5. FIRE FIGHTING MEASURES (continued)

Extinguishing Media
Extinguish with dry chemical,carbon dioxide, or other universal type foam.

Fire Fighting Instructions
The use of SCBA is recommended for fire fighters. Water spray may be used to cool containers exposed to heat and flame. Avoid spreading burning liquid with water used for cooling purposes.

Fire and Explosion Hazards
This material is flammable and may be ignited by heat, sparks, flame or static electricity. Vapors are heavier than air and may travel along the ground and may be moved by ventilation; flashback along vapor trail may occur.

6. ACCIDENTAL RELEASE MEASURES

Eliminate all sources of ignition. If spill is indoors, ventilate area of spill; use appropriate respiratory protection.
For large spills, a universal type foam may be used to suppress vapors. Contain the spill by diking with sand or other inert material. Keep out of drains, sewers, or waterways. Do not flush area with water. If necessary, contact fire authorities and appropriate federal, state or local agencies.
For small spills, do not flush with water; use absorbent pads.

7. HANDLING AND STORAGE

Keep containers tightly closed. Keep containers cool, dry and away from sources of ignition. Use and store this product with adequate ventilation. Avoid inhalation of vapors and personal contact with the product. Use good personal hygiene practices.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Provide NEC / NFPA approved explosion proof mechanical ventilation to maintain airborne concentrations below the established exposure limits.
It is suggested that a source of clean water be available in work area for flushing eyes and skin.

Personal Protective Equipment

Eye / Face Protection
Chemical splash goggles or safety glasses in compliance with OSHA regulations are advised.

Skin Protection
The use of impermeable, solvent resistant gloves is advised to prevent skin contact, possible irritation and absorption.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (continued)

Respiratory Protection
Use NIOSH / OSHA approved cartridge respirators or a supplied air respirator depending upon airborne concentrations.

Exposure Guidelines

Chemical Name	ACGIH TWA	ACGIH STEL	OSHA TWA	OSHA STEL
Rotosolve (Aliphatic Portion)	300	375 ppm	300	375 ppm
Toluene	100	150 ppm	100	150 ppm
Xylene (Mixed Isomers)	100	150 ppm	100	150 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Range	230.4 F - 250.0 F
Density (lbs/gal)	6.05
Vapor Density (vs. air)	Heavier
Evaporation Rate (vs. Butyl Acetate)	Faster
Appearance	Clear Liquid
Percent Volatile (wt.)	100.00

10. STABILITY AND REACTIVITY

Stability
Stable; hazardous polymerization will not occur.

Conditions to Avoid
Keep product away from heat, sparks, pilot lights, static electricity and open flames.

Incompatibility
This product is incompatible with strong acids or bases and oxidizing agents.

11. DISPOSAL CONSIDERATIONS

Reuse recovered material or dispose of product in accordance with local, county, state and federal environmental regulations.

12. REGULATORY INFORMATION

Toxic Substances Control Act (TSCA)

The chemical components of this product are contained on the Section 8(B) Chemical Substance Inventory List (40 CFR 710).

SARA Title III Information

This product contains the following substance(s) which are defined as toxic chemical(s) under, and subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR Part 372).

Chemical Name / Category	CAS #	Concentration
Toluene	108-88-3	57.02 %
Xylene (mixed isomers)	1330-20-7	1.73 %

13. ADDITIONAL COMMENTS

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 sheets must be observed.

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

PEXATE* 37
Metal resinate solution

MSDS No.: 811 5000 3700-01

Supersedes MSDS No.: 767 1138 3008-01 Date: 10/21/94

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

PEXATE* 37
Metal resinate solution

(Formerly HERCULES* RES I-2421
Metal resinate solution)

HMIS RATINGS: (1)

Health hazard:	2	Moderate (2)
Flammability hazard:	3	Serious
Reactivity hazard:	0	Minimal

CASRN: Mixture

CHEMICAL AND COMMON NAME: Metal resinate in toluene solution

APPEARANCE AND ODOR: Amber liquid; toluene odor

(2) Chronic toxicity data available. See Section V of MSDS.

* Registered Trademark of Hercules Incorporated

(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

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES	CASRN	WT %	RECOMMENDED AIRBORNE LEVELS (1) 1992-1993 OSHA TWA	TLV-TWA
Toluene	108-88-3	51	50 ppm	

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 105-114 C (216-237 F) (3)

SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE AT 20 C: 22 mmHg (3)

SPECIFIC GRAVITY: Lighter than water

VAPOR DENSITY: 3.2 (3)

pH: N/A

VOLATILE (WT.),%: 49-51

EVAPORATION RATE: Faster than butyl acetate (3)

FREEZING POINT: Not determined

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID.

FLASH POINT: 5 C (44 F) (3) TAG Closed Cup

FLAMMABLE LIMITS: Lower: 1.0; Upper: 7.0 (3)

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.
Avoid breathing fumes from fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: None

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined

(3) Property of toluene solvent. Property of product may be different.

Continued...

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

SIGNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	Liquid can cause temporary corneal cloudiness, redness, pain, tearing; vapor may also cause irritation. Prolonged exposure may cause visual changes.
SKIN:	Liquid can cause irritation, drying, scaling, cracking and dermatitis and abnormal skin sensations such as burning, prickling, tingling or numbness. Absorption through the skin can cause harmful systemic effects.
INHALATION:	Inhaling vapor or mist may cause irritation of the nose and throat, nausea, headache and, at high concentrations, dizziness, incoordination, and drowsiness.
INGESTION:	May cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, incoordination and drowsiness.

EMERGENCY & FIRST AID PROCEDURES:

EYES: 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 water. Remove contaminated clothing. Wash clothing before reuse.

INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If this product is swallowed, do NOT induce vomiting. Call a physician immediately.

Continued...

V. HEALTH HAZARD DATA

...Continued

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE:
Exposure to toluene may increase the severity of liver injury from alcohol abuse.

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: Inhalation, 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). The International Agency for Research on Cancer (IARC) has evaluated toluene and found it was not classifiable as to human carcinogenicity. Other components have NOT been evaluated by IARC.

REPORTED HUMAN EFFECTS:
TOLUENE vapor is rapidly absorbed through the lungs. Daily exposure to concentrations of 49 to 130 ppm caused decreases in manual dexterity, memory, and visual perception. Levels of 200 ppm for 8 hr produced mild fatigue, weakness, confusion, abnormal skin sensations such as burning, prickling, tingling or numbness, and tearing and transient irritation of the eyes. Higher concentrations also cause nausea, headaches, tiredness, and dizziness. Inhalation of very high concentrations for a prolonged period of time produces vision disturbances, nausea, narcosis and collapse. Chronic inhalation exposure may cause liver, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

A review of data by the California Department of Health Services concluded that instances of adverse reproductive effects associated with deliberate inhalation of paint thinners by pregnant women constitute limited evidence for reproductive toxicity of toluene.

METAL RESINATE: None known.

Continued...

V. HEALTH HAZARD DATA

...Continued

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. It has its primary toxic effect on the central nervous system. The one-hour inhalation LC50 is about 27,000 ppm in rats. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination, tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hr/day for 3 to 4 months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 hr/day for about 35 consecutive days.

TOLUENE has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits was 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for 6 months showed no ill effects.

A data review by the California Department of Health Services concluded that results of animal studies constitute limited evidence for female reproductive toxicity of toluene and sufficient evidence of fetal developmental toxicity.

METAL RESINATE: None known.

OTHER:

TOLUENE was inactive in several in vitro mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus if necessary to enter spill area. 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 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:

Avoid contact with eyes, skin, and clothing.
Avoid breathing vapor.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

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.
Appropriate protective clothing

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

HANDLING AND STORAGE PRECAUTIONS:

Keep away from heat, sparks, and flame.
Store in areas that are designed for flammable liquid storage (see NFPA 30).
Eliminate ignition sources and prevent build-up of static electric charges.
Keep containers closed.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
Provide electrical wiring for hazardous atmosphere.

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.

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	PEXATE* 37 Metal resinate solution	Mixture	100
1	Toluene	108-88-3	51
2	Metal resinate	Proprietary	1.4 (as Zn)

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, HC-3	N/A
1	N/A	N/A	HC-1, HC-2	YES
2	N/A	N/A	NHH	YES

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

PEXATE 37 Metal resinate solution contains toluene which is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE 37 Metal resinate solution has a "Reportable Quantity" of 1,950 lbs.

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

E. OTHER

This product contains toluene which 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).

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

Continued...

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).

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, Section 313 reporting requirements. Reportable constituents are listed individually where they exceed threshold concentration limits.

MATERIAL SAFETY DATA SHEET PAGE: 01 OF 08

HERCULES INCORPORATED
HERCULES PLAZA
WILMINGTON, DE 19894
PHONE #: (302) 594-5000 (24 HRS)

PEXATE* 232-S
METAL RESINATE SOLUTION

MSDS NO.: 811 5011 0100-05

SUPERSEDES MSDS #: 811 5011 0100-04

DATE: 10/12/90

I. PRODUCT IDENTIFICATION

WARNING FLAMMABLE LIQUID.
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.
IF SWALLOWED, VOMITING CAN CAUSE FATAL LUNG INJURY.

PEXATE* 232-S METAL RESINATE SOLUTION

HMIS RATINGS:(1)

HEALTH HAZARD:	2	MODERATE
FLAMMABILITY HAZARD:	3	SERIOUS
REACTIVITY HAZARD:	0	MINIMAL

CHEMICAL AND COMMON NAME: CALCIUM/ZINC RESINATE IN TOLUENE SOLUTION

APPEARANCE AND ODOR: AMBER LIQUID; TOLUENE ODOR

* REGISTERED TRADEMARK OF HERCULES INCORPORATED.

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(1)EXPLANATION OF ACRONYMS:
HMIS: HAZARDOUS MATERIALS IDENTIFICATION SYSTEM RATING FOR PRODUCT AS SUPPLIED.
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

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.

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES:	CASRN	%	RECOMMENDED AIRBORNE LEVELS(1) OSHA TWA	TLV-TWA 1989-90
TOLUENE	108-88-3	40	100 PPM (2)	150 PPM STEL

(2) FOR TOLUENE, THE NIOSH RECOMMENDED EXPOSURE LIMIT IS 100 PPM FOR A 10-HOUR TWA. THE NIOSH RECOMMENDED 10-MINUTE CEILING IS 200 PPM.

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 114 C (237 F) (3)

SOLUBILITY IN WATER: NEGLIGIBLE

VAPOR PRESSURE AT 20 C: NOT DETERMINED.

SPECIFIC GRAVITY: 1.0

VAPOR DENSITY: NOT DETERMINED.

PH: N/A

VOLATILE (WGT.),%: 40

EVAPORATION RATE: FASTER THAN BUTYL ACETATE

FREEZING POINT: NOT DETERMINED.

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING FLAMMABLE LIQUID.

FLASH POINT: 4 C (40 F) (3) PENSKY-MARTENS

FLAMMABLE LIMITS: 1.2 TO 7.1 % BY VOLUME (3)

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.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
NONE, OTHER THAN HAZARDS ASSOCIATED WITH FLAMMABLE LIQUID FIRES.

