -
WASTE DISPOSAL METHOD:		25 11 15 12 (1943-124)	
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required.	in accordance with loca	atment system of	e
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept	acclimated biological tre n in accordance with loca table alternative. Suppl	atment system of 1, state, and emental fuel may be	e
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required. When the drum is empty, rinse it Refer to Section VIII for specif Data regarding use or disposal o	acclimated biological tre n in accordance with loca table alternative. Supple with plenty of water be ic Federal Environmental of this product.	atment system of l, state, and emental fuel may be fore discarding. and Regulatory	9
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required. When the drum is empty, rinse it Refer to Section VIII for specif Data regarding use or disposal o	acclimated biological tre in accordance with loca table alternative. Supple with plenty of water be ic Federal Environmental	atment system of l, state, and emental fuel may be fore discarding. and Regulatory	e 
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required. When the drum is empty, rinse it Refer to Section VIII for specif Data regarding use or disposal o	acclimated biological tre n in accordance with loca table alternative. Supple with plenty of water be ic Federal Environmental of this product.	atment system of l, state, and emental fuel may be fore discarding. and Regulatory	e 
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required. When the drum is empty, rinse it Refer to Section VIII for specif Data regarding use or disposal o	acclimated biological tre n in accordance with loca table alternative. Supple with plenty of water be ic Federal Environmental of this product.	atment system of l, state, and emental fuel may be fore discarding. and Regulatory	e 
This product is biodegradable. considered for treatment in an a adequate capacity. Incineration federal regulations is an accept required. When the drum is empty, rinse it Refer to Section VIII for specif Data regarding use or disposal o	acclimated biological tre n in accordance with loca table alternative. Suppl with plenty of water be ic Federal Environmental of this product.	atment system of l, state, and emental fuel may be fore discarding. and Regulatory	e 

10 10

7.

1,0

9 <sup>°</sup> 1	£			
· ' ~		MSDS No.: 285 7011 0401-06 Date: 10/01/91	PAGE:	05 of 07
$\bigcirc$		VII. APPLICABLE CONTROL MEASURES		
		APROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling, and before eating, drinking Avoid breathing mist. Remove contaminated clothing promptly and clean thoroughly		
al et	r Ai	PERSONAL PROTECTIVE EQUIPMENT: Safety glasses () Impervious gloves Appropriate respiratory protection is required when exposure contaminant is likely to exceed acceptable limits. Respirat selected and used in accordance with OSHA, Subpart I (29 CFF manufacturer's recommendations. Appropriate protective clothing	e to an	airborne
		WORK PRACTICES: Eyewash fountains and safety showers should be easily access	ible.	
		HANDLING AND STORAGE PRECAUTIONS: Keep containers closed. Strong alkalies or anionic materials will cause emulsion to not store near such materials.		te. Do
)	×	ENGINEERING CONTROLS: Adequate ventilation should be provided to keep mist concent acceptable exposure limits. Discharge from the ventilation comply with applicable air pollution control regulations.	ration: system	s below should
		PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, pipin before beginning maintenance or repairs.	2 S	essels
	₫4			
			A6	
			9	
			·** 3-	- S
	-	-		

 $(\bigcirc)$ 

į

. . .

•

e x .

MSDS No.: 285 7011 0401-06

Is.

			) )		
0.	e following e this product ligations.	environmen t in defin	ntal and regulator	y data are provideo ory environmental o	d to assist users compliance
Α.	PRODUCT COM	1POSITION			
	PRODUCT (P) Component N		TRADE NAME or CHEMICAL COMPONEN	T CAS NUMBER	WT. PERCENT
60	P 1		HI-PHASE* 35 Aluminum Sulfate	N/A 10043-01-3	100 5.0 max.
в.	SARA TITLE	III (See	footnotes)	ā	
	COMPONENT NO.	SEC. 30 EHS RQ (1bs	EHS	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, NO)

HC-1, HC-2, NPH	N/A
HC-1, NPH	No
	· ·

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

HI-PHASE\* 35 contains aluminum sulfate which is a "Hazardous Substance" listed in 40 CFR 302.4 which has a "Reportable Quantity" of 5,000 lbs.

# D. RCRA INFORMATION

P 1

Normal variations in this product may cause its pH to be below 2.5. In those cases the product exhibits the characteristic of CORROSIVITY as defined in hazardous waste regulations 40 CFR 261 Subpart C and disposal of unused product must comply with hazardous waste regulations.

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) – i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

.

None

n.	ECEL	t.
Ŋ	<b>Jan</b> 2 3 1996	
	DEQ-OPC	1

Continued...

MSDS No.: 285 7011 0401-06

1

. -

...

.

