

**Revision Date:** 2012-05-31  
**Reason for Revision:** Section 14 Updated

**SECTION 1: IDENTIFICATION OF THE PRODUCT AND COMPANY**

**Product Name:** HI 93763B-0 Molybdovanadate Reagent

**Application:** Determination of Phosphorus in Water Samples

**Company Information (USA):**

Hanna Instruments, Inc.  
 584 Park East Dr, Woonsocket, Rhode Island, USA 02895

**Technical Service Contact Information:**

1-800-426-6287 (8:30AM - 5:00PM ET)  
 +1-401-766-4260 (8:30AM - 5:00PM ET)

**USA Emergency Contact Information:**

1-800-424-9300 (Chemtrec 24Hr. Emergency)

**International Emergency Contact Information:**

+1-703-527-3887 (Chemtrec 24Hr. Emergency)

**E-mail Address:**

tech@hannainst.com

**SECTION 2: HAZARD IDENTIFICATION**

Causes severe burns.

**SECTION 3: COMPOSITION AND COMPONENT INFORMATION**

<b>Component:</b>	Ammonium Metavanadate	Ammonium Molybdate Tetrahydrate	Sulfuric Acid
<b>EC-No.:</b>	232-261-3	234-320-9	231-639-5
<b>CAS-No.:</b>	7803-55-6	12054-85-2	7664-93-9
<b>Hazard:</b>	T	Xi	C
<b>Phrases:</b>	R: 23/25-37/38-41	R: 36/37/38-52/53	R: 35
<b>Content:</b>	> 0.1% - < 3%	> 1% - < 5%	> 35% - < 51%

**SECTION 4: FIRST AID MEASURES**

- After Inhalation:** Remove to fresh air. Immediately summon doctor.
- After Skin Contact:** Wash affected area with plenty of water. Immediately remove contaminated clothing.
- After Eye Contact:** Rinse out immediately with plenty of water for at least 10 minutes and seek medical advice.
- After Swallowing:** Drink plenty of water (if necessary several liters), avoid vomiting (risk of perforation!). Immediately seek medical advice. Do not attempt to neutralize.
- General Information:** Remove contaminated, soaked clothing immediately and dispose of safely.

**SECTION 5: FIRE-FIGHTING MEASURES*****Suitable Extinguishing Media:***

Water spray, Carbon Dioxide, Dry Chemical Powder, Appropriate Foam.

***Special Risks:***

Development of hazardous combustion gases or vapors possible in the event of fire. Hydrogen may form upon contact with metals (danger of explosion!). The following may develop in event of fire: Sulfur Oxides, Ammonia, Nitrogen Oxides.

***Special Protective Equipment:***

Do not stay in dangerous zone without suitable chemical protection clothing and self-contained breathing apparatus.

***Additional Information:***

Product itself is non-combustible. Cool container with spray water from a safe distance. Contain escaping vapors with water.  
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations

**SECTION 6: ACCIDENTAL RELEASE MEASURES*****Personal Precautions:***

Avoid substance contact. Ensure supply of fresh air in enclosed rooms. Take up with liquid-absorbent material. Clean up affected area and dispose according to local regulation.

***Environmental Precautions:***

Do not discharge into the drains/surface waters/groundwater.

***Additional Notes:***

Render harmless: neutralize with diluted sodium hydroxide solution or by throwing on lime, lime sand, or sodium carbonate.

**SECTION 7: HANDLING AND STORAGE*****Handling:***

Avoid generation of vapors/aerosols. Work under hood.  
Do not inhale substance.

***Storage:***

Tightly closed. In a well-ventilated place at +15 to +25 °C. Accessible only for authorized persons.

**SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION**

Type	Value	Source	Type	Value	Source
<b>Ammonium Molybdate Tetrahydrate</b>					
TWA (8hr)	0.5 mg (Mo)/m <sup>3</sup> (respirable)	Canada (Ontario)	TWA (8hr)	0.2 mg (Mn)/m <sup>3</sup>	Canada (Ontario)
TWA (8hr)	5 mg (Mo)/m <sup>3</sup>	Canada (Quebec)	TWA (8hr)	5 mg (Mo)/m <sup>3</sup>	Hungary
TWA (8hr)	4 mg (Mo)/m <sup>3</sup>	Poland	TWA (8hr)	2 mg (Mo)/m <sup>3</sup>	Romania
TWA (8hr)	0.5 mg (Mo)/m <sup>3</sup>	USA (ACGIH)	TWA (8hr)	5 mg (Mo)/m <sup>3</sup>	USA (OSHA)
<b>Sulfuric Acid</b>					
TWA (8hr)	1 mg/m <sup>3</sup>	Belgium	TWA (8hr)	0.2 mg/m <sup>3</sup>	Canada (Ontario)
TWA (8hr)	1 mg/m <sup>3</sup>	Canada (Quebec)	TWA (8hr)	1 mg/m <sup>3</sup>	France
TWA (8hr)	1 mg/m <sup>3</sup>	Greece	TWA (8hr)	1 mg/m <sup>3</sup>	Hungary
TWA (8hr)	0.5 mg/m <sup>3</sup>	Poland	TWA (8hr)	0.2 mg/m <sup>3</sup>	Portugal
TWA (8hr)	0.5 mg/m <sup>3</sup>	Romania	TWA (8hr)	1 mg/m <sup>3</sup>	Spain
TWA (8hr)	0.2 mg/m <sup>3</sup>	USA (ACGIH)	TWA (8hr)	1 mg/m <sup>3</sup>	USA (OSHA)

**Engineering:**

Maintain general industrial hygiene practice.

**Personal Protective Equipment:**

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

**Respiratory Protection:**

Required when vapors/aerosols are generated. Work under hood. Do not inhale substance.

**Protective Gloves:**

Rubber or plastic

**Eye Protection:**

Goggles or face mask

**Industrial Hygiene:**

Change contaminated clothing. Wash hands after working with substance.

**SECTION 9: PHYSICAL/CHEMICAL PROPERTIES**

<b>Appearance:</b>	Pale yellow liquid	<b>Odor:</b>	Odorless	<b>Density at 20°C:</b>	~ 1.3 g/cm <sup>3</sup>
<b>Melting Point:</b>	ND	<b>Boiling Point:</b>	ND	<b>Solubility:</b>	Soluble (development of heat)
<b>pH at 20°C:</b>	Strongly acid	<b>Explosion Limit:</b>	NA	<b>Flash Point:</b>	NA
<b>Thermal Decomp.:</b>	NA				

**SECTION 10: STABILITY AND REACTIVITY**

**Conditions to be Avoided:**

Heating (decomposition).

**Hazardous Polymerization:**

Will not occur.

**Further Information:**

Hygroscopic. Has a corrosive effect. Incompatible with metals, animal and vegetable tissues.

**Hazardous Decomposition Products:**

In the event of fire: See section 5.

**Substances to be Avoided:**

Water, alkali metals, alkali compounds, ammonia, alkaline earth compounds, alkalis, acids, alkaline earth metals, metals, metal alloys, phosphorus oxides, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvents, acetylidene, nitriles, nitrides, organic nitro compounds, anilines, peroxides, picrates, lithium silicide

**SECTION 11: TOXICOLOGICAL INFORMATION**

**Product Toxicity**

Quantitative data on the toxicity of this product is not available.