STABILITY CONSIDERATIONS: STABLE

(3) PROPERTIES OF TOLUENE SOLVENT. PROPERTIES OF PRODUCT MAY BE DIFFERENT.

CONTINUED...

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...CONTINUED

INCOMPATIBILITY WITH: NONE

HAZARDOUS DECOMPOSITION PRODUCTS: NOT DETERMINED.

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

WARNING CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION. IF SWALLOWED, ASPIRATION CAN CAUSE FATAL CHEMICAL PNEUMONIA.

SIGNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	LIQUID CAN CAUSE TEMPORARY CORNEAL CLOUDINESS, REDNESS, PAIN, TEARING; VAPORS MAY ALSO CAUSE IRRITATION. PROLONGED EXPOSURE MAY CAUSE VISUAL CHANGES.
SKIN:	LIQUID CAN CAUSE IRRITATION, DRYING, SCALING, CRACKING AND DERMATITIS AND ABNORMAL SKIN SENSATIONS SUCH AS BURNING, PRICKLING, TINGLING OR NUMBNESS. ABSORPTION THROUGH THE SKIN CAN CAUSE HARMFUL SYSTEMIC EFFECTS.
INHALATION:	INHALING VAPOR OR MIST MAY CAUSE IRRITATION OF THE NOSE AND THROAT, NAUSEA, HEADACHE AND, AT HIGH CONCENTRATIONS, DIZZINESS, INCOORDINATION, AND DROWSINESS.
INGESTION:	MAY CAUSE NAUSEA, VOMITING, BURNING SENSATION OF THE MOUTH AND THROAT, HEADACHE, DIZZINESS, INCOORDINATION AND DROWSINESS. VOMITING CAN CAUSE FATAL LUNG INJURY.

EMERGENCY & FIRST AID PROCEDURES:

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

SKIN: PROMPTLY WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT GIVE OXYGEN. CALL A PHYSICIAN.

CONTINUED...

V. HEALTH HAZARD DATA

EMERGENCY & FIRST AID PROCEDURES:...CONTINUED

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN.

NOTE TO PHYSICIAN: THIS MATERIAL CONTAINS A HYDROCARBON SOLVENT. ASPIRATION INTO THE LUNGS WILL RESULT IN CHEMICAL PNEUMONITIS.

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 NONINDUSTRIAL EXPOSURE CONDITIONS OF REPEATED AND PROLONGED SKIN CONTACT. REPEATED EXPOSURE TO SMOKE OR FUMES OF DECOMPOSITION PRODUCTS OF PEXATE* 232-S METAL RESINATE SOLUTION HEATED TO HIGH TEMPERATURES MAY PRODUCE AN ASTHMATIC REACTION (RESPIRATORY SENSITIZATION) IN SENSITIVE INDIVIDUALS. EXPOSURE TO TOLUENE MAY INCREASE THE SEVERITY OF LIVER INJURY FROM ALCOHOL ABUSE.

PRIMARY ROUTES OF ENTRY: EYES, SKIN, INHALATION

CANCER INFORMATION:
NOT LISTED AS A CARCINOGEN BY NTP (NATIONAL TOXICOLOGY PROGRAM); NOT REGULATED AS A CARCINOGEN BY OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION); THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS EVALUATED TOLUENE AND FOUND IT WAS NOT CLASSIFIABLE AS TO HUMAN CARCINOGENICITY.

REPORTED HUMAN EFFECTS:
TOLUENE VAPOR IS RAPIDLY ABSORBED THROUGH THE LUNGS OF HUMANS. DAILY EXPOSURE TO CONCENTRATIONS OF 49 TO 130 PPM CAUSED DECREASES IN MANUAL DEXTERITY, MEMORY, AND VISUAL PERCEPTION. LEVELS OF 200 PPM FOR 8 HR PRODUCED MILD FATIGUE, WEAKNESS, CONFUSION, ABNORMAL SKIN SENSATIONS SUCH AS BURNING, PRICKLING, TINGLING OR NUMBNESS, AND TEARING AND TRANSIENT IRRITATION OF THE EYES. HIGHER CONCENTRATIONS ALSO CAUSE NAUSEA, HEADACHES, TIREDNESS, AND DIZZINESS. INHALATION OF VERY HIGH CONCENTRATIONS FOR A PROLONGED PERIOD OF TIME PRODUCES VISION DISTURBANCES, NAUSEA, NARCOSIS AND COLLAPSE. CHRONIC INHALATION EXPOSURE MAY CAUSE LIVER, NERVE AND BRAIN DAMAGE. TOLUENE HAS ALSO BEEN REPORTED TO CAUSE EFFECTS ON THE HEART (CARDIAC SENSITIZATION) WHICH CAN RESULT IN DEATH. INGESTION CAUSES TREMORS, EFFECTS ON HEART, CONVULSIONS, STUPOR, SHALLOW RAPID RESPIRATION AND UNCONSCIOUSNESS; LIVER AND KIDNEY DAMAGE MAY OCCUR.

CALCIUM/ZINC RESINATE: NONE KNOWN

CONTINUED...

V. HEALTH HAZARD DATA

...CONTINUED

REPORTED ANIMAL EFFECTS:
TOLUENE IS ABSORBED RAPIDLY BY THE LUNGS, MORE SLOWLY FROM THE GASTROINTESTINAL TRACT, AND QUITE SLOWLY THROUGH THE SKIN. IT HAS ITS PRIMARY TOXIC EFFECT ON THE CENTRAL NERVOUS SYSTEM. THE ONE-HOUR INHALATION LC50 IS ABOUT 27,000 PPM IN RATS. EXPOSURE TO TOLUENE VAPOR AT HIGH CONCENTRATIONS CAUSED INITIAL EXCITEMENT, THEN MUSCULAR INCOORDINATION, TREMORS, NARCOSIS AND WEAKNESS, AND ULTIMATELY UNCONSCIOUSNESS. SEVERAL SPECIES OF ANIMALS EXPOSED TO TOLUENE VAPOR AT CONCENTRATIONS OF 100 PPM OR GREATER, 8 HR/DAY FOR THREE TO FOUR MONTHS, SHOWED NO SIGNIFICANT SIGNS OF OVERT TOXICITY. RECENT STUDIES HAVE INDICATED A HIGH-FREQUENCY HEARING LOSS IN WEANLING AND YOUNG ADULT RATS EXPOSED TO 1200 PPM TOLUENE 14 H/DAY FOR ABOUT 35 CONSECUTIVE DAYS.

TOLUENE HAS AN ACUTE RAT ORAL LD50 GREATER THAN 5 G/KG. LIQUID TOLUENE CAUSED TRANSIENT IRRITATION OF THE EYES. THE DERMAL LD50 IN RABBITS WAS 14 G/KG; DERMAL APPLICATION OF TOLUENE UP TO 20 TIMES CAUSED SLIGHT TO MODERATE IRRITATION. RATS GIVEN UP TO 590 MG/KG/DAY ORALLY FOR SIX MONTHS SHOWED NO ILL EFFECTS.

CALCIUM/ZINC RESINATE: NONE KNOWN

OTHER:
TOLUENE WAS INACTIVE IN SEVERAL IN VITRO MUTAGENICITY TEST SYSTEMS. CHROMOSOME CHANGES HAVE BEEN REPORTED IN TOLUENE EXPOSED WORKERS.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:
ELIMINATE SOURCES OF IGNITION. WEAR SELF-CONTAINED BREATHING APPARATUS IF NECESSARY TO ENTER SPILL AREA. 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 HAZARDOUS WASTE REGULATIONS.

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 VAPORS.
WASH THOROUGHLY AFTER HANDLING, AND BEFORE EATING, DRINKING OR SMOKING.
REMOVE CONTAMINATED CLOTHING PROMPTLY AND CLEAN THOROUGHLY BEFORE REUSE.
AVOID CONTAMINATION OF FOOD, BEVERAGES, OR SMOKING MATERIALS.

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.
APPROPRIATE PROTECTIVE CLOTHING.

WORK PRACTICES:
EYEWASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE EASILY ACCESSIBLE.

HANDLING AND STORAGE PRECAUTIONS:
HANDLE ACCORDING TO TOLUENE HANDLING REQUIREMENTS.
STORE AT ROOM TEMPERATURE BELOW 27 C (80 F), IN ORDER TO PRESERVE PRODUCT INTEGRITY.

ENGINEERING CONTROLS:
ADEQUATE VENTILATION SHOULD BE PROVIDED TO KEEP VAPOR CONCENTRATIONS BELOW ACCEPTABLE EXPOSURE LIMITS. DISCHARGE FROM THE VENTILATION SYSTEM SHOULD COMPLY WITH APPLICABLE AIR POLLUTION CONTROL REGULATIONS.
STORE IN AREAS THAT ARE DESIGNED FOR FLAMMABLE LIQUID STORAGE (SEE NFPA 30).

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.

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
P	PEXATE* 232-S METAL RESINATE SOLUTION	N/A	100
1	TOLUENE	108-88-3	40
2	ZINC RESINATE	TRADE SECRET	1.5 TO 3.0 (AS ZN)

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-3	N/A
1	N/A	N/A	HC-1	YES
2	N/A	N/A	NHH	NO

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

PEXATE 232-S METAL RESINATE SOLUTION CONTAINS TOLUENE THAT IS A "HAZARDOUS SUBSTANCE" LISTED IN 40 CFR 302.4. PEXATE 232-S METAL RESINATE SOLUTION HAS A "REPORTABLE QUANTITY" OF 2,500 LBS.

D. RCRA INFORMATION

THIS PRODUCT EXHIBITS THE CHARACTERISTIC OF IGNITABILITY (D001) AS DEFINED IN HAZARDOUS WASTE REGULATIONS 40 CFR 261 SUBPART C. THEREFORE, DISPOSAL OF UNUSED PRODUCT MUST COMPLY WITH HAZARDOUS WASTE REGULATIONS.

E. OTHER

THIS PRODUCT CONTAINS TOLUENE 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...

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).

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

PEXATE* 332-RS
Metal resinate solution

MSDS No.: 811 5033 0100-05

Supersedes MSDS No.: 811 5033 0100-04 Date: 02/22/91

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID.
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.
IF SWALLOWED, ASPIRATION CAN CAUSE FATAL CHEMICAL PNEUMONIA.

PEXATE* 332-RS Metal resinate solution HMIS RATINGS: (1)

Health hazard:	2	Moderate (2)
Flammability hazard:	3	Serious
Reactivity hazard:	0	Minimal

CHEMICAL AND COMMON NAMES: Calcium/zinc resinate in toluene/lactol spirits solution

APPEARANCE AND ODOR: Amber liquid; toluene odor

(2) Chronic toxicity data available. See Section V of MSDS.

* Registered Trademark of Hercules Incorporated.

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES	CASRN	%	RECOMMENDED AIRBORNE LEVELS (1) 1989-1990 OSHA TWA	TLV-TWA
Toluene	108-88-3	24	100 ppm	STEL 150 ppm
Lactol spirits	64742-89-8	16	400 ppm (3)	STEL 500 ppm

(3) Reported as n-heptane (CASRN 142-82-5). Lactol spirits are 85% heptane isomers.

