# Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Identification**

| | |
|---|---|
| Product Name: | PHOSPHORIC ACID (35% - 95%) |
| Reference Number: | AST10046 |
| Date: | May 19, 2015 |
| Synonyms: | Emulsi-Phos®; LuminEtch™, LuminEtch™ Ultra, PurEtch®; monophosphoric acid; orthophosphoric acid; |

**Use of the substance or preparation**

Phosphates and fertilizers, acid cleaners, aluminum brighteners and metal phosphatizing, leather tanning, varnish, synthetic rubber, and water treatment. Food grade is used as an acidulate for cola drinks, yeast nutrient, etc. NSF International certifies phosphoric acid under Standard 60 as an acceptable drinking water treatment chemical.

**Company/Undertaking Identification**

**ICL PERFORMANCE PRODUCTS LP**
622 Emerson Road - Suite 500
St. Louis, Missouri 63141

Emergency telephone: In USA call CHEMTREC: 1 800 424 9300

Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted): +1 (703) 527-3887.

In Canada call CANUTEC: 1 613 996 6666

General Information: +1 800 244 6169 (Worldwide)

## 2. HAZARDS IDENTIFICATION

**GHS**

**Danger**

GHS05

Skin Corr. 1A H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Composition

| Substance | CAS No. | %w/w | EINECS No. |
|---|---|---|---|
| Phosphoric Acid | 7664-38-2 | 35 - 95 | 231-633-2 |
| Water | 7732-18-5 | 5 - 65 | 231-791-2 |

## 4. FIRST AID MEASURES

### General

This material is an acid; treatment is symptomatic and supportive. Phosphoric acid has irritating effects to mucous membranes.

### Eye contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. If irritation persists, contact an ophthalmologist.

### Skin contact

May cause skin irritation. Wash effected area with plenty of soap and water. Get medical attention.

### Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

### Ingestion

IF SWALLOWED, do NOT induce vomiting. Give victim 2-4 glasses of water to drink. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

## 5. FIRE FIGHTING MEASURES

### Extinguishing media

Not combustible. No special requirements.

### Unsuitable extinguishing media

Non-combustible. No special requirements.

### Exposure hazard

Not combustible. May give off toxic fumes (oxides of phosphorus) in a fire. May react with metals to liberate hydrogen, a flammable gas.

**Protective equipment**

Firefighters should wear self-contained breathing apparatus & personal protective clothing (PPE).

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**

Avoid unnecessary exposure and remove all material from eyes, skin and clothing. Do not ingest or inhale mists of phosphoric acid.

**Environmental precautions**

Small quantities: Avoid discharge into the environment
Large quantities: May cause pollution. Avoid discharge into the environment. Note methods for cleaning up in the next section.

**Methods for cleaning up**

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Neutralize washings with a base such as soda ash or lime. Flush residual spill area with large amounts of water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

## 7. HANDLING AND STORAGE

**Handling**

Do not get in eyes, on skin, or on clothing.
Avoid breathing mist or vapor.
Do not taste or swallow.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

**Engineering measures**

Provide natural or mechanical ventilation to minimize exposure. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment. Consult National Fire Protection Association (NFPA) Standard 91 for design of exhaust systems.

Transfer product from drums to process in closed system (hermetically) and if not possible use effective local exhaust ventilation. Empty drums as thoroughly as possible to facilitate disposal.

For bulk transfer, purge lines with nitrogen to remove residual liquid before disconnect. When unloading bulk vehicles, personnel should wear chemical goggles and rubber or neoprene gloves. All fittings should be properly secured prior to energizing unloading system. Care should be taken to avoid acid contact when disconnecting lines/hoses after unloading.

For bulk storage type 316L stainless is recommended. Glass, polyethylene and FRP (depending on resin used) are satisfactory, steel, aluminum and type 304 stainless are not recommended because of rapid or potential corrosion. Vessels should be vented and operated at ambient conditions. Maintenance heat (hot water preferred) may be used to prevent freezing. Dike area around storage tank with sufficient volume to hold entire tank contents.

**Storage**

Store in plastic, rubber-lined, or 316L stainless steel tanks designed for Phosphoric Acid. Store drums away from heat and out of direct sunlight. Store in a well-ventilated dry area away from alkalis and most metals. Store above freezing point. Contact with reactive metals, i.e. mild steel and aluminum may generate hydrogen that may form and explosive mixture in storage vessels.

For tank inspection, follow manufacturer's recommended safety guidelines (ex. temperature, etc.). In addition, corrosion data for phosphoric acid (ex. Handbook of Corrosion Engineering, McGraw-Hill, 2000) must be followed to match the storage container of choice (ex. stainless, rubber lined, etc.).

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Occupational Exposure Limits

| State | Standard | Limit |
|---|---|---|
| Australia | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. TWA, 3 $mg/m^3$ STEL |
| Austria | Occupation Exposure Limit | MAK 1 $mg/m^3$ 8-hr |
| Belgium | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. TWA, 3 $mg/m^3$ STEL |
| Denmark | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. TWA |
| Finland | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. TWA, 3 $mg/m^3$ STEL |
| France | Occupation Exposure Limit | VME 1 $mg/m^3$ VLE 3 $mg/m^3$ |
| Japan | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. |
| United Kingdom | Occupation Exposure Limit | 2 $mg/m^3$ STEL |
| United States | Occupation Exposure Limit | 1 $mg/m^3$ 8-hr. TWA, 3 $mg/m^3$ STEL |

### Respiratory protection

Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment (full face piece recommended) when airborne exposure limits are exceeded (see below). If used, full-face piece replaces the need for face shield and/or chemical goggles. Refer to U.S. OSHA regulations 29 CFR 1910.134 or European Standard EN 149.

### Hand/Skin protection

Wear impervious protective gloves and clothing to prevent contact to skin. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean personal protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

### Eye protection

Wear chemical goggles, a face shield, and if necessary, a full face respirator when conditions warrant or exceed the Occupation Exposure Limit. Refer to U.S. OSHA regulations 29 CFR 1910.133 or European Standard EN 166.

Components referred to herein may be regulated by specific Canadian provincial legislation. Please refer to exposure limits legislated for the province in which the substance will be used.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance: Clear, colorless, syrupy liquid
b) Odor: None
c) Odor threshold: Undetermined.
d) pH: (as a 1% solution @ 25 $^oC$) 75%:1.6; 80%:1.6; 85%: 1.6; 95%:1.7
e) Melting point/freezing point: Freezing point $^oC$: 75%:-17.5; 80%:4.6; 85%: 21.1;95%:24.7
f) Initial boiling point and boiling range: ($^oC$) 75%:135; 80%:144; 85%:154; 95%:202
g) Flash point: Undetermined
h) Evaporation rate: Undetermined.
i) Flammability (solid, gas) : Undetermined.
j) Upper/lower flammability or explosive limits: Undetermined.
k) Vapor pressure: (100% acid): 0.0285 mm Hg @ 20 $^oC$
l) Vapor density: Undetermined.
m) Relative density: @ 25/15.5 $^oC$: 75%:1.575; 80%:1.633; 85%:1.692; 95%: 1.808
n) Solubility(ies) : Complete
o) Partition coefficient: n-octanol/water: Undetermined.

p) Auto-ignition temperature: Undetermined.
q) Decomposition temperature: Undetermined.
r) Viscosity: @ 25 $^{o}$C 75%:12; 80%:17; 85%:23; 95%:55

Chemical Formula: $H_3PO_4$

| | 75% | 80% | 85% | 95% |
|---|---|---|---|---|
| % Equivalent $H_3PO_4$: | 75.1 | 80.35 | 85.5 | 95.0 |
| Kg/l @ 25 $^{o}$C | 1.57 | 1.64 | 1.69 | 1.81 |
| lb/gallon @ 25 $^{o}$C | 13.17 | 13.66 | 14.15 | 15 - 15.2 |

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

## 10. STABILITY AND REACTIVITY

Product is stable under normal conditions of storage and handling.

### Conditions to avoid

Incompatible materials

### Materials to avoid

Avoid contact with metals (such as mild steel and aluminum), which may liberate flammable hydrogen gas that can produce an explosion in confined vessels. Avoid contact with materials such as sulfides and sulfites, which could release toxic gases. Be cautious in mixing with strong bases because high heat of reaction can generate steam.

### Hazardous decomposition

Phosphorus oxides may form when heated to decomposition.

## 11. TOXICOLOGICAL INFORMATION

Data from ICL Performance Products LP single-dose (acute) animal studies with this material are given below:

### Phosphoric Acid 75%

| | |
|---|---|
| Oral - rat $LD_{50}$: | 4,400 mg/kg; slightly toxic |
| Dermal - rabbit $LD_{50}$: | > 3,160 mg/kg; slightly toxic |
| Eye Irritation - rabbit (24-hr. exp): | corrosive |
| Skin Irritation - rabbit (24-hr. exp): | corrosive |
| DOT Skin Corrosion - rabbit (4-hr. exp): | non-corrosive |

### Phosphoric Acid 80%

| | |
|---|---|
| Oral - rat $LD_{50}$: | 4,200 mg/kg; slightly toxic |
| Dermal - rabbit $LD_{50}$: | > 3,160 mg/kg; slightly toxic |
| Eye Irritation - rabbit (24-hr. exp): | corrosive |
| Skin Irritation - rabbit (24-hr. exp): | corrosive |
| DOT Skin Corrosion - rabbit (4-hr. exp): | non-corrosive |

### Phosphoric Acid 85%

| | |
|---|---|
| Oral - rat $LD_{50}$: | 3,500 mg/kg; slightly toxic |
| Dermal - rabbit $LD_{50}$: | > 1,260 mg/kg; slightly toxic |
| Eye Irritation - rabbit (24-hr. exp): | corrosive |
| Skin Irritation - rabbit (24-hr. exp): | corrosive |
| DOT Skin Corrosion - rabbit (4-hr. exp): | corrosive |

The results of single exposure tests indicate that these concentrations of Phosphoric Acid are slightly toxic orally and no more than slightly toxic after skin application. Following a 24-hour exposure, irreversible eye and skin damage occurred at all tested concentrations of Phosphoric Acid.

