

MATERIAL SAFETY DATA SHEET**HYPOPHOSPHOROUS ACID**

PRODUCT CODE NUMBER(S): 4180-1

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Hypophosphorous acid;
Phosphinic acid**Chemical Family:** Mineral acid**Chemical Formula:** H_3PO_2 in H_2O **Product Use:** Laboratory reagent**Manufacturer's Name and Address:**Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9**Telephone No:** (905) 877-0101**Fax No:** (905) 877-6666**Emergency Telephone No:** CANUTEC (613) 996-6666**HAZARDOUS INGREDIENTS OF MATERIALS**

Ingredients	%	TLV Units	CAS No.
Hypophosphorous acid	~50	Not established	6303-21-5

PHYSICAL DATA**Physical State:** Liquid**Odour and Appearance:** Colourless oily liquid, characteristic, sour odour**Odour Threshold (ppm):** Not available**Vapour Pressure (mm Hg):** <17 mm Hg at 20°C**Vapour Density (Air = 1):** 1**Evaporation Rate:** Not available**Boiling Point (degrees C):** 108°C**Freezing Point (degrees C):** -25°C**pH:** 1**Specific Gravity:** 1.21 to 1.23**Coefficient of Water/Oil distribution:** Not available**SHIPPING DESCRIPTION****UN:** 1760**T.D.G. Class:** 8**Pkg. Group:** II**REACTIVITY DATA****Chemical Stability:** Stable**Incompatibility with other substances:** Reacts violently with strong bases, violently or explosively with oxidizers, particularly mercury (II) nitrate. Reacts explosively with mercury (II) oxide. Releases flammable/explosive hydrogen gas and phosphine in contact with metals. Decomposes violently above 108°C, releasing spontaneously flammable phosphine gas and toxic phosphorus oxides. Can react violently with shock, friction or heat.**Reactivity:** Do not heat above 100°C. Avoid evaporation to dryness with excess heat. Avoid shock or friction. Avoid all incompatible materials, ignition sources, generation of mist. Solutions greater than 50% are thermally unstable.**Hazardous Decomposition Products:** Phosphine - these fumes are spontaneously flammable and may explode, phosphoric acid, phosphorus oxides..**FIRE AND EXPLOSION DATA****Flammability:** Non flammable but can explode when heated. Liberates flammable gases on decomposition.**Extinguishing Media:** Dry chemical powder, alcohol foam, water spray, CO₂. Use water to cool containers, to disperse vapours, and to dilute acid. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (full face-piece, positive-pressure self-contained breathing apparatus) and clothing sufficient to prevent inhalation of mists or vapours, and contact with skin and eyes (Bunker Gear may not be adequate, full chemical splash suit may be necessary).**Flash Point (Method Used):** Not applicable**Autoignition Temperature:** Not applicable**Upper Flammable Limit (% by volume):** Not applicable**Lower Flammable Limit (% by volume):** Not applicable**Hazardous Combustion Products:** PO_x, phosphine gas**Sensitivity to Impact:** Can react violently with shock**Sensitivity to Static discharge:** None identified**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** Not available**LC₅₀:** Not available**Effects of Acute Exposure to Product:****Inhaled:** Corrosive, toxic. Vapours and mists cause burning sensation, coughing, wheezing, shortness of breath, headache, nausea, vomiting. Severe overexposure may cause spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema, and death. Symptoms of pulmonary edema can be delayed for several hours.**In contact with skin:** Corrosive, toxic. Causes severe local irritation, chemical burns and ulceration. Severity of injury depends on the concentration and duration of exposure.**In contact with eyes:** Corrosive. Severity of injury depends on the concentration and duration of exposure. Can cause severe irritation, swelling, pain, burns to eye tissue, possible corneal damage, and blindness.**Ingested:** Corrosive. Can cause severe irritation and burns to the digestive tract, nausea, vomiting, possible perforation esophagus and stomach, with severe abdominal pain. Can cause severe shock and may be fatal. Non-fatal exposures can cause permanent damage and strictures of gastrointestinal tract.

CODE: 4180-1

nal tract. Aspiration may occur during ingestion or vomiting, and can cause serious lung damage, pulmonary edema, and death.