(1) Explanation of acronyms:
HMIS: Hazardous Materials Identification System rating for product as supplied.
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

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 85-111 C (185-232 F) (4) SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE AT 20 C: Not determined. SPECIFIC GRAVITY: 1.0

VAPOR DENSITY: Heavier than air (4) pH: N/A

VOLATILE (WT.),%: 40 EVAPORATION RATE: Slower than butyl acetate

FREEZING POINT: Not determined.

(4) Property of toluene/lactol spirits solvent. Properties of product may be different.

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID.

FLASH POINT: -6 C (21 F) (5)

FLAMMABLE LIMITS: Lower Explosive Limits (LEL) 1.0% (5)

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.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None, other than hazards associated with flammable liquid fires.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined.

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

(5) Properties of lactol spirits. Properties of product may be different.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION. IF SWALLOWED, VOMITING CAN CAUSE FATAL LUNG INJURY.

SIGNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: Liquid can cause temporary corneal cloudiness, redness, pain, tearing; vapor may also cause irritation. Prolonged exposure may cause visual changes.

SKIN: Liquid can cause irritation, drying, scaling, cracking and dermatitis and abnormal skin sensations such as burning, prickling, tingling or numbness. Absorption through the skin can cause harmful systemic effects.

INHALATION: Inhaling vapor or mist may cause irritation of the nose and throat, nausea, headache and, at high concentrations, dizziness, incoordination, and drowsiness.

INGESTION: May cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, incoordination and drowsiness. Vomiting can cause fatal lung injury.

EMERGENCY & FIRST AID PROCEDURES:

EYES: 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 water. Remove contaminated clothing. Wash clothing before reuse.

INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If this product is swallowed, do NOT induce vomiting. Call a physician immediately.

NOTE TO PHYSICIAN: This product contains a hydrocarbon solvent. Aspiration into the lungs will result in chemical pneumonitis.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE:

Exposure to toluene may increase the severity of liver injury from alcohol abuse.

Continued...

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 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: Inhalation, 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). The International Agency for Research on Cancer (IARC) has evaluated toluene and found it was not classifiable as to human carcinogenicity. Other components have NOT been evaluated by IARC.

REPORTED HUMAN EFFECTS:
TOLUENE vapor is rapidly absorbed through the lungs. Daily exposure to concentrations of 49 to 130 ppm caused decreases in manual dexterity, memory, and visual perception. Levels of 200 ppm for 8 hr produced mild fatigue, weakness, confusion, abnormal skin sensations such as burning, prickling, tingling or numbness, and tearing and transient irritation of the eyes. Higher concentrations also cause nausea, headaches, tiredness, and dizziness. Inhalation of very high concentrations for a prolonged period of time produces vision disturbances, nausea, narcosis, and collapse. Chronic inhalation exposure may cause liver, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

A review of data by the California Department of Health Services concluded that instances of adverse reproductive effects associated with deliberate inhalation of paint thinners by pregnant women constitute limited evidence for reproductive toxicity of toluene.

Continued...

V. HEALTH HAZARD DATA

REPORTED HUMAN EFFECTS:...Continued

LACTOL SPIRITS: The odor threshold of a hydrocarbon mixture similar to Lactol Spirits was approximately 0.04 mg/liter or 10 ppm. A concentration of 1.7 mg/liter (400 ppm) was tolerated by most individuals . Eye and throat irritation was noted at exposures between 3 and 8 mg/liter. The hydrocarbons C5 to C9 are reported to have anesthetic and CNS depressant actions. They are fat solvents and on repeated or prolonged skin contact may cause dermatitis.

CALCIUM/ZINC RESINATE: None known.

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. It has its primary toxic effect on the central nervous system. The one-hour inhalation LC50 is about 27,000 ppm in rats. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination, tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hr/day for 3 to 4 months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 hr/day for about 35 consecutive days.

TOLUENE has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits was 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for 6 months showed no ill effects.

A data review by the California Department of Health Services concluded that results of animal studies constitute limited evidence for female reproductive toxicity of toluene and sufficient evidence of fetal developmental toxicity.

LACTOL SPIRITS: The C6 to C8 hydrocarbons, when aspirated into rat lungs, caused almost immediate death due to respiratory paralysis, asphyxia, and cardiac arrest. The 4-hours inhalation LC50 for rats exposed to a hydrocarbon mixture similar to Lactol Spirits was 61 mg/L (1,500 ppm). Motor incoordination was noted at 5,300 ppm. At 24,200 ppm, convulsions and death occurred to all. No toxic signs were observed at 2,800 ppm. Rats survived exposures to 2,000 ppm 6 hrs/day, 5 days/week for 13 weeks without any disturbances in the measured parameters.

CALCIUM/ZINC RESINATE: None known.

OTHER:

TOLUENE was inactive in several in vitro mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus. Do not enter spill area. 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 hazardous waste regulations.

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 vapors.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

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.
Appropriate protective clothing

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

HANDLING AND STORAGE PRECAUTIONS:

Keep away from heat, sparks and flame.
Keep containers closed.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.
Store in areas that are designed from flammable liquid storage. (See NFPA30).
This product may react with strong oxidizing agents and should not be stored near such materials.

Continued...

VII. APPLICABLE CONTROL MEASURES

...Continued

ENGINEERING CONTROLS:
Adequate ventilation should be provided to keep vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
Provide electrical wiring for hazardous atmosphere.

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.
Appropriate protective clothing.

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
P	PEXATE* 332-RS Metal resinate solution	N/A	100
1	Toluene	108-88-3	24
2	Zinc resinate	Trade Secret	1.4 (as Zn)
3	Lactol spirits	64742-89-8	16

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, HC-3	N/A
1	N/A	N/A	HC-1, HC-2, HC-3	YES
2	N/A	N/A	HC-1	NO
3	N/A	N/A	NHH, NPH	YES

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

PEXATE* 332-RS metal resinate solution contains toluene that is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE* 332-RS metal resinate solution has a "Reportable Quantity" of 4,000 lbs.

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

E. OTHER

This product contains toluene 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).

This product contains a petroleum hydrocarbon. Prevent runoff from spills or leaks entering navigable waters, streams or other bodies of water. If runoff occurs, notify the National Response Center (NRC) at 800-424-8802.

Continued...

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).

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.

MATERIAL SAFETY DATA SHEET

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

PEXATE* 532-RS
Metal resinate solution

MSDS No.: 811 5033 7700-01

Supersedes MSDS # 767 1124 5001-01

Date: 01/25/91

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID.
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.
REPEATED EXPOSURE CAN CAUSE KIDNEY AND LIVER DAMAGE.
IF SWALLOWED, ASPIRATION CAN CAUSE FATAL CHEMICAL PNEUMONIA.

PEXATE* 532-RS
Metal resinate solution

(Formerly HERCULES* RES D-2268)

HMIS RATINGS: (1)

Health hazard:	2	Moderate (2)
Flammability hazard:	3	Serious
Reactivity hazard:	0	Minimal

CHEMICAL AND COMMON NAMES: Calcium/zinc resinate in toluene/lactol spirits solution

APPEARANCE AND ODOR: Amber liquid; toluene odor

(2) Indicates that there may be chronic health effects present. See Section V of MSDS.

* Registered Trademark of Hercules Incorporated.

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(1) Explanation of acronyms:
HMIS: Hazardous Materials Identification System rating for product as supplied.
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

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES:	CASRN	RECOMMENDED AIRBORNE LEVELS (1) OSHA TWA / TLV-TWA 1989-90
Toluene	108-88-3	100 ppm (3) STEL 150 ppm
Lactol spirits	64742-89-8	400 ppm (4) STEL 500 ppm

(3) For toluene, the NIOSH exposure limit is 200 ppm. The Acceptable Ceiling Concentration for anytime during an 8-hour shift is 300 ppm. The NIOSH Acceptable Maximum Peak above the Acceptable Ceiling Concentration for an 8-hour shift is 500 ppm for 30 minutes.

(4) Reported as n-heptane (142-82-5). Lactol spirits are 85% heptane isomers.

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 85-111 C (185-232 F) (5) SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE AT 20 C: Not determined. SPECIFIC GRAVITY: .98

VAPOR DENSITY: Heavier than air (5) pH: N/A

VOLATILE (VOL.),%: 40 EVAPORATION RATE: Slower than butyl acetate

FREEZING POINT: Not determined.

(5) Property of toluene/lactol spirits solvent.

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID.

FLASH POINT: -6 C (21 F) TAG (6)

FLAMMABLE LIMITS: LEL 1.0% (6)

AUTOIGNITION TEMPERATURE: Not determined.

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

(6) Properties of Toluene/lactol spirits.

Continued...

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

SPECIAL FIREFIGHTING PROCEDURES:
Cool containers with water if exposed to fire.
Use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None, other than hazards associated with flammable liquid fires.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined.

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.
REPEATED EXPOSURE CAN CAUSE KIDNEY AND LIVER DAMAGE.
IF SWALLOWED, ASPIRATION CAN CAUSE FATAL CHEMICAL PNEUMONIA.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	Vapor can cause eye irritation with pain, tearing and redness. Prolonged overexposure may cause ocular disturbances such as "reddening of the vision."
SKIN:	Liquid may cause irritation, drying, scaling, cracking and dermatitis.
INHALATION:	Vapor can cause irritation of the nose and throat, headache, dizziness, unconsciousness. Exposure to very high vapor concentrations over a prolonged period of time can result in symptoms similar to those reported below for ingestion.
INGESTION:	Can cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, weakness, euphoria, drowsiness, and incoordination.

Continued...

V. HEALTH HAZARD DATA

...Continued

EMERGENCY & FIRST AID PROCEDURES:

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

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

INHALATION: Remove to fresh air. Treat any irritation symptomatically. If breathing has stopped, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

INGESTION: If conscious, the person should immediately drink large quantities of liquid. Do NOT induce vomiting. Call a physician. NEVER give liquids to an unconscious person.

NOTE TO PHYSICIAN: This material contains a hydrocarbon solvent. Aspiration into the lungs will result in chemical pneumonitis. Sympathomimetics may potentiate cardiac arrhythmias in persons exposed to the solvent in this product.

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. The solvent in this product may increase the severity of a pre-existing skin disorder.

PRIMARY ROUTES OF ENTRY: Eyes, skin, inhalation

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...

V. HEALTH HAZARD DATA

...Continued

REPORTED HUMAN EFFECTS:

TOLUENE vapor is rapidly absorbed through the lungs of humans. Concentrations of 150 ppm for a few hours produced neurobehavioral deficits experimentally. Levels of 200 ppm for 8 hours produced mild fatigue, weakness, confusion, paresthesia of the skin (abnormal sensation, such as burning or prickling), tearing and transient irritation of the eyes. Higher concentrations can cause eye irritation and central nervous system effects (nausea, headaches, lassitude, euphoria). Inhalation of very high concentrations for a prolonged period of time can also cause vision disturbances, nausea, narcosis and collapse. Chronic inhalation exposure can cause liver, kidney, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

LACTOL SPIRITS: Human volunteers were exposed to varying vapor concentrations of a hydrocarbon mixture similar to Lactol Spirits. The odor threshold was determined to be approximately 0.04 mg/liter or 10 ppm. The concentration which was tolerated by most individuals was 1.7 mg/liter. Eye and throat irritation was noted by a few individuals at exposures between 3 and 8 mg/liter. The hydrocarbons C5 to C9 are reported to have anesthetic and CNS depressant actions. They are fat solvents and on repeated or prolonged skin contact may cause chemical dermatitis.