Conti	nued
FOOTNOTE	S:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	This chemical is not an EHS. Therefore, there is no Threshold Planning Quantity (TPQ).
SEC.	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
SEC Cate	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard gories" HC-1 Immediate (acute) health hazard
	HC-2 Delayed (chronic) health hazard HC-3 Fire hazard HC-4 Sudden release of pressure hazard
	HC-5 Reactive hazard NHH Not a health hazard NPH Not a physical hazard
SEC 3	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
. NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical. Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements. Percent composition (or estimated range) is listed above.
N/A:	Chemical under 40 CFR 372, Sect. 313 reporting requirements. Reportable constituents are listed individually where the
¥3	threshold concentration limits.
RCULES	INCORPORATED HAS COMPLLED THE INCODUCTION AND SEC
LIABLE A	AND TO REPRESENT THE MOST REASONABLE CURRENT CONTROL OF THE PROPERTY OF THE MOST REASONABLE CURRENT CONTROL OF THE PROPERTY OF
	ASDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USED OF THIS

AS TO THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS PRODUCT MUST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS ENVIRONMENTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL OR STATE LAWS.

.

Doc. No. 4153s

×

2

• • •

.

a na dh' sadha shta ji

4

۰,

· · · · · · · · · · · · ·

$\overline{\lambda}$	MATERIAL SAFETY DATA SHEET		10/18/91	⊅AGE: 01 of 07		
9	HERCULES INCORPORATED Hercules Plaza Wilmington, DE 19894		HERCAT* 627 Cationic emulsion			
	Phone #: (302) 594-5000 (21	+ hrs)	MSDS No.: 285 7011	0800-02		
	Supersedes MSDS #: 285 701	10-0080	Date: 10/11/91			
	I. PRODUCT IDENTIFICATIO	)N				
	CAUT I	ON! MAY CAUSE	EYE IRRITATION.			
	HERCAT* 627 Cationic emulsion size		HMIS RATINGS: (1)			
	CASRN: Mixture	λ	Health hazard: Flammability hazard: Reactivity hazard:	l Slight O Minimal O Minimal		
	CHEMICAL AND COMMON NAME: Cationic dispersion of rosin					
	APPEARANCE AND ODOR: Creamy white liquid; tall oil odor					
$\bigcirc$	☆ Registered Trademark of H€	ercules Incorpo	prated	د. در ۲۰۰۰ د		
	II. HAZARDOUS INGREDIENTS	& EXPOSURE LIN	11TS			
	CHEMICAL & COMMON NAMES	 % ,1	RECOMMENDED AIRBO 1989-19			
	UEDCATA (AT		OSHA TWA	TLV-TWA		
	HERCAT* 627	100	Not establis	hed		
	Aluminum Sulfate	< 30		mg/m3 (as Al)		
	<ul> <li>(1) Explanation of acronyms:</li> <li>HMIS: Hazardous Materials Id</li> <li>CASRN: Chemical Abstract Su</li> <li>AIHA WEEL: American Industrian</li> <li>Environmental Explosion</li> <li>OSHA: Occupational Safety and</li> <li>TLV: Registered trademark of</li> <li>Hygienists for Thresho</li> <li>TWA: Time Weighted Average</li> <li>STEL: Short term exposure lime</li> <li>C: Ceiling exposure concentration</li> <li>SKIN: May be absorbed through</li> <li>N/A: Not applicable</li> </ul>	entification S bstance Regist al Hygienists osure Level. d Health Admin f American Con ld Limit Value nit (See 29 CFI ation (See 29 CFI	ry Number Association - Workplace istration. ference of Governmental s. R 1910.1048, March 1, 1 CFR 1910.1000 March 1	et as supplied. Industrial		

MSDS No.: 285 7011 0800-02 Date: 10/11/91 PAGE: 02 of 07 \_\_\_\_\_\_\_ 111. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS \_\_\_\_\_\_ BOILING POINT: 100 C (212 F) SOLUBILITY IN WATER: Dispersible λ VAPOR PRESSURE AT 20 C: Similar to water SPECIFIC GRAVITY: Not determined 1 . pH: 2.2 - 2.8 VAPOR DENSITY: Lighter than air EVAPORATION RATE: Similar to water VOLATILE (VOL.),%: 65 FREEZING POINT: O C (32 F) FIRE, EXPLOSION, & REACTIVITY HAZARD DATA 10. \_\_\_\_\_ FLASH POINT: Non-flammable 1 FLAMMABLE LIMITS: N/A AUTOIGNITION TEMPERATURE: N/A EXTINGUISHING MEDIA: Product is dispersed in water and as such will not burn. However, water spray, dry chemical, foam, carbon dioxide, or halon may be used on fires involving this product. SPECIAL FIREFIGHTING PROCEDURES: Use self-contained breathing apparatus. UNUSUAL FIRE AND EXPLOSION HAZARDS: None STABILITY CONSIDERATIONS: Stable. Store at room temperature, as cool as possible but above 4 C (40 F). INCOMPATIBILITY WITH: Strong alkalies or anionic materials HAZARDOUS DECOMPOSITION PRODUCTS: None 1 HAZARDOUS PRODUCTS OF COMBUSTION: This product is an aqueous solution which will not support combustion. If heated to decomposition, it may evolve carbon monoxide, carbon dioxide and smoke. Depending on conditions, some aliphatic aldehydes and carboxylic acids, hydrogen cyanide, nitrogen oxides or ammonia also may be formed. HAZARDOUS POLYMERIZATION: Will not occur. 

