# POLYPHOSPHORIC ACID

**PPA**

## CAUTIONARY RESPONSE INFORMATION

| **Common Synonyms** | Liquid | Colorless | Odorless |
|---|---|---|---|
| Condensed phosphoric acid | Sinks and mixes with water. | | |

Keep people away. AVOID CONTACT WITH LIQUID.
Wear chemical protective suit with self-contained breathing apparatus.
Notify local health and pollution control agencies.
Protect water intakes.

| | |
|---|---|
| **Fire** | Not flammable.<br>Flammable gas may be produced on contact with metal.<br>Wear chemical protective suit with self-contained breathing apparatus. |
| **Exposure** | CALL FOR MEDICAL AID.<br><br>LIQUID<br>Will burn skin and eyes.<br>Harmful if swallowed.<br>Remove contaminated clothing and shoes.<br>Flush affected areas with plenty of water.<br>IF IN EYES, hold eyelids open and flush with plenty of water.<br>IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.<br>DO NOT INDUCE VOMITING. |
| **Water Pollution** | Dangerous to aquatic life in high concentrations.<br>May be dangerous if it enters water intakes.<br>Notify local health and wildlife officials.<br>Notify operators of nearby water intakes. |

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Chemical and Physical Treatment:
Neutralize

### 2. CHEMICAL DESIGNATIONS

**2.1 CG Compatibility Group:** Not listed.
**2.2 Formula:** $(P_2O_5)(H_2O)_{<3}$
**2.3 IMO/UN Designation:** Not listed
**2.4 DOT ID No.:** Not listed
**2.5 CAS Registry No.:** Currently not available
**2.6 NAERG Guide No.:** Not listed
**2.7 Standard Industrial Trade Classification:** 52234

### 3. HEALTH HAZARDS

**3.1 Personal Protective Equipment:** Goggles or face shield; rubber gloves or protective clothing.
**3.2 Symptoms Following Exposure:** Liquid burns skin and eyes unless washed off quickly. If ingested will burn mouth and stomach unless diluted at once.
**3.3 Treatment of Exposure:** INGESTION: give victim water, milk, or vegetable oil; do NOT induce vomiting. SKIN OR EYES: flush with water for at least 15 min.; call doctor for eye exposure.
**3.4 TLV-TWA:** Currently not available
**3.5 TLV-STEL:** Not listed.
**3.6 TLV-Ceiling:** Not listed.
**3.7 Toxicity by Ingestion:** Grade 3; $LD_{50}$ = 50 to 500 mg/kg
**3.8 Toxicity by Inhalation:** Currently not available.
**3.9 Chronic Toxicity:** None
**3.10 Vapor (Gas) Irritant Characteristics:** Non-volatile
**3.11 Liquid or Solid Characteristics:** Fairly severe skin irritant; may cause pain and second- degree burns after a few minutes' contact.
**3.12 Odor Threshold:** Odorless
**3.13 IDLH Value:** Not listed.
**3.14 OSHA PEL-TWA:** Not listed.
**3.15 OSHA PEL-STEL:** Not listed.
**3.16 OSHA PEL-Ceiling:** Not listed.
**3.17 EPA AEGL:** Not listed

### 4. FIRE HAZARDS

**4.1 Flash Point:** Not flammable
**4.2 Flammable Limits in Air:** Not flammable
**4.3 Fire Extinguishing Agents:** Not pertinent
**4.4 Fire Extinguishing Agents Not to Be Used:** Not pertinent
**4.5 Special Hazards of Combustion Products:** Not pertinent
**4.6 Behavior in Fire:** Not pertinent
**4.7 Auto Ignition Temperature:** Not flammable
**4.8 Electrical Hazards:** Not pertinent
**4.9 Burning Rate:** Not flammable
**4.10 Adiabatic Flame Temperature:** Currently not available
**4.11 Stoichometric Air to Fuel Ratio:** Not pertinent.
**4.12 Flame Temperature:** Currently not available
**4.13 Combustion Molar Ratio (Reactant to Product):** Not pertinent.
**4.14 Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

### 5. CHEMICAL REACTIVITY

**5.1 Reactivity with Water:** Reacts with water to generate heat and form phosphoric acid. The reaction is not violent.
**5.2 Reactivity with Common Materials:** Reacts with metals to liberate flammable hydrogen gas.
**5.3 Stability During Transport:** Stable
**5.4 Neutralizing Agents for Acids and Caustics:** Flush with water, neutralize acid with lime or soda ash.
**5.5 Polymerization:** Not pertinent
**5.6 Inhibitor of Polymerization:** Not pertinent

### 6. WATER POLLUTION

**6.1 Aquatic Toxicity:** 138 ppm/24 hr/mosquito fish/$TL_m$/fresh water
**6.2 Waterfowl Toxicity:** Currently not available
**6.3 Biological Oxygen Demand (BOD):** None
**6.4 Food Chain Concentration Potential:** None
**6.5 GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

**7.1 Grades of Purity:** 115% phosphoric acid
**7.2 Storage Temperature:** Ambient
**7.3 Inert Atmosphere:** No requirement
**7.4 Venting:** Open or pressure-vacuum
**7.5 IMO Pollution Category:** Currently not available
**7.6 Ship Type:** Currently not available
**7.7 Barge Hull Type:** Currently not available

