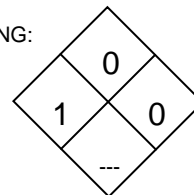


HERITAGE SYSTEMS, INC

NFPA RATING:

4=Severe
3=Serious
2=Moderate
1=Slight
0=Minimal



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: **HSI-313 or 4913**
PRODUCT DESCRIPTION: *Cooling Water Treatment*

COMPANY INFORMATION:
Chem, Inc.
13560 Colombar Court
Fontana, California 92337
Non-emergency: 951-681-9696

Revised: October 12, 2006

24-HOUR EMERGENCY TELEPHONE:
CHEMTREC 800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS #	HAZARD	WT %	ACGIH		OSHA	
				TLV _(TWA)	STEL	PEL _(TWA)	STEL
Hydroxyethylidene diphosphonic acid (HEDP)	2809-21-4	Irritant	1 – 5	NE	NE	NE	NE
Phosphonobutane tricarboxylic acid (PBTC)	37971-36-1	Irritant	1 – 5	NE	NE	NE	NE
Polymaleic acid	26099-09-2	Irritant	1 – 5	NE	NE	NE	NE

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous and/or present at amounts below reportable limits.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Clear, pale yellow liquid
Bland odor
WARNING: May cause moderate to severe irritation to eyes. May cause some irritation to skin. Wear safety glasses and gloves when handling. Wash thoroughly after handling.

POTENTIAL HEALTH EFFECTS Eye contact Skin contact Ingestion Inhalation

EYE CONTACT: Exposure to liquid product may cause moderate irritation to eyes. Symptoms of exposure may include redness, swelling, tearing or pain.

SKIN CONTACT: Exposure to liquid product may be slightly irritating to skin. Symptoms of exposure may include redness, swelling or pain.

INGESTION: Exposure to liquid product is not expected to result in significant adverse effects.

INHALATION: No information is available. Inhalation is not believed to be a likely route of exposure.

CHRONIC: Effects of chronic exposure are not expected to differ from the above-mentioned contact.

CARCINOGENS: This product and its components are not listed on IARC, OSHA or ACGIH lists as cancer-causing agents. This product contains a chemical that is classified as a suspected carcinogen on

the NTP Report (benzotriazole). NCI bioassay for benzotriazole showed no convincing evidence of carcinogenicity.

AGGRAVATION OF PRE-EXISTING CONDITIONS: There are no known medical conditions that would be possibly aggravated by exposure to this product.

4. FIRST AID MEASURES

EYE CONTACT: If this product contacts the eyes, immediately flush eyes with plenty of clean running water for at least fifteen (15) minutes, lifting the upper and lower eyelids occasionally. Remove contact lenses if worn. Seek medical attention if irritation persists.

SKIN CONTACT: If this product contacts the skin, immediately flush the affected area with soap and water for at least fifteen (15) minutes. If the product penetrates the clothing, promptly remove the contaminated clothing or shoes, and flush the affected area as described. Seek medical attention if irritation persists.

INGESTION: If this product is ingested, drink small amounts of water and seek medical attention promptly. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

INHALATION: If this product is inhaled and symptoms occur, move the exposed person to fresh air promptly. Seek medical attention if symptoms persist.

NOTES TO PHYSICIAN: This product is irritating to eyes, skin and mucous membranes. This product has low oral toxicity. Treat exposure symptomatically.

5. FIRE FIGHTING MEASURES

FLASH POINT: None – aqueous solution.
FLAMMABLE LIMITS: NA
AUTOIGNITION TEMPERATURE: NA

EXTINGUISHING MEDIA: Use water, foam, dry chemical or carbon dioxide to extinguish fire.

FIRE/EXPLOSION HAZARD: Dried residue can thermally decompose, giving off irritating and possibly toxic fumes.

FIRE FIGHTING EQUIPMENT: Fire fighters should wear full protective equipment, and have self-contained breathing apparatus available.

SPECIAL PROCEDURES: Use water to cool containers exposed to a fire.

HAZARDOUS COMBUSTION PRODUCTS: Oxides of carbon, possibly toxic phosphines.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Use proper personal protection (refer to Section 8).

ENVIRONMENTAL PRECAUTIONS: Run off from fire control or dilution water may cause pollution. Keep out of drains, municipal sewers, open bodies of water and water course.

CLEAN-UP METHODS: Safely stop source of spill. Clean up spills immediately. Restrict non-essential personnel from the area. Wear protective clothing, goggles and respirator if ventilation is not adequate. For small spills, neutralize with baking soda and flush to sewer. For large spills, dike spill area and soak

up material with sand or other absorbent. Place into chemical waste container for disposal according to local, state or federal regulations. Neutralize residue with lime or soda ash and flush spill area.