Effects of Chronic Exposure to Product:

Prolonged inhalation of vapours or mist may cause chronic cough and respiratory irritation. Persons with pre-existing skin, eye or respiratory disorders may be more susceptible to the effects of this substance.

Carcinogenicity: No information available

Teratogenicity: No information available

Reproductive Effects: No information available

Mutagenicity: No information available

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local corrosion-resistant exhaust ventilation, separate from other exhaust ventilation systems.

Respiratory Protection: Dust/mist mask. Use only in a chemical fumehood. If unsure about concentrations, wear NIOSH approved full face-piece chemical cartridge respirator with acid gas cartridges and high-efficiency particulate filter. For high or unknown concentrations, as in fire or spill conditions, full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus or full face-piece, positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or full face shield.

Skin Protection: Impervious, neoprene, or rubber gloves. Other impervious protective clothing, apron, coveralls, boots, sufficient to prevent any skin contact.

Other Personal Protective Equipment: Safety shower and eye wash facilities in work area.

Leak and Spill Procedure: Ventilate area. Evacuate area. Eliminate all ignition sources. Cleanup personnel must be thoroughly trained in the handling of hazardous materials, and in the specific hazards of this substance, and must wear protective equipment and clothing sufficient to prevent any inhalation of fumes and contact with skin, eyes, or clothing. Stop leak if you can do it without risk. **DO NOT TOUCH SPILLED MATERIAL.** Prevent from entering sewers or waterways. Spread soda ash liberally over the spillage, gather up carefully, and place into containers for later disposal. Keep unnecessary people away; isolate hazard area and deny entry. Contaminated absorbent may pose the same hazards as the product, treat with caution. After thorough cleanup, ventilate area and wash site with plenty of water.

Waste Disposal: Follow all federal, provincial and local regulations for disposal.

Handling Procedures and Equipment: CORROSIVE, TOXIC MATERIAL. Personnel working with this material must be thoroughly trained in chemical handling, must be familiar with the particular hazards of this chemical, and must wear appropriate protective equipment and clothing. (S)he should recognize that the product can cause severe injury or death if improperly handled. Use the smallest amount possible for the purpose in a designated area with appropriate ventilation. Avoid all contact and any inhalation of vapours or fumes. When diluting, always add acid to water, not water to acid. Keep work area clean and free of incompatible materials. Caution: empty containers may contain hazardous residues.

Storage Requirements: Store in suitable, labelled containers a cool, dry, well-ventilated area out of direct sunlight,

away from incompatible materials. Storage area should be constructed of corrosion-resistant materials. Keep containers tightly closed when not in use and when empty. Protect from damage and inspect frequently for signs of leaking.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes with gently running water for at least twenty (20) minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. If irritation persists, continue flushing. Obtain medical attention IMMEDIATELY.

Skin: Remove contaminated clothing, including watches, rings, belts, and shoes. Wear protective gloves to avoid contact during first aid procedures. Wash affected areas with soap and running water for at least fifteen (15) minutes. Obtain medical attention immediately.

Inhalation: Immediately remove to fresh air (caution must be used by rescuers to avoid exposure). Give oxygen and get medical attention for any breathing difficulty. If breathing has stopped, give artificial respiration. If there is no breathing AND no pulse, begin cardiopulmonary resuscitation (CPR). Obtain medical attention immediately. Stay with casualty until medical help arrives. Second rescuer should obtain oxygen equipment and ambulance.

Ingestion: **DO NOT INDUCE VOMITING.** If casualty is alert and not convulsing, rinse mouth with water and give 1 to 2 glasses of water or milk to dilute material. Immediately obtain medical attention. If spontaneous vomiting occurs; have casualty lean forward with head down to avoid breathing in of vomitus, rinse mouth thoroughly and administer 1 to 2 glasses of water or milk.

REFERENCES USED

CCINFO

Budavari: The Merck Index, 12th ed., 1997

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: June 17, 1991

Revision: January 2011

MSDS: 4180-1

Proposed WHIMS Designation: E

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
Caledon Laboratories Ltd. believes the information contained herein is reliable and accurate. Caledon makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such information is solely for your consideration, investigation, and verification.