



Issuing Date 12/28/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name VM Phosphate Reagent
Product Code(s) 4410
Recommended Use Laboratory chemicals. Industrial (not for food or food contact use). Test kit reagent.
Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA
Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION

DANGER! POISON!
Emergency Overview
Corrosive
Liquid and mist cause severe burns to all body tissue
Inhalation may cause coughing, chest pains, damage to lungs. Ingestion may be fatal
Reacts with water, bases, and other materials
May be fatal if inhaled, absorbed through skin, or swallowed
Appearance Clear yellow solution **Physical State** Liquid **Odor** Odorless

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects
Principle Routes of Exposure Inhalation, skin contact, and ingestion

Acute Toxicity
Eyes Corrosive to the eyes and may cause severe damage including blindness.
Skin Corrosive. Can cause redness, pain, and severe skin burns . Harmful if absorbed through skin.
Inhalation May be fatal if inhaled. Corrosive to nose, throat and respiratory tract. Inhalation of corrosive mist may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate.
Ingestion Corrosive. Can cause immediate pain and burning in the mouth, throat, esphagus and GI tract. May cause nausea, vomiting, and diarrhea, and in severe cases death. May be fatal if swallowed.

Chronic Effects Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Aggravated Medical Conditions Hypersensitivity may occur in those with preexisting skin disorders. Respiratory disorders. Preexisting eye disorders. Those with impaired liver or kidney function may be more susceptible to the effects of this substance.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Sulfuric acid	7664-93-9	18
Hexaammonium molybdate	12027-67-7	<2.0
Ammonium vanadate	7803-55-6	<0.1
Water	7732-18-5	to 100%

4. FIRST AID MEASURES

Eye Contact	Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Call a physician immediately.
Skin Contact	Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Excess acid on skin can be neutralized with a 2% solution of sodium bicarbonate in water.. Call a physician immediately.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately.
Ingestion	DO NOT INDUCE VOMITING. Drink large quantity of water. Call a physician immediately. Never give anything by mouth to an unconscious person.
Protection of First-aiders	Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

5. FIRE-FIGHTING MEASURES

Flammable Properties	Reacts with organic materials and may cause ignition of finely divided materials on contact.
Flash Point	Not applicable
Suitable Extinguishing Media	Dry chemical or CO ₂ . DO NOT USE WATER.

Explosion Data

Specific Hazards Arising from the Chemical

Contact with metals may evolve flammable hydrogen gas. React vigorously with water.

NFPA	Health Hazard 3	Flammability 0	Stability 2	Physical and Chemical Hazards W
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6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapors. Use personal protective equipment. Refer to Section 8.
Methods for Cleaning Up	Neutralize spills with bicarbonate, soda ash, or calcium hydroxide and place slurry into a suitable container for disposal. Ammonium metavanadate is a toxic EPA-regulated waste (code P119).

7. HANDLING AND STORAGE

Handling Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product.

Storage Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from incompatible materials such as cyanides or sulfides.. Store away from strong bases or metals. Do not store near combustible materials. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric acid 7664-93-9	TWA: 0.2 mg/m ³	TWA: 1 mg/m ³	IDLH: 15 mg/m ³ TWA: 1 mg/m ³
Hexaammonium molybdate 12027-67-7	TWA: 3 mg/m ³ TWA: 10 mg/m ³ TWA: 0.5 mg/m ³	TWA: 5 mg/m ³ TWA: 15 mg/m ³	IDLH: 1000 mg/m ³
Ammonium vanadate 7803-55-6	None Known	None Known	Ceiling: 0.05 mg/m ³
Water 7732-18-5	None Known	None Known	None Known

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/Face Protection

Safety glasses with side-shields. If splashes are likely to occur, wear: Face-shield. Maintain eye wash and quick drench shower facilities in work area.

Skin and Body Protection

Wear protective gloves/clothing.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear yellow solution	Odor	Odorless
Physical State	Liquid	pH	<1
Flash Point	Not applicable	Boiling Point/Range	No data available
Solubility	Soluble	Vapor Pressure	No data available
Vapor Density	>1 (air = 1)		

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions of use and storage.

Incompatible Products Water. Strong bases. Metals. Combustible materials. Cyanides. Sulfides. Formaldehyde.

Conditions to Avoid Excessive heat. Incompatible products. Moisture.

Hazardous Decomposition Products Hydrogen gas. Sulfur oxides.

Hazardous Reactions Reacts violently with water. Contact with metals may evolve flammable hydrogen gas.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	2140 mg/kg (Rat)	None Known	510 mg/m ³ (Rat) 2 h
Hexaammonium molybdate	None Known	None Known	None Known
Ammonium vanadate	58.1 mg/kg (Rat)	None Known	7800 µg/m ³ (Rat) 4 h
Water	90 mL/kg (Rat)	None Known	None Known

Chronic Toxicity**Chronic Toxicity**

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sulfuric acid	A2	Group 1	Known	X
Hexaammonium molybdate	A3	None Known	None Known	None Known
Ammonium vanadate	None Known	None Known	None Known	None Known
Water	None Known	None Known	None Known	None Known

ACGIH: (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

IARC: (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration)

X - Present

Chemical Name	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Sulfuric acid	None Known	None Known	None Known
Hexaammonium molybdate	None Known	None Known	None Known
Ammonium vanadate	None Known	None Known	None Known
Water	None Known	None Known	None Known

12. ECOLOGICAL INFORMATION**Ecotoxicity**

The material may be toxic to aquatic life.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Microtox	Daphnia Magna (Water Flea)
Sulfuric acid	None Known	LC50> 500 mg/L Brachydanio rerio 96 h	None Known	EC50 = 29 mg/L 24 h
Hexaammonium molybdate	None Known	None Known	None Known	None Known
Ammonium vanadate	None Known	None Known	None Known	None Known
Water	None Known	None Known	None Known	None Known

Bioaccumulation/Accumulation

When released into the soil, this material may leach into ground water. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet or dry deposition.