**Potential Health Effects:**

**Inhalation:** After inhalation of aerosols: damage to the affected mucous membranes.

**Skin Contact:** Severe burns with formation of scabs.

**Eye Contact:** Burns, corneal lesion.

**Ingestion:** Severe pain (risk of perforation!), nausea, vomiting and diarrhea.

**Further Data:** Systemic effects: applicable to partial component(s): Vanadium compounds generally cause irritations after eye and skin contact and mucosal irritations, coughing and dyspnoea after inhalation. After absorption of toxic quantities symptoms are: changes in the blood picture, loss of weight, cardiovascular complaints. Molybdenum (VI) acute intoxication symptoms are: diarrhea, anemia, fatigue. Toxic effect on liver and kidneys after high doses. Further hazardous properties cannot be excluded. The product should be handled with the usual care when dealing with chemicals.

**Component Toxicity**

**Acute Toxicity:**

**Sulfuric Acid**

**LC50:** Inhalation - Rat - 510 mg/m<sup>3</sup>

**LD50:** Oral - Rat - 2140 mg/kg

**Chronic Toxicity:**

**Sulfuric Acid**

NTP: Known to be carcinogenic to humans

**Additional Data:**

Ammonium Metavanadate: acute toxicity:

LD50 (oral, rat): 169 mg/kg.

LD50 (dermal, rat): > 2500 mg/kg.

LC50 (inhalation, rat): 2500 mg/m<sup>3</sup> /4 h.

**SECTION 12: ECOLOGICAL INFORMATION**

Quantitative data on the ecological effect of this product is not available. Biological effects: harmful effect on aquatic organisms. Harmful effect due to pH shift. Toxic effect on fish and algae. Caustic even in diluted form. Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

**Further Data:** APPLICABLE TO PARTIAL COMPONENT:

The following applies to vanadium compounds in general: toxic for aquatic organisms: LD50 from 4.8 mg/L up in soft water, from 30 mg/L up in hard water.

The following applies to molybdenum compounds in general: biological effects: fish: lethal from 25 mg/L up; algae: Sc. quadricauda toxic from 54 mg/L up; protozoa: Microregma toxic from 27 mg/L up.

The following applies to ammonium ions in general: biological effects: fish: toxic as from 0.3 mg/L; nourishment for fish: toxic as from 0.3 mg/L. Depending on the concentration, nitrogen compounds may contribute to the eutrophication of drinking water supplies.

**DO NOT ALLOW TO ENTER WATERS, WASTE WATERS, OR SOIL!**

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Waste Disposal:** Chemical residues are generally classified as special waste and thus covered by local regulations. Contact local authorities or disposal companies for advice. Handle contaminated packaging in the same way as the substance itself.

**SECTION 14: TRANSPORTATION INFORMATION**

	<i>Land (ADR/RID):</i>	<i>Sea (IMDG):</i>	<i>Air (ICAO/IATA):</i>
<b>UN No.:</b>	2796	2796	2796
<b>Proper Shipping Name:</b>	Sulphuric acid solution	Sulphuric acid solution	Sulphuric acid solution
<b>Class (Sub Risk):</b>	8	8	8
<b>Packing Group:</b>	II	II	II

**SECTION 15: REGULATORY INFORMATION**

**Labeling according to EC Directives:**

**Symbol:** C: Corrosive

**R-phrases:** 35: Causes severe burns.

**S-phrases:** 26-30-36/37/39-45: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Contains:** Sulfuric acid

**SECTION 16: OTHER INFORMATION**

**Text of R-phrases under Section 3**

23/25: Toxic by inhalation and if swallowed.  
 35: Causes severe burns.  
 36/37/38: Irritating to eyes, respiratory system and skin.  
 52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Revision Information**

**Revision Date:** 2012-05-31  
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**Legend**

NA: Not Applicable  
 ND: Not Determined

**THE INFORMATION CONTAINED HEREIN IS BASED ON THE PRESENT STATE OF OUR KNOWLEDGE. IT CHARACTERIZES THE PRODUCT WITH REGARD TO THE APPROPRIATE SAFETY PRECAUTIONS. IT DOES NOT REPRESENT A GUARANTEE OF THE PROPERTIES OF THE PRODUCT.**