Phosphoric Acid has produced no genetic changes in standard tests using bacterial cells.

**Additional Information**

This material is severely corrosive to steel based on DOT, 49 CFR criteria.

Phosphoric Acid has a low vapor pressure at room temperature and is not expected to present a significant inhalation hazard under ambient conditions. Phosphoric Acid can, however, be irritating to the respiratory tract if inhaled as a mist or if the material is vaporized. The American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) for Phosphoric Acid. For further information on this material, please refer to the current edition of the Documentation of The Threshold Limit Values and Biological Exposure Indices.

## 12. ECOLOGICAL INFORMATION

**Environmental toxicity**

Phosphoric acid is practically nontoxic to one species of freshwater fish. No toxicity data was located for other freshwater species, algae, or Daphnia magna in a search of the available scientific literature.

The following data have been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity.

96-hr. $LC_{50}$ Mosquitofish: 138 mg/L, practically nontoxic

**Environmental Fate**

No specific biodegradation test data was located in a search of the available scientific literature. It was reported in the literature that while acidity of this material may be reduced readily in natural waters, the phosphate may persist indefinitely.

## 13. DISPOSAL CONSIDERATIONS

This material when discarded is a hazardous waste as defined by the U.S. Resource Conservation and Recovery Act (RCRA), 40 CFR 261.22, due to its characteristic of corrosivity, EPA hazardous waste number D002. Best Demonstrated Available Treatment (BDAT) as defined by RCRA for D002 characteristic wastes is DEACTIVATION plus meet 40 CFR 268.48 (Universal Treatment Standards) for non-CWA/non-CWA equivalent/non-Class I SDWA systems. Dispose of in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

## 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.

**Road/Rail, Sea and Air**

| | |
|---|---|
| IMDG/UN | UN 1805, Phosphoric acid, solution, 8, III |
| ICOA/IATA | UN 1805, Phosphoric acid, solution, 8, III |
| RID/ADR | UN 1805, Phosphoric acid, solution, 8, III |
| Canadian TDG | UN 1805, Phosphoric acid, solution, 8, III * |
| US DOT | UN 1805, Phosphoric acid, solution, 8, III * |

*Reportable Quantity/ Reportable Limit (RQ/RL):
Canadian: Regulated limit (RL) for packages greater than or equal to 230 kg
U.S. DOT: Reportable quantity (RQ) for packages greater than or equal to 5,000 lb

## 15. REGULATORY INFORMATION

### Chemical Inventory

| | | | |
|---|---|---|---|
| USA TSCA | Listed | Australia | Listed |
| Canada DSL | Listed | Korea | Listed |
| EC | Listed | Philippines | Listed |
| Japan | Listed | China | Listed |

### Additional information

WHMIS Classification: D2 (B) - Materials Causing Other Toxic Effects
E - Corrosive Material

SARA Hazard Notification

| | |
|---|---|
| Hazard Categories Under Title III Rules (40 CFR 370): | Immediate |
| Section 302 Extremely Hazardous Substances: | Not Applicable |
| Section 313 Toxic Chemical(s): | Not Applicable |

CERCLA Reportable Quantity: 5,000 lbs. of phosphoric acid

Release of 5,000 lbs. or more of this product into the environment in a 24-hour period requires notification to the U.S. National Response Center (800-424-8802 or 202-426-2675). Since local, state, and federal laws vary; consult your attorney or appropriate regulatory officials for information relating to spill reporting.

FDA: Food grades of phosphoric acid are sanctioned as Generally Recognized as Safe (GRAS) by the U.S. Food and Drug Administration and is codified in 21 CFR 182.1073.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contains all the information required by the Canadian Controlled Products Regulation.

Refer to Section 11 for OSHA/HPA Hazardous Chemical(s) and Section 13 for RCRA classification.

## 16. OTHER INFORMATION

| | Health | Fire | Reactivity | Additional Information |
|---|---|---|---|---|
| Suggested NFPA Rating | 3 | 0 | 0 | |
| Suggested HMIS Rating | 3 | 0 | 0 | H<br>H = Splash goggles, gloves (nitrile rubber recommended), synthetic apron, dust & vapor respirator |

Reason for revision: Revised section 1 and 9. Supersedes MSDS dated: May 2, 2013

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