



# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### Identification

Product Name: PHOSPHORIC ACID (36% - 96%)  
Reference Number: AST10046  
Date: May 22, 2006

### 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  
In Canada call CANUTEC: 1 613 996 6666

General information: +1 800 244 6160 (Worldwide)

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

### Composition

Substance	CAS No.	%w/w	EINECS No.	Risk Phrases
Phosphoric Acid	7664-38-2	35 - 95	231-633-2	R34
Water	7732-18-5	5 - 65	231-791-2	None

## 3. HAZARDS IDENTIFICATION

### Classification of the substance/preparation

EC Classification: Corrosive  
Safety Phrase: S26, S36, S37, S39

### Human health effects

WARNING STATEMENTS: DANGER! CAUSES EYE AND SKIN BURNS  
MAY BE HARMFUL IF SWALLOWED, CORROSIVE TO MILD STEEL  
This product causes eye burns. Injury may be permanent. This product causes skin burns based on physical properties. It may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred.

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Breathing of vapor or mist may be irritating to the respiratory tract. This product may be harmful if swallowed. May cause nausea, vomiting, abdominal discomfort, burns, and a burning sensation (burning behind the breast bone) based on physical properties.

**Environmental effects**

When released into the soil, this material may leach into groundwater. When released to water, natural waters hardness minerals may readily reduce acidity. Phosphate may persist indefinitely.

**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 affected 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

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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 an 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**

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

**General Information**

Chemical Formula:	H <sub>3</sub> PO <sub>4</sub>
Appearance:	Clear, colorless, syrupy liquid
Odor:	None
Vapor Pressure (100% acid):	0.0285 mm Hg @ 20 °C
Solubility in Water:	Complete

**Important health, safety and environmental information**

	75%	80%	85%	95%
pH (as a 1% solution @ 25 °C)	1.6	1.6	1.6	1.7
% Equivalent H <sub>3</sub> PO <sub>4</sub> :	75.1	80.35	85.5	95.0
Boiling Point °C :	135	144	164	202
Freezing point °C	-17.5	4.8	21.1	24.7
Viscosity @ 25 °C	12	17	23	55
Specific Gravity @ 25 °C /15.5 °C:	1.576	1.633	1.692	1.808
Kg/l @ 25 °C	1.57	1.64	1.69	1.81
lb/gallon @ 25 °C	13.17	13.68	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**

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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**

**Laboratory data**

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

**Phosphoric Acid 75%**

Oral - rat LD50: 4,400 mg/kg; slightly toxic  
Dermal - rabbit LD50: > 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 LD50: 4,200 mg/kg; slightly toxic  
Dermal - rabbit LD50: > 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 LD50: 3,500 mg/kg; slightly toxic  
Dermal - rabbit LD50: > 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

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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. LC50 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**

European waste catalog number

The data provided in this section is for information only. Please apply the appropriate classification for your waste.

06 01 04 Waste from inorganic chemical processes, phosphoric and phosphorous acid

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	Phosphoric acid, solution, 8, UN 1805, III
ICAO/IATA	UN 1805, Phosphoric acid, solution, 8, III
RID/ADR	UN 1805, Phosphoric acid, solution, 8, III
Canadian TDG	Phosphoric acid, solution, 8, UN 1805, III*
US DOT	Phosphoric acid, solution, 8, UN 1805, 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**

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EC label

Hazard symbol:	corrosive
R34	Causes burns
S26	In case of contact with eyes, rinse immediately with plenty of water & seek medical advice.
S36	Wear suitable protective clothing
S37	Wear suitable protective gloves
S39	Wear eye/face protection

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 6,000 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**

	<u>Health</u>	<u>Fire</u>	<u>Reactivity</u>	<u>Additional Information</u>
Suggested NFPA Rating	3	0	0	
Suggested HMIS Rating	3	0	0	H

H = Splash goggles, gloves (nitrile rubber recommended), synthetic apron, dust & vapor respirator

Reason for revision: Revised header. Supersedes MSDS dated: May 12, 2006  
Drafted in accordance with ECC Dir 2001/56/EC

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