CALCIUM/ZINC RESINATE: None known.

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. The one-hour inhalation LC50 is about 27,000 ppm in rats. It has its primary toxic effect on the central nervous system. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination, tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hours a day, for three to four months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 h/day for about 35 consecutive days.

Toluene has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits is 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for six months showed no ill effects.

Continued...

V. HEALTH HAZARD DATA

REPORTED ANIMAL EFFECTS:...Continued

LACTOL SPIRITS: The C6 to C8 hydrocarbons, when aspirated into rat lungs, caused almost immediate death due to respiratory paralysis, asphyxia, and cardiac arrest. The LC50 for rats exposed to a hydrocarbon mixture similar to Lactol Spirits for 4 hours was 61 mg/L (1,500 ppm).

Motor incoordination was noted at 5,300 ppm. At 24,200 ppm, convulsions and death occurred in all. No toxic signs were observed at 2,800 ppm. Rats survived exposures to 2,000 ppm 6 hrs/day, 5 days/week for 13 weeks without any disturbances in the measured parameters.

CALCIUM/ZINC RESINATE: None known.

OTHER:

TOLUENE was active in several mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

LACTOL SPIRITS: Present studies indicate that none of the alkanes possess teratogenic, mutagenic, or carcinogenic properties.

CALCIUM/ZINC RESINATE: None known.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus. Do not enter spill area. 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 hazardous waste regulations.

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 vapors.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

Continued...

VII. APPLICABLE CONTROL MEASURES

...Continued

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.
Appropriate protective clothing

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

HANDLING AND STORAGE PRECAUTIONS:

Keep away from heat, sparks and flame.
Keep containers closed.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.
Store in areas that are designed from flammable liquid storage (See NFPA30).
This product may react with strong oxidizing agents and should not be stored near such materials.

ENGINEERING CONTROLS:

Store in areas that are designed for flammable liquid storage (see NFPA 30).
Adequate ventilation should be provided to keep 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:

Isolate, vent, drain, wash and purge systems or equipment before beginning maintenance or repair.
Eliminate sources of ignition.

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
P	PEXATE* 532-RS Metal resinate solution	N/A	100
1	Toluene	108-88-3	23-25
2	Lactol Spirits	64742-89-8	15-17
3	Zinc resinate	N/A	(as Zn) 1.4

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, HC-3	N/A
1	N/A	N/A	HC-1, HC-2, HC-3	YES
2	N/A	N/A	HC-1, HC-2, HC-3	NO
3	N/A	N/A	NHH, NPH	YES

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

PEXATE* 532-RS Metal resinate solution contains toluene that is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE* 532-RS has a "Reportable Quantity" of 2,500 lbs.

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

E. OTHER

This product contains toluene 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...

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).

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

PEXATE* 232-R
Metal resinate solution

MSDS No.: 811 5010 0100-01

Date: 02/22/91

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.
IF SWALLOWED, VOMITING CAN CAUSE FATAL LUNG INJURY.

PEXATE* 232-R Metal resinate solution

HMIS RATINGS: (1)

Health hazard:	2	Moderate (2)
Flammability hazard:	3	Serious
Reactivity hazard:	0	Minimal

CHEMICAL AND COMMON NAME: Calcium/zinc resinate in toluene/lactol spirits solution

APPEARANCE AND ODOR: Amber liquid; toluene odor

(2) Chronic toxicity data available. See Section V of MSDS.

* Registered Trademark of Hercules Incorporated.

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES	CASRN	%	RECOMMENDED AIRBORNE LEVELS (1) 1989-1990 OSHA TWA	TLV-TWA
Toluene	108-88-3	37-38	100 ppm STEL 150 ppm	
Lactol spirits	64742-89-8	1-4	400 ppm (3) STEL 500 ppm	

(3) Reported as n-heptane (CASRN 142-82-5). Lactol spirits are 85% heptane isomers.

(1) Explanation of acronyms:
HMIS: Hazardous Materials Identification System rating for product as supplied.
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

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 114 C (237 F) (4)

SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE AT 20 C: Not determined.

SPECIFIC GRAVITY: 0.98

VAPOR DENSITY: Heavier than air (4)

pH: N/A

VOLATILE (WT.),%: 38-42

EVAPORATION RATE: Faster than butyl acetate

FREEZING POINT: Not determined.

(4) Property of toluene/lactol spirits solvent. Properties of product may be different.

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID.

FLASH POINT: 7 C (45 F) (TAG) (5)

FLAMMABLE LIMITS: Lower Explosive Limit (LEL) 1.0% (5)

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.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None, other than hazards associated with flammable liquid fires.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

(5) Properties of lactol spirits. Properties of product may be different.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION. IF SWALLOWED, VOMITING CAN CAUSE FATAL LUNG INJURY.

SIGNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES: Liquid can cause temporary corneal cloudiness, redness, pain, tearing; vapor may also cause irritation. Prolonged exposure may cause visual changes.

SKIN: Liquid can cause irritation, drying, scaling, cracking and dermatitis and abnormal skin sensations such as burning, prickling, tingling or numbness. Absorption through the skin can cause harmful systemic effects.

INHALATION: Inhaling vapor or mist may cause irritation of the nose and throat, nausea, headache and, at high concentrations, dizziness, incoordination, and drowsiness.

INGESTION: May cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, incoordination and drowsiness. Vomiting can cause fatal lung injury.

EMERGENCY & FIRST AID PROCEDURES:

EYES: 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 water. Remove contaminated clothing. Wash clothing before reuse.

INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

INGESTION: If this product is swallowed, do NOT induce vomiting. Call a physician immediately.

NOTE TO PHYSICIAN: This product contains a hydrocarbon solvent. Aspiration into the lungs will result in chemical pneumonitis.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE:
Exposure to toluene may increase the severity of liver injury from alcohol abuse.

Continued...

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 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: Inhalation, 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). The International Agency for Research on Cancer (IARC) has evaluated toluene and found it was not classifiable as to human carcinogenicity. Other components have NOT been evaluated by IARC.

REPORTED HUMAN EFFECTS:
TOLUENE vapor is rapidly absorbed through the lungs. Daily exposure to concentrations of 49 to 130 ppm caused decreases in manual dexterity, memory, and visual perception. Levels of 200 ppm for 8 hr produced mild fatigue, weakness, confusion, abnormal skin sensations such as burning, prickling, tingling or numbness, and tearing and transient irritation of the eyes. Higher concentrations also cause nausea, headaches, tiredness, and dizziness. Inhalation of very high concentrations for a prolonged period of time produces vision disturbances, nausea, narcosis and collapse. Chronic inhalation exposure may cause liver, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

A review of data by the California Department of Health Services concluded that instances of adverse reproductive effects associated with deliberate inhalation of paint thinners by pregnant women constitute limited evidence for reproductive toxicity of toluene.

Continued...

V. HEALTH HAZARD DATA

REPORTED HUMAN EFFECTS: (Continued)

LACTOL SPIRITS: The odor threshold of a hydrocarbon mixture similar to Lactol Spirits was approximately 0.04 mg/liter or 10 ppm. A concentration of 1.7 mg/liter (400 ppm) was tolerated by most individuals . Eye and throat irritation was noted at exposures between 3 and 8 mg/liter.. The hydrocarbons C5 to C9 are reported to have anesthetic and CNS depressant actions. They are fat solvents and on repeated or prolonged skin contact may cause dermatitis.

CALCIUM/ZINC RESINATE: None known.

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. It has its primary toxic effect on the central nervous system. The one-hour inhalation LC50 is about 27,000 ppm in rats. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination, tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hr/day for 3 to 4 months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 hr/day for about 35 consecutive days.

TOLUENE has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits was 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for 6 months showed no ill effects.

A data review by the California Department of Health Services concluded that results of animal studies constitute limited evidence for female reproductive toxicity of toluene and sufficient evidence of fetal developmental toxicity.

LACTOL SPIRITS: The C6 to C8 hydrocarbons, when aspirated into rat lungs, caused almost immediate death due to respiratory paralysis, asphyxia, and cardiac arrest. The 4-hours inhalation LC50 for rats exposed to a hydrocarbon mixture similar to Lactol Spirits was 61 mg/L (1,500 ppm). Motor incoordination was noted at 5,300 ppm. At 24,200 ppm, convulsions and death occurred to all. No toxic signs were observed at 2,800 ppm. Rats survived exposures to 2,000 ppm 6 hrs/day, 5 days/week for 13 weeks without any disturbances in the measured parameters.

CALCIUM/ZINC RESINATE: None known.

OTHER:

TOLUENE was inactive in several in vitro mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus. Do not enter spill area. 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 hazardous waste regulations.

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 vapors.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

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.
Appropriate protective clothing

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

HANDLING AND STORAGE PRECAUTIONS:

Keep away from heat, sparks and flame.
Keep containers closed.
Eliminate ignition sources and prevent buildup of static electric charges.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.
Store in areas that are designed from flammable liquid storage (See NFPA30).
This product may react with strong oxidizing agents and should not be stored near such materials.

Continued...

VII. APPLICABLE CONTROL MEASURES

...Continued

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
Provide electrical wiring for hazardous atmosphere.

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.

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
P	PEXATE* 232-R Metal resinate solution	N/A	100
1	Toluene	108-88-3	37-38
2	Lactol spirits	64742-89-8	1-4
3	Zinc resinate	Trade Secret	1.4 (as Zn)

B. SARA TITLE III (See footnotes)

COMPONENT NO.	SEC. 302 EHS TPQ (lbs)	SEC. 304 EHS RQ (lbs)	SEC. 311/312 HAZARD CATEGORY	SEC 313 TOXIC CHEMICAL (YES, NO)
P	N/A	N/A	HC-1, HC-2, HC-3	N/A
1	N/A	N/A	HC-1, HC-2, HC-3	YES
2	N/A	N/A	HC-1	NO
3	N/A	N/A	NHH, NPH	YES

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

PEXATE* 232-R Metal resinate solution contains toluene that is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE* 232-R Metal resinate solution has a "Reportable Quantity" of 2,500 lbs.

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

E. OTHER

This product contains toluene which 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).

This product contains a petroleum hydrocarbon. Prevent runoff from spills or leaks entering navigable waters, streams or other bodies of water. If runoff occurs, notify the National Response Center (NRC) at 800-424-8802.

Continued...

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).

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

PEXATE* 732-RS
Metal resinate solution

MSDS No.: 811 5034 3200-01

Supersedes MSDS No.: RES I-2455A

Date: 03/18/94

3/22/94

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID.
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

PEXATE* 732-RS
Metal resinate solution

(Formerly HERCULES* RES I-2455)
Metal resinate solution)

HMIS RATINGS: (1)

Health hazard: 2 Moderate (2)
Flammability hazard: 3 Serious
Reactivity hazard: 0 Minimal

CASRN: Mixture

CHEMICAL AND COMMON NAMES: Metal resinate in toluene/lactol spirits solution

APPEARANCE AND ODOR: Syrupy amber liquid; toluene odor

(2) Chronic toxicity data available. See Section V of MSDS.

* Registered Trademark of Hercules Incorporated

(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

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES	CASRN	WT %	RECOMMENDED AIRBORNE LEVELS (1) 1993-1994 OSHA TWA	TLV-TWA
Recovered solvent	N/A	39-41	212 ppm (3)	

(3) Based on components per ACGIH procedure.

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 93-114 C (199-237 F) (4)

SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE AT 20 C: Not determined

SPECIFIC GRAVITY: 0.98

VAPOR DENSITY: Heavier than air (4)

pH: N/A

VOLATILE (WT.),%: 40

EVAPORATION RATE: Faster than butyl acetate

FREEZING POINT: Not determined

V. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID.

FLASH POINT: 7 C (45 F) (4)

FLAMMABLE LIMITS: Lower: 1.0%; Upper: 7.0% (4)

AUTOIGNITION TEMPERATURE: N/A

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.

(4) Property of recovered solvent. Property of product may be different.

Continued...

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None, other than hazards associated with flammable liquid fires.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

SIGNS & SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	Liquid can cause temporary corneal cloudiness, redness, pain, tearing; vapor may also cause irritation. Prolonged exposure may cause visual changes.
SKIN:	Liquid can cause irritation, drying, scaling, cracking and dermatitis and abnormal skin sensations such as burning, prickling, tingling or numbness. Absorption through the skin can cause harmful systemic effects.
INHALATION:	Inhaling vapor or mist may cause irritation of the nose and throat, nausea, headache and, at high concentrations, dizziness, incoordination, and drowsiness.
INGESTION:	May cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, incoordination and drowsiness.

Continued...

V. HEALTH HAZARD DATA

...Continued

EMERGENCY & FIRST AID PROCEDURES:

EYES: 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 water. Remove contaminated clothing. Wash clothing before reuse.

INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE:
Exposure to toluene may increase the severity of liver injury from alcohol abuse.

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. None have been reported by our customers.

PRIMARY ROUTES OF ENTRY: Inhalation, 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). The International Agency for Research on Cancer (IARC) has evaluated toluene and found it was not classifiable as to human carcinogenicity. Other components have NOT been evaluated by IARC.

Continued...

V. HEALTH HAZARD DATA

...Continued

REPORTED HUMAN EFFECTS

TOLUENE vapor is rapidly absorbed through the lungs. Daily exposure to concentrations of 49 to 130 ppm caused decreases in manual dexterity, memory, and visual perception. Levels of 200 ppm for 8 hr produced mild fatigue, weakness, confusion, abnormal skin sensations such as burning, prickling, tingling or numbness, and tearing and transient irritation of the eyes. Higher concentrations also cause nausea, headaches, tiredness, and dizziness. Inhalation of very high concentrations for a prolonged period of time produces vision disturbances, nausea, narcosis and collapse. Chronic inhalation exposure may cause liver, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

A review of data by the California Department of Health Services concluded that instances of adverse reproductive effects associated with deliberate inhalation of paint thinners by pregnant women constitute limited evidence for reproductive toxicity of toluene.

LACTOL SPIRITS: The odor threshold of a hydrocarbon mixture similar to Lactol Spirits was approximately 0.04 mg/liter or 10 ppm. A concentration of 1.7 mg/liter (400 ppm) was tolerated by most individuals . Eye and throat irritation was noted at exposures between 3 and 8 mg/liter. The hydrocarbons C5 to C9 are reported to have anesthetic and CNS depressant actions. They are fat solvents and on repeated or prolonged skin contact may cause dermatitis.

METAL RESINATE: None known.

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. It has its primary toxic effect on the central nervous system. The one-hour inhalation LC50 is about 27,000 ppm in rats. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination, tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hr/day for 3 to 4 months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 hr/day for about 35 consecutive days.

Continued...

V. HEALTH HAZARD DATA

REPORTED ANIMAL EFFECTS:...Continued

TOLUENE has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits was 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for 6 months showed no ill effects.

A data review by the California Department of Health Services concluded that results of animal studies constitute limited evidence for female reproductive toxicity of toluene and sufficient evidence of fetal developmental toxicity.

LACTOL SPIRITS: The C6 to C8 hydrocarbons, when aspirated into rat lungs, caused almost immediate death due to respiratory paralysis, asphyxia, and cardiac arrest. The 4-hours inhalation LC50 for rats exposed to a hydrocarbon mixture similar to Lactol Spirits was 61 mg/L (1,500 ppm). Motor incoordination was noted at 5,300 ppm. At 24,200 ppm, convulsions and death occurred to all. No toxic signs were observed at 2,800 ppm. Rats survived exposures to 2,000 ppm 6 hrs/day, 5 days/week for 13 weeks without any disturbances in the measured parameters.

METAL RESINATE: None known.

OTHER:

TOLUENE was inactive in several in vitro mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus. Do not enter spill area. 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 hazardous waste regulations.

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 vapors.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

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.
Appropriate protective clothing

WORK PRACTICES:

Eyewash fountains and safety showers should be easily accessible.

HANDLING AND STORAGE PRECAUTIONS:

Keep away from heat, sparks and flame.
Keep containers closed.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.
Store in areas that are designed from flammable liquid storage (See NFPA30).
This product may react with strong oxidizing agents and should not be stored near such materials.

ENGINEERING CONTROLS:

Adequate ventilation should be provided to keep vapor concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
Provide electrical wiring for hazardous atmosphere.

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.

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	PEXATE* 732-RS Metal resinate solution	N/A	100
1	Toluene	108-88-3	24
2	Lactol spirits	64742-89-8	20
3	Xylenes	1330-20-7	3
4	Metal resinate	Trade Secret	1.4 (as Zn)

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, HC-3	N/A
1	N/A	N/A	HC-1, HC-2	YES
2	N/A	N/A	NHH	NO
3	N/A	N/A	HC-1, HC-2	YES
4	N/A	N/A	NHH	YES

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

PEXATE* 732-RS metal resinate solution contains toluene that is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE* 732-RS metal resinate solution has a "Reportable Quantity" of 4,100 lbs.

Continued...

VIII. ENVIRONMENTAL REGULATORY DATA

...Continued

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

E. OTHER

This product contains toluene 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).

This product contains a petroleum hydrocarbon. Prevent runoff from spills or leaks entering navigable waters, streams or other bodies of water. If runoff occurs, notify the National Response Center (NRC) at 800-424-8802.

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

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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).

Continued...

VIII. ENVIRONMENTAL REGULATORY DATA

FOOTNOTES:...Continued

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.

Doc. No. resi2455.wpf

MATERIAL SAFETY DATA SHEET

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

PEXATE* YELLOW RS50
Metal resinate solution

MSDS No.: 811 5001 0500-01

Supersedes MSDS No.: 767 1138 3001-02 Date: 07/22/94

I. PRODUCT IDENTIFICATION

WARNING! FLAMMABLE LIQUID
CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT.
ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR
CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

PEXATE* YELLOW RS50
Metal resinate solution

(Formerly HERCULES* RES 1-2362
Metal resinate solution)

HMIS RATINGS: (1)

Health hazard:	2	Moderate (2)
Flammability hazard:	3	Serious
Reactivity hazard:	0	Minimal

CASRN: Mixture

CHEMICAL AND COMMON NAMES: Metal resinate in toluene/lactol spirits/ VM&P naphtha solution

APPEARANCE AND ODOR: Viscous amber liquid; toluene odor

(2) Indicates that there may be chronic health effects present. See Section V of MSDS.

* Registered trademark of Hercules Incorporated

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(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

II. HAZARDOUS INGREDIENTS & EXPOSURE LIMITS

CHEMICAL AND COMMON NAMES:	CASRN	WT. %	RECOMMENDED AIRBORNE LEVELS (1) OSHA TWA	TLV-TWA 1993-1994
Toluene	108-88-3	22-24	100 ppm (3)	STEL 150 ppm
Lactol spirits/ VM&P Naphtha	64742-89-8/ 8032-32-4	16-18	400 ppm	STEL 500 ppm 300 ppm STEL 400 ppm
Xylene	1330-20-7	1-1.5	100 ppm	STEL 150 ppm

(3) For toluene, the NIOSH exposure limit is 200 ppm. The Acceptable Ceiling Concentration for anytime during an 8-hour shift is 300 ppm. The NIOSH Acceptable Maximum Peak above the Acceptable Ceiling Concentration for an 8-hour shift is 500 ppm for 30 minutes.

III. TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS

BOILING POINT: 93-121 C (200-250 F) (4)

VAPOR PRESSURE AT 20 C: 22.98 mmHg (4)

VAPOR DENSITY: 3.2 (4)

VOLATILE (WT.),%: 40

FREEZING POINT: Not determined

SOLUBILITY IN WATER: Negligible

SPECIFIC GRAVITY: 0.85 (4)

pH: N/A

EVAPORATION RATE: Faster than butyl acetate

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

WARNING! FLAMMABLE LIQUID

FLASH POINT: 1 C (34 F) TAG Closed Cup (4)

FLAMMABLE LIMITS (BY VOLUME IN AIR): Upper: 7.0%; Lower: 1.2% (4)

AUTOIGNITION TEMPERATURE: Not determined

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

(4) Property of solvent. Property of product may be different.

Continued...

IV. FIRE, EXPLOSION, & REACTIVITY HAZARD DATA

...Continued

SPECIAL FIREFIGHTING PROCEDURES:
Cool containers with water if exposed to fire.
Use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None, other than hazards associated with flammable liquid fires.

STABILITY CONSIDERATIONS: Stable

INCOMPATIBILITY WITH: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined

HAZARDOUS PRODUCTS OF COMBUSTION:
Combustion products vary depending on fire conditions and other products in the fire. The predominant products will be carbon monoxide and carbon dioxide. Under some conditions, aldehydes and carboxylic acids may be formed. These will be irritating to eyes, nose, throat, and lungs.

HAZARDOUS POLYMERIZATION: Will not occur.

V. HEALTH HAZARD DATA

WARNING! CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. ABSORPTION OF LIQUID THROUGH THE SKIN OR INHALATION OF VAPOR CAN CAUSE HEADACHE, DIZZINESS, SLEEPINESS OR INCOORDINATION.

SIGNS AND SYMPTOMS OF OVEREXPOSURE IN THE WORKPLACE:

EYES:	Liquid can cause temporary corneal cloudiness, redness, pain, tearing; vapors may also cause irritation. Prolonged exposure may cause visual changes.
SKIN:	Liquid can cause irritation, drying, scaling, cracking and dermatitis and abnormal skin sensations such as burning, prickling, tingling or numbness. Absorption through the skin can cause harmful systemic effects.
INHALATION:	Inhaling vapor or mist may cause irritation of the nose and throat, nausea, headache and, at high concentrations, dizziness, incoordination, and drowsiness.
INGESTION:	Can cause nausea, vomiting, burning sensation of the mouth and throat, headache, dizziness, weakness, drowsiness, and incoordination.

EMERGENCY & FIRST AID PROCEDURES:
EYES: Immediately flush with plenty of low-pressure water for at least 15 minutes. Remove contact lenses to ensure thorough flushing. Call a physician.

Continued...

V. HEALTH HAZARD DATA

EMERGENCY & FIRST AID PROCEDURES:...Continued

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

INHALATION: Remove to fresh air. Treat any irritation symptomatically. If breathing has stopped, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

INGESTION: If this product is swallowed, do NOT induce vomiting. Call a physician immediately.

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.

Exposure to toluene may increase the severity of liver injury from alcohol abuse.

PRIMARY ROUTES OF ENTRY: Skin, inhalation

CANCER INFORMATION:

The International Agency for Research on Cancer (IARC) has evaluated toluene and found it was not classifiable as to human carcinogenicity. 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).

REPORTED HUMAN EFFECTS:

TOLUENE vapor is rapidly absorbed through the lungs. Daily exposure to concentrations of 49 to 130 ppm caused decreases in manual dexterity, memory, and visual perception. Levels of 200 ppm for 8 hr produced mild fatigue, weakness, confusion, abnormal skin sensations such as burning, prickling, tingling or numbness, and tearing and transient irritation of the eyes. Higher concentrations also cause nausea, headaches, tiredness, and dizziness. Inhalation of very high concentrations for a prolonged period of time produces vision disturbances, nausea, narcosis and collapse. Chronic inhalation exposure may cause liver, nerve and brain damage. Toluene has also been reported to cause effects on the heart (cardiac sensitization) which can result in death. Ingestion causes tremors, effects on heart, convulsions, stupor, shallow rapid respiration and unconsciousness; liver and kidney damage may occur.

Continued...

V. HEALTH HAZARD DATA

REPORTED HUMAN EFFECTS:...Continued

A review of data by the California Department of Health Services concluded that instances of adverse reproductive effects associated with deliberate inhalation of paint thinners by pregnant women constitute limited evidence for reproductive toxicity of toluene.

VM&P Naphtha: Vapors from solvents of similar composition have been reported to cause effects on the central nervous and cardiac systems. Humans exposed to vapor concentrations of 880 mg/m3 for 15 minutes reported irritant effects.

LACTOL SPIRITS: The odor threshold of a hydrocarbon mixture similar to Lactol Spirits was approximately 0.04 mg/liter or 10 ppm. A concentration of 1.7 mg/liter (400 ppm) was tolerated by most individuals . Eye and throat irritation was noted at exposures between 3 and 8 mg/liter. The hydrocarbons C5 to C9 are reported to have anesthetic and CNS depressant actions. They are fat solvents and on repeated or prolonged skin contact may cause dermatitis.

XYLENE vapor can cause eye irritation. Systemic effects of xylene exposure are reported to include headache, fatigue, lassitude, irritability and gastrointestinal disturbances including nausea, loss of appetite, and flatulence. Injury to the liver and kidneys has been reported, as well as cardiac sensitization after exposure to very high concentrations. A concentration of 10,000 ppm was lethal to one of three workers exposed for several hours. Liquid can cause severe eye irritation and produce cloudiness of the cornea. The liquid causes defatting of the skin leading to drying, cracking and blistering and, in some cases, a burning sensation.

METAL RESINATE: None known.

REPORTED ANIMAL EFFECTS:

TOLUENE is absorbed rapidly by the lungs, more slowly from the gastrointestinal tract, and quite slowly through the skin. It has its primary toxic effect on the central nervous system. The one-hour inhalation LC50 is about 27,000 ppm in rats. Exposure to toluene vapor at high concentrations caused initial excitement, then muscular incoordination,tremors, narcosis and weakness, and ultimately unconsciousness. Several species of animals exposed to toluene vapor at concentrations of 100 ppm or greater, 8 hr/day for 3 to 4 months, showed no significant signs of overt toxicity. Recent studies have indicated a high-frequency hearing loss in weanling and young adult rats exposed to 1200 ppm toluene 14 hr/day for about 35 consecutive days.

Toluene has an acute rat oral LD50 greater than 5 g/kg. Liquid toluene caused transient irritation of the eyes. The dermal LD50 in rabbits was 14 g/kg; dermal application of toluene up to 20 times caused slight to moderate irritation. Rats given up to 590 mg/kg/day orally for 6 months showed no ill effects.

Continued...

V. HEALTH HAZARD DATA

REPORTED ANIMAL EFFECTS:...Continued

A data review by the California Department of Health Services concluded that results of animal studies constitute limited evidence for female reproductive toxicity of toluene and sufficient evidence of fetal developmental toxicity.

VM&P Naphtha: Dogs and rats were exposed to a similar solvent at 500 ppm for 30 hours weekly for 13 weeks. There was no evidence of latent or chronic effect.

LACTOL SPIRITS: The C6 to C8 hydrocarbons, when aspirated into rat lungs, caused almost immediate death due to respiratory paralysis, asphyxia, and cardiac arrest. The 4-hours inhalation LC50 for rats exposed to a hydrocarbon mixture similar to Lactol Spirits was 61 mg/L (1,500 ppm). Motor incoordination was noted at 5,300 ppm. At 24,200 ppm, convulsions and death occurred to all. No toxic signs were observed at 2,800 ppm. Rats survived exposures to 2,000 ppm 6 hrs/day, 5 days/week for 13 weeks without any disturbances in the measured parameters.

XYLENE has an acute peroral LD50 of 4.3 g/kg; it produces eye irritation in rabbits and cloudiness of the cornea. Inhalation studies with several species have shown that exposure to concentrations of less than 400 ppm for 6 hours per day for 13 weeks caused no significant effects. In one study with guinea pigs, 300 ppm for 4 hours a day, six days per week for 64 exposures, caused some liver and lung effects.

METAL RESINATE: None known.

OTHER:

TOLUENE was inactive in several in vitro mutagenicity test systems. Chromosome changes have been reported in toluene-exposed workers.

HYDROCARBON MIXTURE, VM&P NAPHTHA: Present studies indicate that none of the alkanes possess teratogenic, mutagenic, or carcinogenic properties.

METAL RESINATE: None known.

VI. SPILL PROCEDURES & WASTE DISPOSAL

SPILL PROCEDURES:

Eliminate sources of ignition. Wear self-contained breathing apparatus. Do not enter spill area. 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 hazardous waste regulations.

Continued...

VI. SPILL PROCEDURES & WASTE DISPOSAL

WASTE DISPOSAL METHOD...Continued
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 vapors.
Wash thoroughly after handling, and before eating, drinking or smoking.
Remove contaminated clothing promptly and clean thoroughly before reuse.
Avoid contamination of food, beverages, or smoking materials.

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.
Appropriate protective clothing

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

HANDLING AND STORAGE PRECAUTIONS:
Keep away from heat, sparks and flame.
Keep containers closed.
Store at room temperature below 27 C (80 F), in order to preserve product integrity.
Store in areas that are designed from flammable liquid storage (See NFPA30).
This product may react with strong oxidizing agents and should not be stored near such materials.

ENGINEERING CONTROLS:
Store in areas that are designed for flammable liquid storage (see NFPA 30).
Adequate ventilation should be provided to keep 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:
Isolate, vent, drain, wash and purge systems or equipment before beginning maintenance or repair.
- Eliminate sources of ignition.

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	PEXATE* YELLOW RS50 Metal resinate solution	Mixture	100
1	Toluene	108-88-3	22-24
2	Lactol spirits/ VM&P Naphtha	64742-89-8/ 8032-32-4	16-18
3	Xylene	1330-20-7	1-1.5

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, HC-3	N/A
1	N/A	N/A	HC-1	YES
2	N/A	N/A	HC-1	NO
3	N/A	N/A	HC-1, HC-2	YES

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

PEXATE YELLOW RS50 Metal resinate solution contains toluene that is a "Hazardous Substance" listed in 40 CFR 302.4. PEXATE YELLOW RS50 Metal resinate solution has a "Reportable Quantity" of 4,100 lbs.

D. RCRA INFORMATION

This product exhibits the characteristic of ignitability (D001) as defined in hazardous waste regulations 40 CFR 261 Subpart C. Therefore, disposal of unused product must comply with hazardous waste regulations.

Continued...

VIII. ENVIRONMENTAL REGULATORY DATA

...Continued

E. OTHER

This product contains toluene 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).

This product contains a petroleum hydrocarbon. Prevent runoff from spills or leaks entering navigable waters, streams or other bodies of water. If runoff occurs, notify the National Response Center (NRC) at 800-424-8802.

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

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

Continued...

VIII. ENVIRONMENTAL REGULATORY DATA

FOOTNOTES...Continued

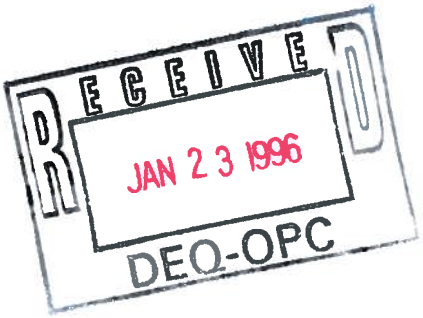
SEC. 313 - 40 CFR 372 Toxic Chemical Release Reporting Requirements

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. 8295s



MATERIAL SAFETY DATA SHEET

Drew Divisions → 3-20-95
ASHLAND CHEMICAL, INC.
One Drew Plaza, Boonton, New Jersey 07005
Phone (201) 263-7600/Telex 136444 FAX (201) 263-4482

24-HOUR Emergency Telephone
1(606) 324-1133 or
1(800) 274-5263

000084

ADVANTAGE PLUS 1460 DEPOSIT INHIBITOR

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

****

Product Name: ADVANTAGE PLUS 1460 DEPOSIT INHIBITOR

HERCULES
WEST 7TH STREET
HATTIESBURG MS 39401

OD 10 044 40372-502

PRODUCT: 5700
INVOICE: 346550
INVOICE DATE: 02/24/95
TO: HERCULES
HATTIESBURG

Data Sheet No: 0275695-002.000
Prepared: 02/09/95
Supersedes: 01/30/95
Print Date: 03/11/95

SECTION I - PRODUCT IDENTIFICATION

General or Generic ID: DEPOSIT INHIBITOR

DOT Hazard Classification: 8 (CORROSIVE MATERIAL)

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
TRADE SECRET *	1-10			(1)
TRADE SECRET *	1-10			(2)
SODIUM HYDROXIDE CAS #: 1310-73-2	1-10	2 MG/M3 - CEILING	2 MG/M3 - CEILING	
ORGANIC SALT *	1-10			(3)
TRADE SECRET *	1-10			(4)
SODIUM ERYTHORBATE CAS #: 6381-77-7	1-10			(5)

Notes:

(1) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL
(2) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL
(3) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL
(4) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL
(5) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

* THE SPECIFIC CHEMICAL NAME OF THIS COMPONENT IS BEING WITHHELD AS A TRADE SECRET.