Chemical Name	Log Pow
Sulfuric acid	None Known
Hexaammonium molybdate	None Known
Ammonium vanadate	None Known
Water	None Known

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method

Dispose of in accordance with local regulations. Should not be released into the environment.

Chemical Name
Sulfuric acid - 7664-93-9
Hexaammonium molybdate - 12027-67-7
Ammonium vanadate - 7803- 55-6
Water - 7732-18-5

Chemical Name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Sulfuric acid - 7664-93-9	None Known	None Known	None Known	None Known
Hexaammonium molybdate - 12027-67-7	None Known	None Known	None Known	None Known
Ammonium vanadate - 7803- 55-6	None Known	P119	None Known	None Known
Water - 7732-18-5	None Known	None Known	None Known	None Known

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name SULFURIC ACID (with <51% ACID)
Hazard Class 8
UN-No 2796
Packing Group II
Reportable Quantity (RQ) 1000

IATA

UN-No 2796
Proper Shipping Name SULPHURIC ACID (with <51% ACID)
Hazard Class 8
Packing Group II

IMDG/IMO

Proper Shipping Name SULFURIC ACID (with <51% acid)
Hazard Class 8
UN-No 2796
Packing Group II

15. REGULATORY INFORMATION

International Inventories

Component	TSCA	DSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Sulfuric acid 7664-93-9 (18)	Present	X	X	1-430; 1-724	X	KE-32570	X	X
Hexaammonium molybdate 12027-67-7 (<2.0)	Present	X	X	1-389	X	KE-18391	X	X
Ammonium vanadate 7803-55-6 (<0.1)	Present	X	X	1-407	X	KE-01756	X	X
Water 7732-18-5 (to 100%)	Present	X	X	ENCS	X	KE-35400	X	X

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Sulfuric acid	7664-93-9	18	1.0
Hexaammonium molybdate	12027-67-7	<2.0	None Known
Ammonium vanadate	7803-55-6	<0.1	1.0
Water	7732-18-5	to 100%	None Known

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric acid 7664-93-9 (18)	1000 lb	None Known	None Known	X
Hexaammonium molybdate 12027-67-7 (<2.0)	None Known	None Known	None Known	None Known
Ammonium vanadate 7803-55-6 (<0.1)	None Known	None Known	None Known	None Known
Water 7732-18-5 (to 100%)	None Known	None Known	None Known	None Known

Chemical Name	CAS-No	Weight %	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Sulfuric acid	7664-93-9	18	None Known	None Known	None Known	None Known
Hexaammonium molybdate	12027-67-7	<2.0	None Known	None Known	None Known	None Known
Ammonium vanadate	7803-55-6	<0.1	None Known	None Known	None Known	None Known
Water	7732-18-5	to 100%	None Known	None Known	None Known	None Known

CERCLA

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Sulfuric acid	1000 lb	1000 lb
Hexaammonium molybdate	None Known	None Known
Ammonium vanadate	1000 lb	None Known
Water	None Known	None Known

U.S. State Regulations

California Proposition 65

Warning! California Proposition 65 has classified "strong inorganic acid mists containing sulfuric acid" as a chemical known to the State of California to cause cancer. This classification applies only to "mists" containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions, as is this solution.

Chemical Name	CAS-No	California Prop. 65
Sulfuric acid	7664-93-9	Carcinogen
Hexaammonium molybdate	12027-67-7	None Known
Ammonium vanadate	7803-55-6	None Known

Water	7732-18-5	None Known
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Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sulfuric acid	X	X	X	X	X
Hexaammonium molybdate	None Known	None Known	None Known	None Known	None Known
Ammonium vanadate	X	X	X	None Known	None Known
Water	None Known	None Known	None Known	None Known	None Known

International Regulations

Mexico - Grade

Chemical Name	Carcinogen Status	Exposure Limits
Sulfuric acid	A2	Mexico: TWA= 1 mg/m ³
Hexaammonium molybdate	None Known	Mexico: TWA= 10 mg/m ³ Mexico: TWA= 5 mg/m ³
Ammonium vanadate	None Known	None Known
Water	None Known	None Known

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

E Corrosive material
D1A Very toxic materials



Chemical Name	NPRI
Sulfuric acid	X

16. OTHER INFORMATION

NFPA	HMIS	PPE	Transport Symbol						
	<table border="1"> <tr> <td>Health Hazard</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Fire Hazard</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: center;">2</td> </tr> </table>	Health Hazard	3	Fire Hazard	0	Reactivity	2		
Health Hazard	3								
Fire Hazard	0								
Reactivity	2								

Prepared By Regulatory Affairs Department

Issuing Date 12/28/2010

Revision Date**Revision Note**

Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS