The following list contains the Material Safety Data Sheets you requested. Please scroll down to view the requested MSDS(s).

<table>
<thead>
<tr>
<th>Product</th>
<th>MSDS</th>
<th>Distributor</th>
<th>Format</th>
<th>Language</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>224800</td>
<td>220999</td>
<td>Hach Company</td>
<td>OSHA</td>
<td>English</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Enclosures: 1
MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: PhosVer ® 3 Phosphate Reagent
Catalog Number: 220999

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(PMedical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00038
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: Causes eye burns.
Date of MSDS Preparation:
Day: 19
Month: March
Year: 2012

2. COMPOSITION / INFORMATION ON INGREDIENTS

Potassium Pyrosulfate
CAS No.: 7790-62-7
TSCA CAS Number: 7790-62-7
Percent Range: 70.0 - 80.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 2340 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Causes eye burns.

Ascorbic Acid
CAS No.: 50-81-7
TSCA CAS Number: 50-81-7
Percent Range: 20.0 - 30.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 11900 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Practically non-toxic.

Sodium Molybdate
CAS No.: 7631-95-0
TSCA CAS Number: 7631-95-0
Percent Range: 1.0 - 10.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 4000 mg/kg.
LC50: Inhalation rat LC50 = > 2080 mg/m³/4 hrs
TLV: 5 mg/m³ (as Mo)
PEL: 5 mg/m³ (as Mo)
Hazard: May cause irritation.

**Other components, each**
- **CAS No.:** Not applicable
- **TSCA CAS Number:** Not applicable
- **Percent Range:** < 1.0
- **Percent Range Units:** weight / weight
- **LD50:** Not applicable
- **LC50:** Not applicable
- **TLV:** Not established
- **PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

---

3. HAZARDS IDENTIFICATION

**Emergency Overview:**
- **Appearance:** White to off-white powder
- **Odor:** None
- **CAUSES EYE BURNS MAY CAUSE RESPIRATORY TRACT IRRITATION**

**HMIS:**
- **Health:** 3
- **Flammability:** 1
- **Reactivity:** 0
- **Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**
- **Health:** 3
- **Flammability:** 1
- **Reactivity:** 0
- **Symbol:** Not applicable

**Potential Health Effects:**
- **Eye Contact:** Causes eye burns.
- **Skin Contact:** No effects are anticipated
- **Skin Absorption:** None reported
- **Target Organs:** None reported
- **Ingestion:** May cause: copper deficiency anemia gout loss of coordination loss of appetite listlessness diarrhea liver damage May effect enzyme activity.
- **Target Organs:** Blood Liver
- **Inhalation:** May cause: respiratory tract irritation Effects similar to those of ingestion.
- **Target Organs:** Blood Liver

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions Gout

**Chronic Effects:** Chronic overexposure may cause copper deficiency enzyme activity effects liver damage Molybdenum poisoning signs include loss of appetite, listlessness and reduced growth rate. Excessive exposure to molybdenum compounds may cause gout and anemia.

**Cancer / Reproductive Toxicity Information:**
- This product does NOT contain any OSHA listed carcinogens.
- This product does NOT contain any IARC listed chemicals.
- This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.
5. FIRE FIGHTING MEASURES

Flammable Properties: Can burn in fire, releasing toxic vapors.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
  Lower Explosion Limits: Not applicable
  Upper Explosion Limits: Not applicable
Autoignition Temperature: Not determined
Hazardous Combustion Products: Toxic fumes of: sulfur oxides, carbon monoxide, carbon dioxide, sodium monoxide
Fire / Explosion Hazards: None reported
Static Discharge: None reported
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Containment Technique: Stop spilled material from being released to the environment.

Clean-up Technique: Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

Evacuation Procedure: When any quantity is spilled, evacuate local area (15 foot radius or as directed by your facility's emergency response plan).

Special Instructions (for accidental release): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: None

7. HANDLING / STORAGE

Handling: Avoid contact with eyes clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

Storage: Store between 10° and 25°C.

Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Maintain general industrial hygiene practices when using this product.

Personal Protective Equipment:

Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. Lab coat
Inhalation Protection: Adequate ventilation
Precautionary Measures: Avoid contact with: eyes Do not breathe: dust Wash thoroughly after handling. Protect from: heat

TLV: Not established
PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: White to off-white powder
Physical State: Solid
Molecular Weight: Not applicable
Odor: None
**pH:** of a 5% Solution = 1.1

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 190 °C (374 °F)

**Specific Gravity/ Relative Density (water = 1; air =1):** 2.17

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**
- Water: Soluble
- Acid: Soluble
- Other: Not determined

**Metal Corrosivity:**
- Steel: Not applicable
- Aluminum: Not applicable

### 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: oxidizers dyes alkalies iron copper

**Hazardous Decomposition:** Heating to decomposition releases: carbon dioxide carbon monoxide sulfur oxides

**Hazardous Polymerization:** Will not occur.

### 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**
- LD50: None reported
- LC50: None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Potassium Pyrosulfate Oral rat LD50 = 2340 mg/kg; Sodium Molybdate Oral rat LD50 = 4000 mg/kg, Inhalation rat LC50 > 2080mg/m^3/4hr; Ascorbic Acid Oral rat LD50 = 11.9 g/kg

### 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

- No ecological data available for this product. Mobility in soil: No data available

**Ingredient Ecological Information:** --

- No ecological data available for the ingredients of this product.

### 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Work in an approved fume hood. Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

### 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA

I.C.A.O.:  
I.C.A.O. Proper Shipping Name: Not Currently Regulated

---

ICA O Hazard Class: NA
ICA O Subsidiary Risk: NA
ICA O ID Number: NA
ICA O Packing Group: NA

I.M.O.:  
I.M.O. Proper Shipping Name: Not Currently Regulated

---

I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
OSHA: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

EPA:  
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard  
S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

---

302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains no RCRA regulated substances.

C.P.S.C.: Not applicable

State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): Not applicable
California Perchlorate Rule CCR Title 22 Chap .33: Not applicable
Trade Secret Registry: Not applicable

National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Reagent Phosphate determination

**Revision Summary:** Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

---

**Legend:**
- NA - Not Applicable  w/w - weight/weight
- ND - Not Determined  w/v - weight/volume
- NV - Not Available   v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

HACH COMPANY ©2012