7. HANDLING AND STORAGE

HANDLING: Use proper personal protection when handling (refer to Section 8). Use under well-ventilated conditions. Avoid contact with eyes, skin and clothing. Avoid breathing vapors and mists. Avoid prolonged or repeated contact. Do NOT ingest. Wash thoroughly after handling. Rinse container before disposal.

SHELF LIFE: The recommended shelf life is two (2) years. It is recommended that products be retested if stored for more than two (2) years. Under ideal storage conditions, the shelf life is almost indefinite.

STORAGE TEMPERATURE: The recommended storage temperature is above 32°F, preferably at room temperature (70°F).

GENERAL: Store closed containers in a cool, dry, well-ventilated area away from incompatible materials. This product is stable under normal conditions of handling and storage. Avoid cold temperatures.

8. EXPOSURE CONTROLS / PERSONAL PROTECTIVE EQUIPMENT

Please refer to Section 2 for applicable exposure limits.

EYE PROTECTION: To avoid contact with eyes, use safety glasses or chemical splash goggles. Face shield is recommended. Eye wash station should be available in the work area.

HAND PROTECTION: Use rubber or plastic gloves to minimize skin contact.

BODY PROTECTION: A rubber apron and boots are recommended to minimize contact. Full drench shower should be available in the work area.

RESPIRATOR: Use of respirator protection is not generally required. However, if exposure is above the stated limits or ventilation is inadequate, use a NIOSH approved acid gas/organic vapor respirator to reduce potential for inhalation exposure. When using respirator cartridges, they must be changed frequently to assure breakthrough exposure does not occur.

VENTILATION: General mechanical ventilation is recommended for enclosed areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, pale yellow liquid	Boiling Point:	100°C / 212°F
Odor:	Bland	Freezing Point:	0°C / 32°F
Specific Gravity @ 68°F:	~ 1.07	Vapor Pressure:	23.75 mmHg
pH:	~ 2.3	Vapor Density (air = 1):	ND
Water Solubility:	Complete	VOC Content:	< 2%

10. STABILITY AND REACTIVITY

GENERAL STABILITY: This product is stable at ambient temperatures and atmospheric pressures.

INCOMPATIBLE MATERIALS: Strong alkali and oxidizing materials.

HAZARDOUS POLYMERIZATION: Hazardous polymerization is not expected to occur under normal temperatures and pressures.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon, possibly toxic phosphines.

11. TOXICOLOGICAL INFORMATION

	<u>Product 4913</u>	<u>HEDP</u>	<u>PBTC</u>	<u>Polymaleic acid</u>
Eye irritation:	Moderate to severe	Corrosive	Slight to moderate	Corrosive
Skin irritation:	Slight to moderate	None to slight	None to slight	Moderate
Inhalation irritation:	None to slight	Moderate to severe	None to slight	Slight to moderate
Oral LD₅₀, Rat:	> 5012 mg/kg	2400 mg/kg	5000 mg/kg	15000 mg/kg
Dermal LD₅₀, Rabbit:	> 1426 mg/kg	7940 mg/kg	NDA	NDA
Inhalation LC₅₀, Rabbit:	NDA	NDA	NDA	NDA
Other toxicological data:	NA	See below	See below	See below

HEDP: [Chronic Toxicity] Dogs orally dosed develop severe effects on the bone, with rib and pelvic fractures reported in many of the animals. No birth defects were noted in rats or rabbits given the product orally during pregnancy. No effects were seen on the ability of female and male rats to reproduce when given the product in their diet for two successive generations. The product produced no genetic changes in standard in vitro assays using bacterial and mammalian cells.

PBTC: [Chronic Toxicity] 2-phosphono-butane-tricarboxylic acid was not mutagenic in the Ames Assay. No significant health effects expected. [Acute effects from overexposure] This product has low oral toxicity. It is irritation to the eyes and non-irritating to the skin. 2-phosphono-butane-tricarboxylic acid is moderately irritating to the mucous membranes.

Polymaleic Acid: [Chronic Toxicity] Results from subchronic studies in laboratory animals did not produce any adverse effects. Product was not mutagenic in the Ames Assay. [Acute Effects From Overexposure] Product will cause severe irritation of the mucous membranes and skin. Eye damage may include conjunctivitis, swelling and fluid discharge, permanent corneal damage and blindness. Skin and mucous membrane irritation may include severe swelling, redness and scar formation. Overexposure to mists or vapors will cause difficulty in breathing due to irritation and fluid in the lungs, which can result in severe tissue damage or even death.

12. ECOLOGICAL INFORMATION

	<u>Product 4913</u>	<u>HEDP</u>	<u>PBTC</u>	<u>Polymaleic acid</u>
96 hr LC₅₀, Rainbow trout:	> 4200 mg/l	NDA	1000 mg/l	100 mg/l
48 hr LC₅₀, Daphnia magna:	> 4500 mg/l	NDA	300 mg/l	580 mg/l
72 hr EC₅₀, Algae:	> 1900 mg/l	NDA	1000 mg/l	NDA

13. DISPOSAL CONSIDERATIONS

US EPA RCRA Status: This product is not considered to be a hazardous waste.
US EPA RCRA Hazardous waste code: NA

Do NOT dump into any sewers, on the ground or into any body of water. Rinse containers before disposal. Since emptied containers contain product residue, follow label warnings even after container is emptied. Dispose in accordance with all applicable federal, state and local laws and regulations.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

US DOT

Proper Shipping Name: Not DOT regulated
Hazard Class: NA
Hazard Identification Number: NA
Packing Group: NA
Transport Label: Scale Preventing/Scale Removing Liquid or Paste

15. REGULATORY INFORMATION

Components:	<u>HEDP</u>	<u>PBTC</u>	<u>Polymaleic acid</u>
<u>Carcinogenic Potential</u>			
Regulated by OSHA:	No	No	No
Listed on NTP Report:	No	No	No

Listed by IARC / Group: No No No
ACGIH Appendix A / Group: Not listed Not listed Not listed

US EPA Release Reporting

CERCLA (40 CFR 302):

Listed substance: Not listed Not listed Maleic acid (< 0.5% in product)
Reportable quantity: NA NA 5000 lbs.
Category: NA NA D
RCRA waste number: NA NA NDA
Unlisted substance: NA NA NA
Reportable quantity: NA NA NA
Characteristic: NA NA NA
RCRA waste number: NA NA NA

SARA TITLE III

Section 302 & 303 (40 CFR 355):

Listed substance: Not listed Not listed Not listed
Reportable quantity: NA NA NA
Planning threshold: NA NA NA

Section 311 & 312 (40 CFR 370):

Hazard categories: Acute Acute Acute, chronic
Planning threshold: 10000 lbs. 10000 lbs. 10000 lbs.

Section 313 (40 CFR 372):

Listed toxic chemical: Not listed Not listed Not listed
Reporting threshold: NA NA NA

US TSCA

Listed/Exempt (40 CFR 710): Yes Yes Yes

CA PROP 65

Carcinogen: No No No
Reproductive toxin: No No No

16. OTHER INFORMATION

HMIS Rating

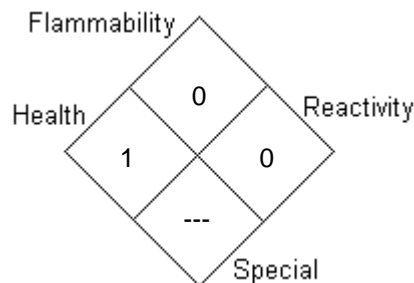
HEALTH	1
FLAMMABILITY	0
REACTIVITY	0
PROTECTION	B

B = Safety glasses, gloves

KEY

4 = Severe ACID = Acid
3 = Serious ALK = Alkali
2 = Moderate COR = Corrosive
1 = Slight OX = Oxidizer
0 = Minimal W = Use NO WATER

NFPA Rating



Legend:

ACGIH:	American Conference of Governmental Industrial Hygiene	NE:	Not established
A1:	Confirmed human carcinogen	NFPA:	National Fire Protection Association
A2:	Suspected human carcinogen	NIOSH:	National Institute for Occupational Safety and Health
A3:	Confirmed animal carcinogen	NTP:	National Toxicology Program
CAS #:	Chemical Abstract Service Registry number	OSHA:	Occupational Safety and Health Administration
CERCLA:	Comprehensive Environmental Response Compensation and Liability Act	PEL:	Permissible Exposure Limit
DOT:	Department of Transportation	RCRA:	Resource Conservation and Recovery Act
EPA:	Environmental Protection Agency	REL:	Recommended Exposure Limit
HMIS:	Hazardous Materials Identification System	SARA TITLE III:	Superfund Amendments and Reauthorization Act
IARC:	International Agency for Research on Cancer	STEL:	Short Term Exposure Limit (15 minute Time Weighted Average)
Group 1:	Carcinogenic to humans	TLV:	Threshold Limit Value
Group 2A:	Probably carcinogenic to humans	CEIL (C):	Ceiling Exposure Limit
Group 2B:	Possibly carcinogenic to humans	TSCA:	Toxic Substance Control Act
Group 3:	Unclassified as carcinogenic to humans	TWA:	Time Weighted Average
NA or N/A:	Not applicable	VOC:	Volatile Organic Compound
ND:	Not determined	> / <:	Greater than / Less than
NDA:	No data available	~:	Approximately

This Material Safety Data Sheet is presented in good faith as an information source only. It should not be taken as an expressed or implied warranty or guarantee for which the Company assumes legal responsibility. While the Company believes the information contained herein is accurate and compiled from sources believed to be reliable, it is the responsibility of the user to investigate and verify its validity. The Company does not accept liability for any loss or damage that may occur from the use of this information. The buyer or user accepts all responsibility of using, handling and disposing of the product in accordance with applicable federal, state and local rules, regulations and laws.