MSDS No.: 285 7011 0800-02

# V. HEALTH HAZARD DATA

# 

# CAUTION! MAY CAUSE EYE IRRITATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: Redness, pain, tearing

SKIN: None expected (See below: MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE). INHALATION: Inhaling vapor or mist may cause respiratory irritation. INGESTION: None known.

### EMERGENCY & FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing? Call a physician.

SKIN: Wash with soap and running water.

INHALATION: Remove to fresh air. Treat any irritation symptomatically. Call a physician if irritation persists.

INGESTION: If conscious, the person should immediately drink large quantities of liquid to dilute this product. Induce vomiting. Call a physician if irritation persists. NEVER give liquids to an unconscious person. NEVER induce vomiting in an unconscious person.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: This material contains a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals under certain non-industrial exposure conditions of repeated and prolonged skin contact. Individuals sensitized to rosin derivatives may also react to this resin after skin contact. Hercules is unaware of any allergic skin reactions caused by industrial exposure to rosin or its derivatives.

PRIMARY ROUTES OF ENTRY: Eyes, skin

# CANCER INFORMATION:

HERCAT\* 627: The components of this product are NOT listed as carcinogens by the National Toxicology Program (NTP). They are not regulated as carcinogens by the Occupational Safety and Health Administration (OSHA) and have not been evaluated by the International Agency for Research on Cancer (IARC).

1

REPORTED HUMAN EFFECTS: HERCAT\* 627: None known.



MSDS No.: 285 7011 0800-02
----------------------------

Date: 10/11/91 PAGE: 04 of 07

•

\_\_\_\_\_

HEALTH HAZARD DATA ۷. 

-----

REPORTED HUMAN EFFECTS:Continued ALUMINUM SULFATE: Ingestion of concentrated solutions has produced gingival necrosis and hemorrhagic gastroenteritis. These effects may be accompanied by incoordination, clonic contractions, and evidence of nephritis.
REPORTED ANIMAL EFFECTS: HERCAT* 627: None known.
ALUMINUM SULFATE: The acute oral LD50 (rats) for hydrated aluminum sulfate is 2,812 mg/kg (or 228 mg/kg as A1), while that reported for mice for the anhydrous material is 6,207 mg/kg (or 980 mg/kg as A1). The acute dermal LD50 (rabbit) is greater than 21.4 g/kg. Rabbit skin irritation was mild (0.47/8), and the acute eye irritation was moderate and was confined to the conjunctival membranes. In a 28-day feeding study at 10,000 ppm in the diet (hydrated material), rats showed no grossly observable signs of intoxication. At autopsy, a mild incidence of enlarged and/or cystic kidneys were noted at all dietary levels, including 3,160 ppm and 1,000 ppm.
VI. SPILL PROCEDURES & WASTE DISPOSAL
SPILL PROCEDURES: Small Spills: Add absorbent, sweep up, and discard. Large Spills: Dike to contain and pump into drums for use or disposal. WASTE DISPOSAL METHOD: This product is biodegradable. Wastewater containing this product can be considered for treatment in an acclimated biological treatment system of adequate capacity. Incineration in accordance with local, state, and federal regulations is an acceptable alternative. Supplemental fuel may be required. When the drum is empty, rinse it with plenty of water before discarding. Refer to Section VIII for specific Federal Environmental and Regulatory Data regarding use or disposal of this product.

MSDS No.: 285 7011 0800-02 Date: 10/11/91 PAGE: 05 of 07 \_\_\_\_\_ VII. APPLICABLE CONTROL MEASURES APROPRIATE HYGIENIC PRACTICES: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling, and before eating, drinking or smoking. Avoid breathing mist. Remove contaminated clothing promptly and clean thoroughly before reuse. PERSONAL PROTECTIVE EQUIPMENT: Safety glasses Impervious gloves Appropriate respiratory protection is required when exposure to an airborne contaminant is likely to exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations. Appropriate protective clothing WORK PRACTICES: Eyewash fountains and safety showers should be easily accessible. HANDLING AND STORAGE PRECAUTIONS: Keep containers closed. 🔒 Strong alkalies or anionic materials will cause emulsion to separate. Do not store near such materials. ENGINEERING CONTROLS: Adequate ventilation should be provided to keep mist concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations. PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: Completely isolate and thoroughly clean all equipment, piping or vessels before beginning maintenance or repairs. .1 1