SECTION III - PHYSICAL DATA

Boiling Point	for COMPONENT(70-85%)	212.00 Deg F (100.00 Deg C) @ 760.00 mm Hg
Vapor Pressure	for COMPONENT(70-85%)	17.50 mm Hg @ 68.00 Deg F (20.00 Deg C)
Specific Vapor Density		HEAVIER THAN AIR
Specific Gravity		1.200 @ 72.00 Deg F (22.22 Deg C)
Percent Volatiles		70-85%
Evaporation Rate	UNAVAILABLE	
pH		12.5
Appearance		CLEAR TO SLIGHTLY HAZY AMBER
State		LIQUID
Form		HOMOG SOLN

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

CONTINUED ON PAGE: 2

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000084 **ADVANTAGE PLUS 1460 DEPOSIT INHIBITOR**

SECTION IV-FIRE AND EXPLOSION INFORMATION (Continued)

EXTINGUISHING MEDIA: REGULAR FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM:, CARBON DIOXIDE AND CARBON MONOXIDE, NITROGEN OXIDES, VARIOUS HYDROCARBONS

FIREFIGHTING PROCEDURES: WEAR A SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WITH APPROPRIATE TURN-OUT GEAR AND CHEMICAL RESISTANT PERSONAL PROTECTIVE EQUIPMENT. REFER TO THE PERSONAL PROTECTIVE EQUIPMENT SECTION OF THIS MSDS.

SPECIAL FIRE & EXPLOSION HAZARDS: CAN REACT WITH CHEMICALLY REACTIVE METALS SUCH AS ALUMINUM, ZINC, MAGNESIUM, COPPER ETC. TO RELEASE HYDROGEN GAS WHICH CAN FORM EXPLOSIVE MIXTURES WITH AIR.

NFPA CODES: HEALTH- 3 FLAMMABILITY- 0 REACTIVITY- 1

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - EXPOSURE CAUSES EYE IRRITATION. SYMPTOMS MAY INCLUDE STINGING, TEARING, REDNESS, AND SWELLING.
SKIN - EXPOSURE CAUSES SEVERE SKIN IRRITATION. SYMPTOMS MAY INCLUDE REDNESS, BURNING, AND SEVERE SKIN DAMAGE. PRE-EXISTING SKIN DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.
BREATHING - EXPOSURE TO VAPOR OR MIST IS POSSIBLE.
SYMPTOMS MAY INCLUDE:
-IRRITATION (NOSE, THROAT, RESPIRATORY TRACT)- PRE-EXISTING LUNG DISORDERS, E.G. ASTHMA-LIKE CONDITIONS, MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.
SWALLOWING - MAY BE HARMFUL OR FATAL. SYMPTOMS MAY INCLUDE SEVERE IRRITATION AND BURNS OF THE MOUTH, THROAT, AND DIGESTIVE TRACT.

FIRST AID:

IF ON SKIN: IMMEDIATELY FLUSH SKIN WITH WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. SEEK IMMEDIATE MEDICAL ATTENTION. WASH CLOTHING BEFORE REUSE AND DECONTAMINATE OR DISCARD CONTAMINATED SHOES.

IN EYES: IF MATERIAL GETS INTO THE EYES, IMMEDIATELY FLUSH EYES GENTLY WITH WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS APART. IF SYMPTOMS DEVELOP AS A RESULT OF VAPOR EXPOSURE, IMMEDIATELY MOVE INDIVIDUAL AWAY FROM EXPOSURE AND INTO FRESH AIR BEFORE FLUSHING AS RECOMMENDED ABOVE. SEEK IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: SEEK IMMEDIATE MEDICAL ATTENTION. DO NOT INDUCE VOMITING.VOMITING WILL CAUSE FURTHER DAMAGE TO THE MOUTH AND THROAT. IF INDIVIDUAL IS CONSCIOUS AND ALERT, IMMEDIATELY RINSE MOUTH WITH WATER AND GIVE MILK OR WATER TO DRINK. IF POSSIBLE, DO NOT LEAVE INDIVIDUAL UNATTENDED.

IF BREATHED: IF SYMPTOMS DEVELOP, IMMEDIATELY MOVE INDIVIDUAL AWAY FROM EXPOSURE AND INTO FRESH AIR. SEEK IMMEDIATE MEDICAL ATTENTION; KEEP PERSON WARM AND QUIET. IF PERSON IS NOT BREATHING, BEGIN ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG MINERAL ACIDS., STRONG OXIDIZING AGENTS, REACTIVE METALS SUCH AS ALUMINUM AND MAGNESIUM, STRONG ORGANIC ACIDS, COPPER

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL.

LARGE SPILL: PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), 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 INDUSTRIAL HYGIENIST). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW LEVEL OF OVEREXPOSURE (FROM KNOWN, SUSPECTED OR APPARENT ADVERSE EFFECTS).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER).

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. CONSULT YOUR SAFETY REPRESENTATIVE.

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SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED (Continued)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

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.

KEEP FROM FREEZING.

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.

MATERIAL SAFETY DATA SHEET

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DEFINITIONS

This definition page is intended for use with Material Safety Data Sheets supplied by the Drew Chemical Corporation. 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.

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 lowest 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.

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.

J. T. BAKER CHEMICAL CO. 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-HOUR EMERGENCY TELEPHONE -- (201) 859-2151
CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

8 -01 SODIUM CHLORIDE PAGE: 1
EFFECTIVE: 05/30/86 ISSUED: 06/26/86

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM CHLORIDE
FORMULA: NACL
FORMULA WT: 58.44
CAS NO.: 07647-14-5
NIOSH/RTECS NO.: VZ4725000
COMMON SYNONYMS: SALT
PRODUCT CODES: 3628,3624,3625,3632,4924

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH	-	1
FLAMMABILITY	-	0
REACTIVITY	-	0
CONTACT	-	1

LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT

PRECAUTIONARY LABEL STATEMENTS

CAUTION
MAY CAUSE IRRITATION
DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SECTION II - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
NOT APPLICABLE		

SECTION III - PHYSICAL DATA

BOILING POINT: 1413 C (2575 F)
MELTING POINT: 801 C (1474 F)
SPECIFIC GRAVITY: 2.16 (H2O=1)
SOLUBILITY(H2O): MODERATE (1 TO 10 %)
APPEARANCE & ODOR: ODORLESS WHITE CRYSTALLINE SOLID.

VAPOR PRESSURE(MM HG): N/A
VAPOR DENSITY(AIR=1): N/A
EVAPORATION RATE: (BUTYL ACETATE=1) N/A
% VOLATILES BY VOLUME: 0

CONTINUED ON PAGE: 2

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A

FIRE EXTINGUISHING MEDIA
USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SECTION V - HEALTH HAZARD DATA

TOXICITY: LD50 (ORAL-RAT)(MG/KG) - 3000

EFFECTS OF OVEREXPOSURE
DUST MAY IRRITATE OR BURN MUCOUS MEMBRANES.
DUST MAY IRRITATE EYES.

EMERGENCY AND FIRST AID PROCEDURES

INGESTION:	IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.
INHALATION:	IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION.
EYE CONTACT:	IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.
SKIN CONTACT:	IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES.

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE DOCUMENTED

INCOMPATIBLES: STRONG OXIDIZING AGENTS, LITHIUM, INTER-HALOGENS, EX. BROMINE TRIFLUORIDE

SECTION VII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.

DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION VIII - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION

CONTINUED ON PAGE: 3

SECTION VIII - PROTECTIVE EQUIPMENT (CONTINUED)

CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE

SPECIAL PRECAUTIONS
KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE AREA.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

(TM) AND (R) DESIGNATE TRADEMARKS.
N/A = NOT APPLICABLE OR NOT AVAILABLE

-- LAST PAGE --

Health Hazard Information SECTION 5

A. Exposure/Health Effects

Inhalation:	Inhalation of dust may cause mild irritation to mucous membranes, nose and throat. Symptoms may include coughing, dryness, and sore throat.
Ingestion:	Very large doses can cause vomiting, diarrhea, and prostration. Dehydration and congestion occur in most internal organs. Hypertonic salt solutions can produce violent inflammatory reactions in the gastrointestinal tract.
Skin Contact:	Not expected to be a health hazard.
Eye Contact:	May cause irritation.
Chronic Exposure:	No information found.
Aggravation of Pre-existing Conditions:	No information found.

B. FIRST AID

Inhalation:	Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:	If large amounts were swallowed, get medical advice.
Skin Exposure:	Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Exposure:	Wash thoroughly with running water. Get medical advice if irritation develops.

C. TOXICITY DATA (RTECS, 1982)

Oral rat LD50: 3000 mg/kg.
Reproductive effects cited.

Occupational Control Measures SECTION 6

Airborne Exposure Limits:	None established.
Ventilation System:	In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.
Personal Respirators (NIOSH Approved)	For conditions of use where exposure to the dust is apparent, a dust/mist respirator may be worn. For emergencies, a self-contained breathing apparatus may be necessary.
Skin Protection:	Wear protective gloves and clean body-covering clothing.
Eye Protection:	Use chemical safety goggles. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

Storage and Special Information SECTION 7

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

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7581, 7532, 7640, 4577, 7544, 4733, 4647, 4751, 6577, 3767

SODIUM CHLORIDE

Material Safety Data Sheet

Emergency Telephone Number
314-982-5000

Mallinckrodt, Inc.
P.O. Box 5840
St. Louis, Mo. 63134

Effective Date: 08-08-86 Supersedes 08-07-85

PRODUCT IDENTIFICATION:

Synonyms: Salt

Formula CAS No.: 7647-14-5

Molecular Weight: 58.44

Hazardous Ingredients:
Sodium chloride

Chemical Formula: NaCl

PRECAUTIONARY MEASURES

WARNING! CAUSES EYE IRRITATION.

Avoid contact with eyes.
Wash thoroughly after handling.

EMERGENCY/FIRST AID

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SEE SECTION 5.

DOT Hazard Class: Not Regulated

Physical Data SECTION 1

Appearance: White crystalline

Odor: Odorless.

Solubility: 36g/100cc water @ 20°C (68°F)

Boiling Point: 1413°C (2575°F)

Vapor Density (Air=1): No information found.

Melting Point: 801°C (1474°F)

Vapor Pressure (mm Hg): 1.0 @ 865°C (1589°F)

Specific Gravity: 2.16

Evaporation Rate: No information found.

Fire and Explosion Information SECTION 2

Fire: Not considered to be a fire hazard.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Reactivity Data SECTION 3

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: When heated to above 801°C (1474°F), it emits toxic fumes of chloride and sodium oxide

Hazardous Polymerization: Will not occur.

Incompatibilities: Lithium, bromide trifluoride.

Leak/Spill Disposal Information SECTION 4

Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

Disposal: Whatever cannot be saved for reclamation may be delivered to an approved waste disposal facility, or if local ordinances allow, can be dissolved in sufficient amounts of water to meet water quality standards, and flushed down a sewer drain.

