

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product name VM Phosphate Reagent

Other means of identification

Product Code(s) 4410
UN-No 2796

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use). Use as a laboratory reagent.

Details of the supplier of the safety data sheet

LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620 USA
T 410-778-3100
F 410-778-9748

Emergency telephone numbers

(CHEM-TEL):USA, Canada, Puerto Rico 1-800-255-3924 Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION

Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1

EMERGENCY OVERVIEW

DANGER

Hazard statements

Causes severe skin burns and eye damage.



Appearance Clear yellow solution

Physical state liquid

Odor Odorless

Precautionary Statements - Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Do not taste or swallow. Do not breathe dust /fume /gas /mist /vapors /spray. Wash face, hands and any exposed skin thoroughly after handling.

Response: Immediately call a poison center or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage:

Store locked up.

Disposal:

Dispose of contents/container to an approved waste disposal plant.

Unknown Acute Toxicity

1.7% of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS*

Chemical name	CAS No	Weight-%
Ammonium metavanadate	7803-55-6	<0.1
Ammonium molybdate tetrahydrate	12054-85-2	<2.0
Sulfuric acid	7664-93-9	18

4. FIRST AID MEASURES**First Aid Measures****General advice**

Do not get in eyes, on skin, or on clothing.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention/advice.

Skin contact

Wash off immediately with soap and plenty of water for at least 15 minutes. Take off contaminated clothing and wash before reuse. Excess acid on skin can be neutralized with a 2% solution of sodium bicarbonate in water. Call a physician immediately.

Inhalation

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Give artificial respiration if victim is not breathing. Call a physician immediately.

Ingestion

Do NOT induce vomiting. Call a physician immediately. Drink plenty of water. Never give anything by mouth to an unconscious person.

Self-protection of the first aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protection recommended in Section 8.

5. FIREFIGHTING MEASURES**Suitable extinguishing media**

Dry chemical or CO₂. DO NOT USE WATER.

Specific hazards arising from the chemical

React vigorously and/or explosively with water.

Hazardous combustion products

Contact with metals may evolve flammable hydrogen gas.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures****Personal precautions**

Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Avoid breathing vapors or mists.

Environmental precautions See Section 12 for additional Ecological Information. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Methods and material for containment and cleaning up

Methods for containment Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

Methods for cleaning up After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Precautions for safe handling

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

Conditions for safe storage, including any incompatibilities

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.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ammonium metavanadate 7803-55-6	*-	*-	Ceiling: 0.05 mg/m ³ V dust and fume 15 min
Ammonium molybdate tetrahydrate 12054-85-2	TWA: 0.5 mg/m ³ Mo respirable fraction	TWA: 5 mg/m ³ Mo (vacated) TWA: 5 mg/m ³ Mo	IDLH: 1000 mg/m ³ Mo
Sulfuric acid 7664-93-9	TWA: 0.2 mg/m ³ thoracic fraction	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 15 mg/m ³ TWA: 1 mg/m ³

Appropriate engineering controls

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles). If splashes are likely to occur, Face protection shield. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection Gloves & Lab Coat. Impervious clothing. Protective gloves. Nitrile rubber.

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. Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state liquid
Appearance Clear yellow solution
Odor Odorless

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	<1	
Melting point / freezing point	No information available	
Boiling point / boiling range	No information available	
Flash point	Not Applicable	
Evaporation rate		
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	No information available	
Water solubility	No information available	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point No information available
Molecular weight No information available
VOC Content (%) No information available
Density No information available
Bulk density No information available

10. STABILITY AND REACTIVITY

Stability Stable under recommended storage conditions.
Hazardous Reactions Reacts violently with water. Contact with metals may evolve flammable hydrogen gas.
Hazardous polymerization Hazardous polymerization does not occur.
Conditions to avoid Excessive heat. Incompatible products. Moisture.
Incompatible materials Water. Strong bases. Metals. Combustible materials. Cyanides. Sulfides. Formaldehyde.
Hazardous decomposition products Hydrogen gas. Sulfur oxides (SO_x).

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure****Component identification**

Chemical name	ATEmix (oral)	ATEmix (dermal)	Inhalation LC50
Ammonium metavanadate 7803-55-6	= 58.1 mg/kg (Rat) = 58100 µg/kg (Rat)	= 2102 mg/kg (Rat)	= 7800 µg/m ³ (Rat) 4 h
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	= 2140 mg/kg (Rat)	Not Established	= 510 mg/m ³ (Rat) 2 h

Information on toxicological effects

Carcinogenicity

IARC has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to occupational exposures to these mists. (Steel pickling / the manufacture of isopropyl alcohol by strong-acid process that uses sulfuric acid).