	S No.: 285 70				
VII	I. ENVIRONME	NTAL REGULA	TORY DATA		
of	following er this product igations.	nvironmental in defining	and regulatory their regulato	data are provic ry environmental	led to assist users compliance
Α.	PRODUCT COM	POSITION			
	PRODUCT (P) COMPONENT N		NDE NAME OF MICAL COMPONENT	CAS NUMBE	ER WT. PERCEN
	P ใ		RCAT≭ 627 uminum Sulfate	N/A 10043-01-	-3 100 -3 30.0 max
в.	SARA TITLE	(See foo	otnotes)		
	COMPONENT NO.	SEC. 304 EHS RQ (1bs)	SEC. 302 EHS TPQ (1bs)	SEC. 311/312 HAZARD CATEGORY	SEC. 313 TOXIC CHEMICAL (YES, N
	Р	N/A N/A	N/A N/A	HC-1, HC-2, NPH HC-1, NPH	N/A NO

CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES) С.

HERCAT\* 627 contains aluminum sulfate which is a "Hazardous Substance" listed in 40 CFR 302.4 which has a "Reportable Quantity" of 5,000 lbs.

RCRA INFORMATION D.

1

Normal variations in this product may cause its pH to be below 2.5. In those cases the product exhibits the characteristic of CORROSIVITY as defined in hazardous waste regulations 40 CFR 261 Subpart C and disposal of unused product must comply with hazardous waste regulations.

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

OTHER Ε.

None

Continued...

· .....

MSDS No.: 285 7011 0800-02

.

•

	NVIRONMENTAL REGULATORY DATA
Conti	nued
FOOTNOTE	S:
SEC.	302 - Threshold Planning Quantity, Extremely Hazardous Substance (EHS) (40 CFR 355 Emergency Planning and Notification regulations)
N/A:	
	304 - Reportable Quantity for Releases of an EHS (40 CFR 355, Appendix A)
N/A:	This chemical is not an EHS. Therefore, there is no Reportable Quantity (RQ).
SEC Cate	311/312 - 40 CFR 370 Hazardous Chemical Reporting Requirements "Hazard gories"
	HC-l Immediate (acute) health hazard HC-2 Delayed (chronic) health hazard HC-3 Fire hazard
	HC-4 Sudden release of pressure hazard HC-5 Reactive hazard
	NHH Not a health hazard
	NPH Not a physical hazard
SEC 3	313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements
NO:	This component is NOT subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
YES:	This component is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 Toxic Chemical Reporting requirements.
N/A:	Percent composition (or estimated range) is listed above. This product is a mixture. As such, it is not listed as a Toxic Chemical under 40 CFR 372, Sect. 313 reporting requirements.
	Reportable constituents are listed individually where they exceed threshold concentration limits.
ł	
ERCULES ONTAINED ELIABLE HEN THE S TO THE RODUCT M RODUCT,	INCORPORATED HAS COMPILED THE INFORMATION AND RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET FROM SOURCES BELIEVED TO BE AND TO REPRESENT THE MOST REASONABLE CURRENT OPINION ON THE SUBJECT MSDS WAS PREPARED. NO WARRANTY, GUARANTY OR REPRESENTATION IS MADE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION. THE USER OF THIS UST DECIDE WHAT SAFETY MEASURES ARE NECESSARY TO SAFELY USE THIS EITHER ALONE OR IN COMBINATION WITH OTHER PRODUCTS, AND DETERMINE ITS NTAL REGULATORY COMPLIANCE OBLIGATIONS UNDER ANY APPLICABLE FEDERAL LAWS.
oc. No.	5013s