Ensure compliance with local, state and federal regulations.

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SECTION V-HEALTH HAZARD DATA (Continued)

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG MINERAL ACIDS., STRONG OXIDIZING AGENTS

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT OR OTHER ABSORBENT MATERIAL.

LARGE SPILL: PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP IS COMPLETED. STOP SPILL AT SOURCE. DIKE TO PREVENT SPREADING. PUMP TO SALVAGE TANK.

PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), 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 INDUSTRIAL HYGIENIST). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NEOPRENE, POLYVINYL CHLORIDE

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. CONSULT YOUR SAFETY REPRESENTATIVE.

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

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.

MATERIAL SAFETY DATA SHEET

Drew Divisions
ASHLAND CHEMICAL, INC.
One Drew Plaza, Boonton, New Jersey 07005
Phone (201) 263-7600/Telex 136444 FAX (201) 263-4482

24 HOUR Emergency Telephone
1(606) 324-1133 or
1(800) 274-5263

000053

AMERSITE 2 CORROSION INHIBITOR

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

****

Product Name: AMERSITE 2 CORROSION INHIBITOR

HERCULES
P.O. BOX 1937
HATTIESBURG MS 39401

OD 10 027 40372-501

PRODUCT: 1523
INVOICE: 328728
INVOICE DATE: 08/10/94
TO: HERCULES
HATTIESBURG

Data Sheet No: 0137818-003.003
Prepared: 08/17/94
Supersedes: 06/20/94
Print Date: 08/27/94

SECTION I - PRODUCT IDENTIFICATION

General or Generic ID: CORROSION INHIBITOR

DOT Hazard Classification: NOT APPLICABLE

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION. SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	Percent	PEL	TLV	Note
SODIUM BISULFITE CAS #: 7681-57-4	25-40	5 MG/M3	5 MG/M3	(1)

Notes:

(1) PEL NOT ESTABLISHED FOR THIS MATERIAL

SECTION III - PHYSICAL DATA

Boiling Point	for COMPONENT(55-70%)	212.00 Deg F (100.00 Deg C) @ 760.00 mm Hg
Vapor Pressure	for COMPONENT(55-70%)	17.50 mm Hg @ 68.00 Deg F (20.00 Deg C)
Specific Vapor Density		HEAVIER THAN AIR
Specific Gravity		1.300 @ 77.00 Deg F (25.00 Deg C)
Percent Volatiles		55-70%
Evaporation Rate		SLOWER THAN ETHER
pH		4.1
Appearance		CLEAR PINK COLOR
State		LIQUID
Form		HOMOG SOLN

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: WATER FOG OR CARBON DIOXIDE

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, SULFUR DIOXIDE

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SPECIAL FIRE & EXPLOSION HAZARDS: NOT APPLICABLE

NFPA CODES: HEALTH- 2 FLAMMABILITY- 0 REACTIVITY- 0

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - EXPOSURE TO LIQUID OR VAPOR CAUSES IRREVERSIBLE EYE DAMAGE. SYMPTOMS MAY INCLUDE STINGING, TEARING, REDNESS, SWELLING, CORNEAL DAMAGE AND BLINDNESS.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.
BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION.
SKIN - EXPOSURE MAY CAUSE MILD SKIN IRRITATION. SYMPTOMS MAY INCLUDE REDNESS AND BURNING.

CONTINUED ON PAGE: 2

MATERIAL SAFETY
DATA SHEET

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Emergency Telephone
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1(800) 274-5263

DEFINITIONS

This definition page is intended for use with Material Safety Data Sheets supplied by the Drew Chemical Corporation. 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.

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 lowest 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.

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

DATE August 1985

PRODUCT NAME FILTRASORB 300
ACTIVATED CARBON

CALGON
CALGON CARBON CORPORATION

SECTION I

MANUFACTURER'S NAME	Calgon Carbon Corporation	EMERGENCY TELEPHONE NO.	412-787-6700
ADDRESS	P.O. Box 717 Pittsburgh, PA 15230-0717		
CHEMICAL NAME AND SYNONYMS	Carbon	FORMULA	C

SECTION II HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	CAS #	% BY WEIGHT	ORAL LD_{50}	DERMAL LD_{50}	TLV (Units) ACGIH	OSHA	OTHER
Chemical Name Carbon Common Name Activated Carbon	7440-44-0	100%	>10g/Kg* (rat)	--	N/A	N/A	N/A
Chemical Name Common Name							
Chemical Name Common Name							
Chemical Name Common Name							
Chemical Name Common Name							

*No animal mortalities during course of 14-day study.

CAUTION!! Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels and enclosed or confined spaces. Before entering such an area, sampling and work procedures for low oxygen levels should be taken to ensure ample oxygen availability, observing all local, state, and federal regulations.

This product is non-hazardous according to the definitions for "health hazard" and "physical hazard" provided in the OSHA Hazard Communication Law (29 CFR part 1910).

SECTION III PHYSICAL DATA

BOILING POINT (°F)	N/A	SPECIFIC GRAVITY (H,O=1)	2.3g/cc real density
VAPOR PRESSURE (mmHg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	pH	N/A
SOLUBILITY IN WATER	insoluble	OTHER packing density	0.4 to 0.7g/cc

APPEARANCE AND ODOR black particulate solid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

LASH POINT (Method Used)	N/A
XTINGUISHING MEDIA	If involved in fire, flood with plenty of water.
PECIAL FIRE FIGHTING ROCEDURES	None
JNUSUAL FIRE AND EXPLOSION HAZARDS	Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. may result in fire.

SECTION V HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE

A. ACUTE

1. INGESTION

The product is non-toxic through ingestion. The acute oral LD_{50} (rat) is >10g/Kg.

2. INHALATION

The acute inhalation LC_{50} (rat) is >64.4 mg/ℓ (nominal concentration) for activated carbon.

3. DERMAL EXPOSURE

a. TOXIC

Non-toxic

b. IRRITATION

The product is not a primary skin irritant. The primary skin irritation index (rabbit) is 0.

c. SENSITIZATION

None

4. EYE IRRITATION

The physical nature of the product may produce eye irritation.

B. SUBCHRONIC, CHRONIC, OTHER

The effects of long-term, low-level exposures to this product have not been determined. Safe handling of this material on a long-term basis should emphasize the avoidance of all effects from repetitive acute exposures.

FIRST AID

A. EYE

Flush with plenty of water for at least 15 minutes.

B. SKIN

Wash with soap and water.

C. INGESTION

D. INHALATION

SECTION VI REACTIVITY DATA

ABILITY	STABLE	X	CONDITIONS TO AVOID: None
	UNSTABLE		

COMPATABILITY (Materials to Avoid)

Strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc.

[illegible]US DECOMPOSITION ODUCTS

Carbon monoxide may be generated in the event of fire.

SECTION VII SPILL OR LEAK PROCEDURES

PORTABLE QUANTITIES (RQ) LBS OF EPA HAZARDOUS BSTANCES IN PRODUCT

1. N/A
2.
3.

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING N/A LBS.

EPS TO BE TAKEN IN CASE TERIAL IS RELEASED SPILLED

Sweep up unused carbon and discard in refuse container or repackage.

STE DISPOSAL METHOD

Dispose of unused carbon in refuse container. Dispose of in accordance with local, state, and federal regulations.

SECTION VIII HANDLING & STORAGE

OTECTIVE GLOVES: Rubber gloves recommended

EYE PROTECTION: Safety glasses or goggles recommended

ROTECTIVE: Not required

ORY PROTECTION: A NIOSH approved particulate filter respirator is recommended if excessive dust is generated.

TILATION

LOCAL EXHAUST	OTHER
Recommended	
MECHANICAL (General): Recommended	

RAGE & HANDLING

CAUTION!! Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels and enclosed or confined spaces. Before entering such an area, sampling and work procedures for low oxygen levels should be taken to ensure ample oxygen availability, observing all local, state, and federal regulations.

R PRECAUTIONS

Wash thoroughly after handling. Exercise caution in the storage and handling of all chemical substances.

PREPARED BY S. D. Cifrulak

Mississippi Department of Environmental Quality
Office of Pollution Control

I-sys 2000 Master Site Detail Report

Site Name: Hercules Inc

PHYSICAL ADDRESS	
LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

MAILING ADDRESS	
LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

OTHER INFORMATION	
MASTER ID:	002022
COUNTY:	Forrest
REGION	SRO
SIC 1:	2822
AIR TYPE:	TITLE V
HW TYPE:	LARGE QUANTITY
SOLID TYPE:	
WATER TYPE:	INDUSTRIAL
BRANCH:	Chemical
ECED CONTACT:	Yassin, Mohammad
BASIN:	

AIR PROGRAMS	☑ SIP	☐ PSD	☐ NSPS	☐ NESHAPS	☑ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

Pemits

PROGRAM	PERMIT TYPE	PERMIT #	MDEQ PERMIT CONTACT	ACTIVE
HAZ. WASTE	EPA ID	MSD008182081		NO
AIR	TITLE V	080000001	Ketchum, Brian	YES
AIR	SOP	080000001	Ketchum, Brian	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Beasley, Jerry	YES
WATER	PRE-TREATMENT	MSP091286	Tomkins, Tracy	YES
GENERAL	SARA TITLE III	MSR110153	Lavallee, Louis	YES
AIR	TITLE V	0800-00001	Glenn, Montie	NO

Compliance Actions

MEDIA	ACTIVITY TYPE	SCHEDULED	COMPLETED	INSPECTED B
WATER	CEI - NA	3/17/99	3/17/99	Yassin, Mohammad
WATER	CMI - PRETREATMENT	11/1/99		Sharp, Loyd
WATER	CMI - NPDES	4/1/00		Sharp, Loyd
WATER	CMI - NPDES	11/1/99		Sharp, Loyd
WATER	CEI - NA	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Yassin, Mohammad
AIR	State Compliance Inspection	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	6/30/99	6/30/99	Yassin, Mohammad
AIR	State Compliance Inspection	6/29/99	6/29/99	Yassin, Mohammad
WATER	CEI - NA	6/30/99	6/30/99	Yassin, Mohammad

Mississippi Department of Environmental Quality
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MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

OTHER INFORMATION	
MASTER ID:	002022
COUNTY:	Forrest
REGION	SRO
SIC 1:	2822
AIR TYPE:	TITLE V
HW TYPE:	LARGE QUANTITY
SOLID TYPE:	
WATER TYPE:	INDUSTRIAL
BRANCH:	Chemical
ECED CONTACT:	
Yassin, Mohammad	
BASIN:	

AIR PROGRAMS	☑ SIP	☐ PSD	☐ NSPS	☐ NESHAPS	☑ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

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WATER	CMI - NPDES	11/1/99		Sharp, Loyd
WATER	CEI - NA	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Yassin, Mohammad
AIR	State Compliance Inspection	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	6/30/99	6/30/99	Yassin, Mohammad
AIR	State Compliance Inspection	6/29/99	6/29/99	Yassin, Mohammad
WATER	CEI - NA	6/30/99	6/30/99	Yassin, Mohammad