Chemical name	ACGIH	IARC	NTP	OSHA
Ammonium metavanadate 7803-55-6	Not Established	Not Established	Not Established	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	A3	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	Not Established	Group 1	Known	Not Established

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 Toxicology Program)

Known - Known Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Chronic toxicity

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth.

Numerical measures of toxicity - Product Information

ATEmix (oral) 11,889.00 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Unknown Aquatic Toxicity 1.77 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Chemical name	Toxicity to Algae	Toxicity to Fish	Daphnia Magna (Water Flea)
Ammonium metavanadate 7803-55-6	Not Established	1.5: 144 h <i>Poecilia reticulata</i> mg/L LC50	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	Not Established	500: 96 h <i>Brachydanio rerio</i> mg/L LC50 static	29: 24 h <i>Daphnia magna</i> mg/L EC50

Persistence and degradability

No information available.

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
Ammonium metavanadate 7803-55-6	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established
Sulfuric acid 7664-93-9	Not Established

13. DISPOSAL CONSIDERATIONS

Disposal Methods

This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Dispose of waste product or used containers according to local regulations. Should not be released into the environment.

Contaminated packaging

Dispose of waste product or used containers according to local regulations.

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes

Ammonium metavanadate 7803-55-6	P119	-	Not Established	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	-	Not Established	Not Established
Sulfuric acid 7664-93-9	Not Established	-	Not Established	Not Established

Chemical name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Ammonium metavanadate 7803-55-6	Not Established	P119	Not Established	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	Not Established	Not Established	Not Established	Not Established

Chemical name	California Hazardous Waste Status
Ammonium metavanadate 7803-55-6	*-
Ammonium molybdate tetrahydrate 12054-85-2	*-
Sulfuric acid 7664-93-9	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

Proper shipping name SULFURIC ACID (with <51% ACID)
UN-No 2796
Hazard Class 8
Packing group II
Reportable Quantity (RQ) 1000

TDG

Not regulated

MEX

Not regulated

ICAO

Not regulated

IATA

UN-No 2796
Proper shipping name SULFURIC ACID (<51% ACID)
Hazard Class 8
Packing group II

IMDG/IMO

UN-No 2796
Proper shipping name SULFURIC ACID (<51% ACID)
Hazard Class 8
Packing group II

RID

UN-No 2796
Proper shipping name SULFURIC ACID (<51% ACID)
Hazard Class 8
Packing group II

ADR

UN-No 2796
Proper shipping name SULFURIC ACID (<51% ACID)
Hazard Class 8

Packing group II

ADN Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA Complies
DSL/NDSL Complies
EINECS/ELINCS Does not comply
ENCS Complies
IECSC Complies
KECL Does not comply
PICCS Complies
AICS Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US 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	SARA 313 - Threshold Values %
Ammonium metavanadate 7803-55-6	1.0
Ammonium molybdate tetrahydrate 12054-85-2	1.0
Sulfuric acid 7664-93-9	1.0

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

CWA (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)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Ammonium metavanadate 7803-55-6	Not Established	Not Established	Not Established	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	1000 lb	Not Established	Not Established	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	CERCLA/SARA RQ	RQ
Ammonium metavanadate	1000 lb	Not Established	RQ 1000 lb final RQ

7803-55-6			RQ 454 kg final RQ
Ammonium molybdate tetrahydrate 12054-85-2	*	Not Established	-
Sulfuric acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ

US State Regulations**California Proposition 65**

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 occupational exposures to these mists generated during manufacturing processes which sulfuric acid is used or produced.

Chemical name	California Proposition 65
Ammonium metavanadate 7803-55-6	Not Established
Ammonium molybdate tetrahydrate 12054-85-2	Not Established
Sulfuric acid 7664-93-9	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Ammonium metavanadate 7803-55-6	X	X	X
Ammonium molybdate tetrahydrate 12054-85-2	Not Established	Not Established	Not Established
Sulfuric acid 7664-93-9	X	X	X

CPSC (Consumer Product Safety Commission) - Specially Regulated Substances

Chemical name	CPSC (Consumer Product Safety Commission) - Specially Regulated Substances
Sulfuric acid 7664-93-9	Add POISON to label, 16 CFR 1500.129

16. OTHER INFORMATION**NFPA**

Health hazard 3

Instability 2

Physical and Chemical Hazards Stability 2
W

Health Hazard	3
Fire Hazard	0
Reactivity	2

Prepared by**Issuing Date****Revision Date****Reason for revision****Disclaimer**

Regulatory Affairs Department

Dec-22-2016

Dec-13-2016

SDS sections updated 2 11 16

The information provided on this SDS 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 Safety Data Sheet