MATERIAL SAFETY DATA SHEET	PAGE: 01 of 08	
HERCULES INCORPORATED	PAMITE* TALL OIL ROSIN (All grades)	
Hercules Plaza		
<pre>~ ilmington, DE 19894</pre>		
hone #: (302) 594-5000 (24 hrs)'4	MSDS No.: 676 4401 0100-03	
Supersedes MSDS No.: 676 4401 0100-02	Date: 08/24/90	
I. PRODUCT IDENTIFICATION		
	<b>)</b> a s a	
WARNING! STATIC CHARGES GENERATED BY I VAPORS MAY CAUSE FLASH FIRI	5. <sub>1</sub>	
MAY FORM FLAMMABLE DUST-AIR N		
(FOR BAGS 1000 LBS. OR GREATE HAZARDS).	ER, SEE SECTION VII FOR ADDITIONAL	
PAMITE* TALL OIL ROSIN (All grades)	HMIS RATINGS:(1)	
	Health hazard: 0 Minimal	i.
	Flammability hazard: l Slight	
	Reactivity hazard: 0 Minimal	
APPEARANCE AND ODOR: Amber-colored solid		
* Registered Trademark of Hercules Incorr	orated.	
	/**	
	2	
(1)Explanation of acronyms:		
HMIS: Hazardous Materials Identification	System rating for product as supplied.	
OSHA: Occupational Safety and Health Admi		•
TLV: Registered trademark of American Co		
Hygienists for Threshold Limit Valu TWA: Time Weighted Average	1es.	
		s
N/A: Not applicable		
Hercules Incorporated has compiled the ir		
contained in this Material Safety Data Sh		
reliable and to represent the most reason		
when the MSDS was prepared. No warranty,		
as to the correctness or sufficiency of t		
product must decide what safety measures		
product, either alone or in combination w		15
environmental regulatory compliance oblig	ations under any applicable federal	
or state laws.	经收益 建塑料 化化量塑	
	TRAT	

÷.

.

Master File Do Not Remove This Copy

MSDS No.: 676 4401 0100-03

Date: 08/24/90

IV.	FIRE, EXPLO	SION, & REACTIVIT	Y HAZARD DATA		
$\odot$		_			
	Continued				
EXI	INGUISHING MED	IA: Water spray,	dry chemical, f	oam, carbon dioxid	e, or halon
SPE	CIAL FIREFIGHT	ING PROCEDURES:	Use self-contair	ed breathing appara	atus.
UNU	ISUAL FIRE AND	EXPLOSION HAZARDS	: May form flam	mable dust-air mix	tures.
ST	ABILITY CONSIDE	RATIONS: Stable			
INC	COMPATIBILITY W	ITH: None			
HAZ	ARDOUS DECOMPO	SITION PRODUCTS:	None expected.	×	
HAZ	Carbon monoxid	S OF COMBUSTION: le, carbon dioxide hydes and carboxy	and smoke. Dep lic acids also r	bending on conditio may be formed.	ns, some
		IZATION: Will no			
	HEALTH HAZA	מייאמ חסי		2	
	GNS AND SYMPTON EYES:	fumes from decomp	ritation by mec position of rosi	CE: hanical abrasion. n products heated t ation, with redness	o high
	SKIN:			ENERALLY RECOGNIZED	AS BEING
	INHALATION:	Breathing smoke of heated to high to coughing and sore	or fumes from de emperatures may	composition of rosi produce breathing d	n products liscomfort,
	INGESTION:	None known.			0.12
EM	EYES: In cas water for at	r AID PROCEDURES: e of contact, imm	Remove any con	ith plenty of low-p tact lenses to ensu	pressure Ire
10	material come water. Do NO	ith soap and runn s in contact with T attempt to remo ere tissue damage	the skin, cool ve the resin fro	under a running st m the skin. Remova	ceam of
	NOTE TƏ PHYSI Mineral oil m	CIAN: Material s ay be used to loo	hould not be for sen the material	cibly pulled from .	the <sup>°</sup> skin.
·				· .	
$\bigcirc$		24	Continued		

.

VI.	SPILL PROCEDURES & WASTE DISPOSAL	
DITT		
	PROCEDURES:	
CO	material is not contaminated, scoop ntaminated, scoop into containers fo	r disposal.
WASTE	DISPOSAL METHOD:	
ace di:	cineration of combustible waste mate cordance with local, state, and fede sposal method. Landfilling in a lic ternative.	ral regulations is the recommended
Rei Dai	fer to Section VIII for specific Fed ta regarding use or disposal of this	eral Environmental and Regulatory product.
	APPLICABLE CONTROL MEASURES	
APPRO	PRIATE HYGIENIC PRACTICES:	a 21
	oid contact with eyes, skin, and clo	thing.
Avo	oid breathing dust.	
	sh thoroughly after handling, and be	fore eating, drinking or smoking.
PERSON	NAL PROTECTIVE EQUIPMENT:	
	fety glasses	،
the second se	pervious gloves	
cor sel mar	propriate respiratory protection req ntaminant is likely to exceed accept lected and used in accordance with O nufacturer's recommendations.	able limits. Respirators should be SHA Subpart I (29 CFR 1910.134) and
tha sui	rsonnel exposed to hot molten materia at provides protection from thermal i it (or other heat resistant material commended.	burns. Full face shield, lined rain
	PRACTICES:	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
Eye	ewash fountains and safety showers s	hould be easily accessible.
For WAR	ING AND STORAGE PRECAUTIONS: r small packages, the following warn: RNING! STATIC CHARGES GENERATED BY EN	MPTYING PACKAGE IN OR NEAR FLAMMABLE
VAP ign add ves	PORS MAY CAUSE FLASH FIRE. MAY FORM nition sources such as sparks and fla dition, when emptying bags where flar ssel with inert gas, ground operator, nductive, grounded chute.	FLAMMABLE DUST-AIR MIXTURES. Avoid ame. Ground all equipment. In nmable vapors may be present, blanket
	-	
	Continued	3
	Continued	A • • •
		2 10 A A
	10 12 20	

\_\_\_\_\_

VIII. ENVIRONMENTAL & REGULATORY DATA

following Environmental and regulatory data are provided to assist users or this product in defining their regulatory environmental compliance obligations.

