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MATERIAL SAFETY DATA SHEET

O-PHOSPHORIC ACID

Emergency Contact: William W. Gorman, Jr.

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Substance Identification

CAS-Number 7664-38-2

Trade Names/Synonyms: White Phosphoric Acid; Orthophosphoric Acid; Ortho-Phosphoric Acid; Sonac; Evits; WC-Reiniger; A-260; A-242; A-365; A-365-P

Chemical Family: Inorganic Acid

Molecular Formula: H_3PO_4

Molecular Weight: 98.00

Cercla Ratings (Scale 0-3): Health=2; Fire=0; Reactivity=1; Persistence=0

Components and Contaminants

Percent: 85

Component: Phosphoric Acid

Percent: 15

Component: Water

Exposure Limits: 1 Mg/M3 OSHA TWA; 1 Mg/M3 ACGIH TWA; 3 Mg/M3 ACGIH STEL

Physical Data

Description: Odorless, colorless sparkling liquid, viscous at concentrations above 85%, pleasing acid taste when suitably diluted

Boiling Point: 266°F (130°C)

Melting Point: 52°F (11°C)

Specific Gravity: 1.8

pH: Acidic

Solubility in Water: Miscible

Solvent Solubility: Alcohol

Fire and Explosion Data

Fire and Explosion Hazard: Negligible fire/reacts with many metals forming flammable gases of hydrogen. Fire may produce irritating or poisonous gases. Runoff from fire control or dilution water may cause pollution.

Flash Point: Non-flammable

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam (1984 Emergency Response Guidebook, DOT P 5800.3)

For larger fires, use water spray, fog or alcohol foam (1984 Emergency Response Guidebook, DOT P 5800.3)

Firefighting: Move containers from fire area if possible. Cool containers exposed to flames with water from side until well after fire is out (1984 Emergency Response Guidebook, DOT P 5800.3).

Use agent suitable for type of fire. Use water in flooding quantities as fog. Cool containers with flooding amounts of water. Apply from as far a distance as possible. Avoid breathing corrosive vapors. Keep upwind (Bureau of Explosives, Emergency Handling of Hazardous Materials in Surface Transportation, 1981).

Toxicity

220 Mg/Kg unknown-man LDLO; 1530 Mg/Kg Oral-rat LD50; 2740 Mg/Kg skin-rabbit LD50; 595 Mg/24 hour skin-rabbit severe; 119 Mg eye-rabbit severe; carcinogen status; none.

Phosphoric Acid liquid is corrosive to skin, eyes and mucous membranes. Dust is especially irritating to skin and mucous membranes in the presence of moisture. Persons with chronic respiratory disease or skin disease may be at increased risk from exposure.

Health Effects and First Aid

Inhalation: Corrosive.

Acute Exposure - May cause shortness of breath, pulmonary edema with frothy sputum, sore throat, coughing, choking, headache, dizziness, weakness, cyanosis, hypotension and rapid pulse. Serious cases may be fatal.

Chronic Exposure - Prolonged or repeated exposure may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of bronchial pneumonia are common. Gastrointestinal disturbances are also noted.

First Aid - Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and at rest. Get medical attention. (Dreisbach, Handbook of Poisoning, 11th Ed.)

Skin Contact: Corrosive.

Acute Exposure - Pain, brown or yellowish stains on skin and burns which usually penetrate the full thickness of the skin.

Chronic Exposure - Prolonged contact with substance may cause dermatitis.

First Aid - Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water (approximately 15-20 minutes) until no evidence of chemical remains. In case of chemical burns, cover area with sterile, dry dressing. Bandage securely but not too tightly. Get medical attention. (Dreisbach, Handbook of Poisoning, 11th Ed.)

Eye Contact: Corrosive.

Acute Exposure - Redness, pain, blurred vision, conjunctival destruction, corneal destruction, tearing and increased sensitivity to light.

Chronic Exposure - Prolonged contact may cause conjunctivitis and corneal destruction.

First Aid - Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). In

presence of chemical burns, apply sterile bandages loosely without medication. Get medical attention. (Dreisbach, Handbook of Poisoning, 11th Ed.)

Ingestion: Corrosive.

Acute Exposure - High doses may cause sore throat, abdominal pain, burning in mouth and pharynx followed by vomiting and diarrhea of dark precipitated blood. Immediate hypotension and brown or yellowish stains may be found around the mouth, asphyxia occurs from edema of the glottis.

First Aid - If victim is conscious, immediately give two to four glasses of water and induce vomiting by touching finger to back of throat. Get medical attention immediately.

Reactivity

Reactivity: Strong acid that reacts violently with bases and is very corrosive. Attacks many metals forming combustible and corrosive gases of hydrogen. Particularly corrosive to skin in presence of moisture or water. Decomposes into toxic oxides of phosphorous at temperature above 300°C.

Incompatibilities: Reacts with chloride causing corrosive gases of hydrogen to be emitted, creating a potential explosion hazard. When added to nitromethane may render it susceptible to initiation by detonation. Sodium tetrahydroborate and sodium compounds react generating heat and may be dangerously violent with rapid mixing. Mildly corrosive to metals.

Decomposition: Decomposes at temperature above 300°C, forming toxic oxides of phosphorus.

Polymerization: Not known to occur.

Conditions to Avoid

May burn but does not ignite readily. Flammable, poisonous gases may accumulate in tanks and hopper cars. May ignite combustibles (wood, paper, oil, etc.). Decomposes with heating to form toxic phosphorous oxides gases. Reacts with metals to form flammable hydrogen gases.

Spill and Leak Procedures

Soil Spill: Dig holding area such as lagoon, pond or pit for containment.

Dike flow of spilled material using soil or sandbags or foamed barriers such as polyurethane or concrete.

Use cement powder or fly ash to absorb liquid mass.

Neutralize spill with slaked lime, sodium bicarbonate or crushed limestone.

Air Spill: Knock down vapors with water spray. Keep upwind.

Water used to knock down vapors may become corrosive or toxic and should be contained properly for later disposal.

Water Spill: Add suitable agent to neutralize spilled material of pH7.

Use dredges or lifts to extract immobilized masses of pollution and precipitates.

Neutralize with agricultural lime, slaked lime, crushed limestone or sodium bicarbonate.

Occupational Spill: Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, with clean shovel, place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

Protective Equipment

Ventilation: Provide local exhaust ventilation system to meet permissible exposure limit requirements.

Respirator:

- 50 Mg/M3 - High efficiency particulate respirator with a full face-piece.
- Supplied-air respirator with a full face-piece, helmet or hood.
- Self-contained breathing apparatus with a full face-piece.

- 2000 Mg/M3 - Type 'C' supplied-air respirator.
- Supplied-air respirator with a full face-piece, helmet or hood operated in continuous flow-mode.

Firefighting - Self-contained breathing apparatus with a full face-piece operated in continuous flow-mode.

Clothing: Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.

Gloves: Employee must wear appropriate protective gloves to prevent contact with this substance.

Eye Protection: Employee must wear dust-proof safety goggles to prevent eye contact with this substance.