

MATERIAL SAFETY DATA SHEET

NFPA RATING: Health = 3, Flammability = 0, Reactivity = 0
 HMIS RATING: Health = /3, Flammability = 0, Reactivity = 0

SECTION I - IDENTITY AND MANUFACTURER'S INFORMATION (1027A)

Manufacturer's Name: HILLYARD INDUSTRIES Product Name: MARINER
 Address: 302 North Fourth Street Date Prepared: July 12, 2007
 St. Joseph, MO 64501 Prepared by: Regulatory Affairs Department
 Emergency Telephone No.: (800) 424-9300 (Only in the event of chemical emergency involving a spill, leak, fire, exposure or
 accident involving chemicals.) Other information calls: (816) 233-1321 (Ext. 8285)
<http://www.hillyard.com>

SECTION II - INGREDIENTS/IDENTITY INFORMATION

Components

(Specific Chemical Identity: Common Name(s))	CAS#	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED	%
Phosphoric acid*(1)	7664-38-2	1 mg./m ³	1 mg./m ³	3 mg/m ³	10-15%
Citric acid	77-29-9	not established	not established	not established	7-12
Water	7732-18-5	none	none	N.A.	---
1-Butoxy-2-Propanol	5131-66-8	not established	not established	N.A.	---
Linear Primary Alcohol Ethoxylate	68439-46-3	not established	not established	N.A.	---
Poly (oxy 1,2-Ethanedyl)	9036-19-5	not established	not established	N.A.	---
Lauramine Oxide	1643-20-5	not established	not established	N.A.	---

*This product contains the following chemicals subject to the reporting requirements of SARA Title III, Sec. 313, and 40 CFR Part 372: Phosphoric acid.

(1) Regulated by OSHA, and the following states: CT, FL, IL, LA, MA, NJ, NY, PA, and RI.; (2) Regulated by OSHA and the following states: FL, IL, LA, MA, NJ, PA, RI.

Concentrated VOS = Less than 10%; Diluted VOS = 0.98%

SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point: 208°F Specific Gravity (H₂O = 1): 25°C = 1.09 & 39°C = 1.09
 Vapor Pressure (mm Hg.): 16.99 Percent Volatile by Volume (%): 69.79%
 Vapor Density (AIR = 1): 1.32 Evaporation Rate (ethyl ether = 1): slower than 1
 Solubility in Water: complete Appearance and Odor: Clear, blue liquid, floral fragrance
 pH = 1.36

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash point: None to 200°F(T.C.C.) Flammable Limits: LEL = N.A. UEL = N.A.
 Extinguishing Media: Foam, dry chemical, carbon dioxide, water spray.
 Special Fire Fighting Procedures: Hot phosphoric acid is corrosive. Self contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals.
 Unusual Fire and Explosion Hazards: May generate hydrogen gas in contact with some metals.

SECTION V - PHYSICAL HAZARDS

Stability: Stable Conditions to Avoid: None known to manufacturer.
 Incompatibility (Materials to Avoid): Corrodes some metals and alloys; cyanides and strong alkalis (ammonia) or bleach.
 Hazardous Decomposition Products or Byproducts: Hydrogen gas from contact with some metals.
 Hazardous Polymerization: Will not occur Conditions to Avoid: N.A.

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? by mist Skin? yes Ingestion? yes

HEALTH HAZARDS (1. Acute and 2. Chronic)

1. Concentrate is harmful or fatal if swallowed. Concentrate was not considered to be a primary skin irritant per Federal Hazardous Substance Act; however, five out of six test subjects had crust formation by day seven. Concentrate was considered to be an eye irritant per FHSA. Neo-vascularization, an indication of corrosion, was observed in all six test subjects by day seven. Concentrate induced mortality in four of 10 test subjects at a dose of 5 g./kg. Inhalation - Overexposure may cause nose and throat irritation. Acute inhalation - 1 Hour Toxic Limit test - not toxic at nominal concentration of at least 44.69 mg/l (actual concentration 62.04 mg./L). This was the maximum concentration that could be generated by this test. 2. None known by Hillyard Industries.

SECTION VI – HEALTH HAZARD DATA continued

Chemical listed as Carcinogen or Potential Carcinogen:

National Toxicology Program = No I.A.R.C. Monographs = No OSHA = No

This product has no carcinogens listed by IARC, NTP, NIOSH, or ACGIH as of this date, greater than or equal to 0.1%.

Signs and Symptoms of Exposure: Contact: burns of eyes, skin, and on mouth and lips after ingestion, with sour taste of acid, severe gastrointestinal irritation. Inhalation of high concentrations of vapors results in respiratory and eye irritation, narcosis, headache, nausea, dizziness.

Medical Conditions Generally Aggravated by Exposure: None known to manufacturer.

Emergency and First Aid Procedures: If swallowed get medical attention immediately. Inhalation - If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately. In case of contact, immediately flush eyes or skin with plenty of water for 15 minutes. Get medical attention immediately.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE

Steps To Be Taken In Case Material Is Released Or Spilled: If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with Federal, State, and Local regulations. Use solvent-resistant eyewear with splash guards. Solvent-impermeable rubber gloves, rubber boots and rubber apron or suit to prevent skin contact. Avoid contamination of storm drains, sewers, or other unauthorized treatment drainage systems and natural waterways.

Waste Disposal Method: Disposal is regulated under the Resource Conservation and Recovery Act (40 CFR 261.22) as a corrosive waste. Regulated quantities should be neutralized by a permitted facility in accordance with applicable local, state, and federal regulations.

Precautions To Be Taken In Handling And Storing: Product residue may remain on or in empty containers. All precautions for handling the product must be used in handling the empty container or residue. Container disposal: Triple rinse (or equivalent) then offer clean, dry container for recycling or reconditioning. Waste from normal use may be sewer to a public-owned treatment works in compliance with applicable federal, state and local requirements.

Other Precautions: Avoid breathing vapors or fine fog spray mist. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. Use only with adequate ventilation. Do not breathe vapors or fine fog spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application. Follow respirator manufacturer's directions for respirator use. Close container after each use. Do not take internally.

SECTION VIII – CONTROL MEASURES

Respiratory Protection (Specify Type):

Not usually necessary. If spraying in a fine fog mist use NIOSH approved respirator (TC-21C-279, TC-23C-736, or TC-23C-745).

Ventilation: At least 3 air exchanges per hour suggest in good public restrooms.

Local Exhaust = Recommended Mechanical (General) = Recommended Special = N.A. Other = N.A.

Protective Gloves: Impervious gloves (rubber). **Eye Protection:** Solvent resistant eyewear with splash shields.

Other Protective Clothing or Equipment: Not usually necessary. Where there is a danger of contact with concentrated cleaner use Solvent resistant rubber gloves, rubber boots and rubber apron or suit to prevent skin contact.

Work / Hygienic Practices: Wash thoroughly after handling. Upon contact remove contaminated clothing; wash before reuse.

SECTION IX – TRANSPORTATION INFORMATION

Applicable regulations: DOT = No; IMCO = No; IATA = No

Proper shipping name: Cleaning compound

UN No.: not applicable Limited Qty.: not applicable Hazard Class: not applicable

Labels required: not required DOT Exception: not applicable

EPA Hazardous waste/number code: not listed

Hazardous waste characteristics:

Ignitability = not applicable; Corrosivity = yes; Reactivity = not applicable

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