A. PRODUCT COMPOSITION

PRODUCT (P) or COMPONENT NO.	TRADE NAME OF CHEMICAL COMPONENT	CAS NUMBER	WT. PERCENT
P	PAMITE* TALL OIL ROSIN	N/A	100

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 304 EHS RQ (lbs)	SEC. 302 EHS TPQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC 313 TOXIC CHEMICAL (YES, NO)
P	N/A	N/A	NHH, HC-3 (dust)	NO

C. CERCLA (40 CFR 302.4 HAZARDOUS SUBSTANCE & REPORTABLE QUANTITIES)

This product does NOT contain any hazardous substances listed in 40 CFR 302.4.

# D. RCRA INFORMATION

This product is not listed in federal hazardous waste regulation 40 CFR 261.33, paragraph (e) or (f) - i.e., chemical products that are considered hazardous if they become wastes. It does not exhibit any of the hazardous characteristics listed in 40 CFR 261, Subpart C. State or local hazardous waste regulations may apply if they are different from the federal regulation.

E. OTHER

None

Continued...

.1

		Health Emergencies, co	MSDS N Effective Date: October NUM SULFATE SOLUTION es, Call (800) 424-9300 (CHEMTREC) ontact Your Local Poison Center bid contact with skin, eyes or clothing.	
A	Product Name:	I. PRODUCT IN Aluminum Sulfate Solution	IFORMATION Formula: Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	177.1
2	Chemical Name: CAS Number:	10043-01-3	Chemical Family: Inorg	ganic Salt
		Typical Composition Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> · 14 H <sub>2</sub> O · , Water	Aster Filo Po Not Reinovo This Copy and a TLV of 2 mg/m <sup>3</sup> for aluminum in	% 48% 52%
	Exposure Standard	d: The ACGIH has establish form of soluble salts.	ned a TLV of 2 mg/m <sup>3</sup> for aluminum in	the
		II: PERSONAL PROTEC	TION INFORMATION	
	Ventilation:	Handle in open or well ventila	ted areas.	÷.
ц. Ц	Eye:	Prevent eye contact through the face shield.	e use of chemical safety glasses, goggle	es or a
	Skin:	Prevent skin contact through the footwear.	ne use of protective clothing, gloves and	1
	Respiratory:	Where mists or aerosols may or cartridge air purifying respirate	occur, use a NIOSH <sup>1</sup> approved half-face or.	piece
	Other:	Eye wash and shower shall be	available.	
· · · · · · · · · · · · · · · · · · ·		HI. HEALTH	NFORMATION	
1 ° (** 123	Routes of Entry	<u>PHYSIOLOGICAL 8</u> 1	2 HEALTH EFFECTS	
	Eyes:	Irritant to the eyes.	Leel TH por Docing	
	Skin:	Irritation may result by contac	t with concentrated solutions.	
			a a a a a a a a a a a a a a a a a a a	

MSDS No. 002

2013

به بنجونگ		and a second
In	ويغصف الماري والمتاط متبيها ما	nhalation of mists may cause considerable irritation.
In		Dral and gastrointestinal irritation and local tissue damage. Nausea, vomiting; iarrhea may occur.
To	oxicity: 7	The acute oral LD50 is greater than 5000 mg/kg.
		EMERGENCY & FIRST AID PROCEDURES
$\mathbf{E}_{j}$		MMEDIATELY flush with large quantities of water for at least 15 minutes. Seek medical attention.
. SI		IMMEDIATELY flush affected area with water for 15 minutes. Remove contaminated clothing. Seek medical attention.
Iı	nhalation:	Remove to fresh air. Keep warm. Give artificial respiration if not breathing. Seek medical attention.
Ŀ	ngestion:	Give large quantities of water. Induce vomiting. Seek medical attention.
		SYMPTOMS OF OVEREXPOSURE
A		Oral and gastrointestinal irritation if swallowed. Skin contact will cause irritation.
C	Chronic:	Long term exposure to skin by concentrated solutions will cause irritation. Prolonged contact with dilute solutions may cause irritation.
		IV. REACTIVITY DATA
S	Stability:	Stable at ambient temperatures and atmospheric pressure.
	Conditions To Avoid:	This material will undergo reactions typical of acidic substances.
• ]	Incompatibility:	Aluminum sulfate will react with strong alkalies to form aluminum hydroxide.
1015.4 	Hazardous-Deco	mposition
	Products:	Thermal decomposition may release toxic oxides of sulfur.
	Hazardous	
1. 35 Marters - 1957 - 1. 1974 - 1957 - 1. 1979 - 1979 - 1979	Polymerization:	Will not occur.
	10 10	
1992 - 10		