### 8. HAZARD CLASSIFICATIONS

**8.1 49 CFR Category:** Not listed.
**8.2 49 CFR Class:** Not pertinent
**8.3 49 CFR Package Group:** Not listed.
**8.4 Marine Pollutant:** No
**8.5 NFPA Hazard Classification:** Not listed
**8.6 EPA Reportable Quantity:** Not listed.
**8.7 EPA Pollution Category:** Not listed.
**8.8 RCRA Waste Number:** Not listed
**8.9 EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

**9.1 Physical State at 15° C and 1 atm:** Liquid
**9.2 Molecular Weight:** Not pertinent
**9.3 Boiling Point at 1 atm:** 1022°F = 550°C = 823°K
**9.4 Freezing Point:** 100°F = 38°C = 311°K
**9.5 Critical Temperature:** Not pertinent
**9.6 Critical Pressure:** Not pertinent
**9.7 Specific Gravity:** 2.05 at 38°C (liquid)
**9.8 Liquid Surface Tension:** Not pertinent
**9.9 Liquid Water Interfacial Tension:** Not pertinent
**9.10 Vapor (Gas) Specific Gravity:** Not pertinent
**9.11 Ratio of Specific Heats of Vapor (Gas):** Not pertinent
**9.12 Latent Heat of Vaporization:** Not pertinent
**9.13 Heat of Combustion:** Not pertinent
**9.14 Heat of Decomposition:** Not pertinent
**9.15 Heat of Solution:** Not pertinent
**9.16 Heat of Polymerization:** Not pertinent
**9.17 Heat of Fusion:** Currently not available
**9.18 Limiting Value:** Currently not available
**9.19 Reid Vapor Pressure:** Currently not available

**NOTES**

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PPA

| 9.20 SATURATED LIQUID DENSITY | | 9.21 LIQUID HEAT CAPACITY | | 9.22 LIQUID THERMAL CONDUCTIVITY | | 9.23 LIQUID VISCOSITY | |
|---|---|---|---|---|---|---|---|
| Temperature (degrees F) | Pounds per cubic foot | Temperature (degrees F) | British thermal unit per pound-F | Temperature (degrees F) | British thermal unit inch per hour-square foot-F | Temperature (degrees F) | Centipoise |
| 100 | 127.099 | 110 | 0.299 | | NOT PERTINENT | | NOT PERTINENT |
| 110 | 126.799 | 120 | 0.303 | | | | |
| 120 | 126.500 | 130 | 0.307 | | | | |
| 130 | 126.200 | 140 | 0.311 | | | | |
| 140 | 125.799 | 150 | 0.315 | | | | |
| 150 | 125.500 | 160 | 0.319 | | | | |
| 160 | 125.200 | 170 | 0.323 | | | | |
| 170 | 124.900 | 180 | 0.326 | | | | |
| 180 | 124.599 | 190 | 0.330 | | | | |
| 190 | 124.299 | 200 | 0.334 | | | | |
| 200 | 124.000 | 210 | 0.338 | | | | |
| 210 | 123.700 | 220 | 0.342 | | | | |
| | | 230 | 0.346 | | | | |
| | | 240 | 0.350 | | | | |
| | | 250 | 0.354 | | | | |
| | | 260 | 0.358 | | | | |
| | | 270 | 0.361 | | | | |
| | | 280 | 0.365 | | | | |
| | | 290 | 0.369 | | | | |
| | | 300 | 0.373 | | | | |
| | | 310 | 0.377 | | | | |
| | | 320 | 0.381 | | | | |
| | | 330 | 0.385 | | | | |
| | | 340 | 0.389 | | | | |
| | | 350 | 0.393 | | | | |
| | | 360 | 0.396 | | | | |

| 9.24 SOLUBILITY IN WATER | | 9.25 SATURATED VAPOR PRESSURE | | 9.26 SATURATED VAPOR DENSITY | | 9.27 IDEAL GAS HEAT CAPACITY | |
|---|---|---|---|---|---|---|---|
| Temperature (degrees F) | Pounds per 100 pounds of water | Temperature (degrees F) | Pounds per square inch | Temperature (degrees F) | Pounds per cubic foot | Temperature (degrees F) | British thermal unit per pound-F |
| | MISCIBLE | 150 | 0.000 | | NOT PERTINENT | | NOT PERTINENT |
| | | 200 | 0.000 | | | | |
| | | 250 | 0.000 | | | | |
| | | 300 | 0.000 | | | | |
| | | 350 | 0.000 | | | | |
| | | 400 | 0.001 | | | | |
| | | 450 | 0.002 | | | | |
| | | 500 | 0.008 | | | | |
| | | 550 | 0.023 | | | | |
| | | 600 | 0.060 | | | | |
| | | 650 | 0.143 | | | | |
| | | 700 | 0.317 | | | | |
| | | 750 | 0.658 | | | | |
| | | 800 | 1.288 | | | | |
| | | 850 | 2.396 | | | | |
| | | 900 | 4.258 | | | | |