•

۰ م ۱	ŃSDS No. 002	Page 3			
<u> </u>		V. PHYSICAL AND CHEMICAL PROPERTIES	116.0		
	Appearance and Odor:	-Clear-to-slightly amber liquid. No-odor.	<b>A</b> 5		
	, Boiling Point:	101°/214°F			
	Melting Point:	N/A	7		
	Vapor Density $(air = 1)$ :	Same as air.			
	Vapor Pressure:	Less than 1 mm Hg @ 30°C (86°F)			
	Solubility in water:	Completely			
	Specific Gravity $(H_2 0 = 1)$ :	1.29 to 1.34			
	Molecular weight:	594			
	pH:	3.5 (1% aqueous solution)			
	Other (i.e. wtg. per gallon):	Approximately 11.1 lbs/gal			
		VI. SPECIAL PRECAUTIONS			
		e in tanks designed to withstand the corrosive effects of aluminum sulfate. nless steel or fiberglass tanks are recommended.			
		VII. FIRE PROTECTION INFORMATION			
	Flash Point: N/A				
	Flammable Limits: N/A				
Extinguishing Media: Water, dry chemicals, foam or carbon dioxide.					
	Special Firefighting				
		and the second sec			

-

# VIII. TRANSPORTATION REQUIREMENTS

DOT Proper Shipping Name: ALUMINUM SULFATE SOLUTION Department of Transportation Classification: Corrosive Liquid, N.O.S

**UN/NA** Identification UN 1760 Number:

IX. SPILL OR LEAK PROCEDURES

Environmental

Releases to streams may kill aquatic life. Large releases to land may react with Impact: soil and may penetrate great distances underground.

Precautions if Spilled or Released: Contain released material by diking and neutralize with soda ash.

Neutralizing Soda ash, slaked lime. Chemicals:

Waste Disposal

Consult state or federal regulatory agencies for disposal procedures. Methods:

r

Reportable 5,000 lbs. - 450 gallons Quantities:

Construction of the second states and the second states a

NOTE:

Supplier's Phone Number (601) 494-3055

States and the second

Page 4

Disclaimer Southern Ionics, Inc. believes that the information contained in this material safety data sheet is accurate as of the date indicated. However, it makes no warranty, express or implied, as to either the accuracy of the information or the properties, filness or safety of the chemical identified in part 1 and assumes no liability or responsibility in connection with the information contained herein or as a result of the use of this material if the chemical is altered, combined with another substance, or subjected to physical or chemical processes. Each company or person using or distributing this material safety data sheet is responsible for ensuring its accuracy, applicability, and suitability at the time and under the particular circumstances used or distributed.

# **Product Safety Information**

# N-521° BIOCIDE

· (Technical Grade)

# A Fungicide for Use in the Manufacture of Registered Pesticides Only

This Product Safety Information Sheet is principally directed to managerial, safety, hygiene and medical personnel. The description of physical, chemical and toxicological properties and handling advice is based on experimental results and past experience. It is intended as a starting point for the development of health and safety procedures.

# I. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Composition: Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazIne-2-thione (99.0%), CAS# 533-74-4;

Other (1.0%)

Formula<sup>\*</sup>C<sub>5</sub>H<sub>10</sub>N<sub>2</sub>S<sub>2</sub>

Molecular Weight: 162:27

Physical State: White crystalline solid Bulk Density: 90.6 lbs/ft<sup>3</sup> (1.45 g/mL) at 68° F/20° C Melting Point: 216-221 ° F/102-104° C (endothermic) Solubility: 0.2 g/100g in water Odor: Sulfide-type

# II. CHEMICAL REACTIVITY

This material hydrolyzes slowly with water to release methyl isothiocyanate and carbon disulfide. This breakdown is necessary to effect the biocidal activity of the material and should not pose a health and safety hazard If the material is properly handled and stored. The presence of heavy metal salts accelerates the breakdown without affecting the biocidal activity. Chlorine, in excess of 10 ppm in water solutions, also accelerates the breakdown but reduces the biocidal activity.

It will react with dilute aclds to form salts with a mild exotherm. It reacts with aqueous bases at a moderate rate (nonviolent).

# **III. STABILITY**

This material is stable at ambient environmental temperatures and atmospheric pressure. However, it may slowly decompose at temperatures greater than 212° F/100° C.

# IV. FIRE HAZARD

Under fire conditions, this material may support combustion and decompose to give off toxic materials such as methyl isothiocyanate.

# V. FIREFIGHTING TECHNIQUE

Vapors are irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon exposure.

As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate nonessential personnel from the fire area.

When there is a potential for exposure to smoke, fumes or products of combustion, firefighters should wear fullface, self-contained breathing apparatus and impervious clothing such as gloves, hoods, suits and rubber boots.

Use standard firefighting techniques in extinguishing fires involving this material—use water, dry chemicals, foam or carbon dioxide. High pressure water hoses may spread product from broken containers, increasing contamination hazard. Use of contaminated buildings, areas and equipment must be prevented until they are properly decontaminated.

# VI. TOXICOLOGY

CAUTION: Harmful if swallowed. May cause skin irritation. May cause allergic skin reaction. Avoid contact with skin, eyes, or clothing. May form hazardous vapors on contact with water. Do not breathe dust or vapor.

#### Ingestion

The acute oral LD50 is 584 mg/kg in female rats. The acute oral LD50 is greater than 500 but less than 1000 mg/kg in male rats. The acute oral LD50 is 650 mg/kg in mice. A single oral dose of 50 mg/kg produced decreased physical activity and lacrimation in male rats. A single oral dose of 500 mg/kg produced decreased

In case of suspected poisoning, refer to the procedure and emergency contacts in Section VII — FIRST AID.

In case of spillage, refer to the procedure and emergency contacts in Section IX — SPILL HANDLING. In case of animal poisoning, call a veterinarian or call collect, day or night (203) 226-6602 (Stauffer Chemical Company) or (800) 424-9300 (Pesticide Team Safety Network/Chemtrec)

In case of contamination with other materials, call (800) 424-9300 (Pesticide Team Safety Network/ Chemtrec)

NOTE: For CHEMTREC assistance when calling from Washington, D.C., Virgin Islands, Guam, Samoa. Puerto Rico or Alaska, call collect, day or night (202) 483-7616.

We telleve all information given is accurate it is offered in gived faith, but without guarantee. Since constraints of use are believed our chintred, all isses of use are assumed by the user. Nothing herm shall be constraints as a impompendation to uses which informer valid patients or as extensing a regime under rated patients.



STAUFFER CHEMICAL COMPANY Specialty Chemical Division WESTPORT, CONNECTICUT 06881

#### Inhalation

This material must be handled in open (e.g. outdoor) or well ventilated areas. Where adequate ventilation is not available and use conditions generate airborne dust or aerosol, inhalation must be prevented through the use of NIOSH-approved respirators. Respirator selection must address the potential for exposure under the use conditions.

#### Exposure Limit Information

No exposure limit has been established for this material.

# IX. SPILL HANDLING

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices (refer to Section VIII).

Small spills can be handled routinely. Use adequate ventilation and wear a respirator to prevent inhalation. Wear suitable protective clothing and eye protection to prevent skin and eye contact. Use the following procedures:

Sweep up the spilled material being careful not to create dust. Place the sweepings into an appropriate chemical waste container. Seal container and dispose of in an approved landfill. Flush the spill area with water to remove any residue.

Large spills should be handled according to a predetermined plan. For assistance in developing a plan, contact the Chemical Systems Division, Stauffer Chemical Company, Westport, CT 06881.

IN CASE OF EMERGENCY, CALL, DAY OR NIGHT (800) 424-9300 (CHEMTREC) FROM WASHINGTON, D.C., VIRGIN ISLANDS, GUAM.

SAMOA, PUERTO RICO OR ALASKA, CALL COLLECT DAY OR NIGHT: (202) 483-7616 PESTICIDE TEAM SAFETY NETWORK/CHEMTREC

#### X. CORROSIVITY TO MATERIALS OF CONSTRUCTION

This material is not corrosive to materials commonly used in the construction of shipping and handling equipment.

## **XI. STORAGE REQUIREMENTS**

Containers should be stored in a cool, dry, well ventilated area. Store away from flammable materials, sources of heat and flame and foodstuffs. Exercise due caution to prevent damage to or leakage from the container. Guard against water contamination to prevent decomposition.

#### XII. DISPOSAL OF UNUSED MATERIAL

Material that cannot be used as directed on the product label must be disposed of according to Federal and State procedures under the Resource Conservation and Recovery Act (RCRA).

NOTE: State regulations may be more stringent than Federal regulations.

#### **XIII. DISPOSAL OF CONTAINER**

DO NOT REUSE. Dispose of empty containers according to approved Federal and State procedures under the Resource Conservation and Recovery Act. (RCRA).

#### **XIV. ENVIRONMENTAL PRECAUTIONS**

This material is toxic to fish. Do not contaminate water sources by cleaning equipment or disposing of wastes.

1/82

à

1.1