



Teco Diagnostics

Clinical Reagent Specialists

Form	QL801-038
Revision	A
Prepared by	Brian Anderson
Approved by	Owen Bry
Issue date	1/14/2011

[MSDS]

Inorganic Phosphorus (Color)

1268 N. Lakeview Ave. Anaheim, CA 92807 Phone: (714) 463-1111 Fax: (714) 463-1169 www.tecodiag.com

Section 1 – Product and Company Information

Product Name	Inorganic Phosphorus Color	Emergency Telephone No.
Catalog Number	I515-480	CHEMTREC (800) 424-9300
Product Type	Clinical Chemistry Reagent	International CHEMTREC (703) 527-3887
Company Name	Teco Diagnostics	Company Telephone No.
Street Address	1268 N. Lakeview Avenue	(800) 222-9880 or (714) 693-7788 Monday - Friday 8:00-4:30 PST
City, State, Zip Code, Country	Anaheim, CA 92807 USA	Fax No. (714) 693-3838

Section 2 – Composition/Information on Ingredients

	Chemical Names	Concentration	CAS#
Inorganic Phos. (Color) Reagent (Mixture):	Sulfuric acid	750 mM	7664-93-9
	Ammonium molybdate	2.4 mM	7782-91-4
	Ferrous ammonium sulfate	10.2 mM	10045-89-3
Inorganic Phos. (Color) Standard:	Potassium phosphate	5 mg/dl	7778-77-0

Other components either non-hazardous or at concentrations below that requiring hazardous listing.

Section 3 – Hazards Identification

Emergency Overview:							
Note: The following information applies to the component materials at higher concentrations than present in the reagent or standard. Although lower concentrations are present in the reagent or standard, appropriate safety precautions should still be taken.							
Sulfuric acid:	Highly Toxic (USA) Toxic (EU). Causes severe burns. Toxic by inhalation. Target organ(s): Teeth. Cardiovascular system.						
Ammonium molybdate:	Caution: Avoid contact and inhalation.						
Ferrous ammonium sulfate:	Irritant. Irritating to eyes, respiratory system and skin.						
HMIS Rating	Health	Flammability	Reactivity	NFPA Rating	Health	Flammability	Reactivity
Sulfuric acid:	3	0	2	Sulfuric acid:	3	0	2
Ammonium molybdate:	1	0	0	Ammonium molybdate:	1	0	0
Ferrous ammonium sulfate:	2	0	1	Ferrous ammonium sulfate:	2	0	1
Potassium phosphate:	0	0	1	Potassium phosphate:	0	0	1
For additional information on toxicity, please refer to section 11.							

Section 4 – First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.
Inhalation Exposure
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Dermal Exposure
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.
Eye Exposure
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5- Fire and Explosive Hazard Data

Conditions of Flammability	Flash Point
Sulfuric acid: Strong dehydrating agent which may cause ignition of finely divided materials on contact.	N/A
Extinguishing Media	Autoignition Temp
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.	N/A
Firefighting Measures	Flammability
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions.	N/A

Section 6 – Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill
Ventilate the area.
Procedures of Personal Precaution
Exercise appropriate precautions to avoid contact with skin or eyes and prevent inhalation. Wear personal protective equipment. Refer to section 8.
Methods for Cleaning Up and Disposal
Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete. Follow federal, state and local disposal regulations for disposal.



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Section 7 – Handling and Storage

Handling

Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Avoid inhalation or ingestion. Do not pipette by mouth. Wash thoroughly after handling.

Storage

Suitable: Keep tightly closed. Store at 2 - 8°C

Section 8 – Exposure Controls / PPE

Engineering Controls

Safety shower and eyewash.
Good general ventilation is satisfactory.

General Hygiene Measures

Wash contaminated clothing before reuse.

Personal Protective Equipment

Respiratory Protection: None required where adequately ventilated
Protective Clothing: Lab coat
Protective Gloves: Latex or rubber gloves
Eye: Chemical safety goggles with side shields recommended.
Other protective equipment: Use a safety pipette device.

Exposure Limits (RTECS): Sulfuric acid

Country	Source	Type	Value	Remarks
USA	ACGIH	STEL	3 MG/M3	---
USA	ACGIH	TWA	0.2 MG/M3	---
USA	MSHA Standard-air	TWA	1 MG/M3	---
USA	OSHA	PEL	8H TWA 1 MG/M3	---
New Zealand	OEL	---	---	Check ACGIH TLV
USA	NIOSH	TWA	1 MG/M3	

Exposure Limits: Sulfuric acid

Country	Source	Type	Value
Poland	---	NDS	1 MG/M3
Poland	---	NDSCh	3 MG/M3
Poland	---	NDSP	--

Exposure Limits (RTECS): Ferrous ammonium sulfate

Country	Source	Type	Value
USA	MSHA Standard - air	TWA	1 mg (Fe) / M3

Section 9 - Physical Data

Appearance Reagent: Light blue liquid Standard: Clear liquid	Boiling Point Sulfuric acid: 100°C	Melting Point Sulfuric acid: 10°C Ferrous ammonium sulfate: 100°C Potassium Phosphate: 252.6 °C	Specific Gravity (g/cm³) Sulfuric acid: 1.84 Ammonium molybdate: 3.1 Ferrous ammonium sulfate: 1.86 Potassium Phosphate: 2.338
Vapor Pressure Sulfuric acid: 1 mmHg at 145.8°C	Vapor Density Sulfuric acid: <0.3 g/L at 25 °C Ammonium molybdate: 6.2 g/l	Percent Volatile N/A	Solubility in Water: Soluble

Section 10 – Stability and Reactivity

Stability		
Chemical	Stable	Materials to Avoid
Sulfuric acid:	Stable	Bases, Halides, Organic materials Incompatible with carbides, chlorates, fulminates, nitrates, picrates, cyanides, alkali halides, zinc iodide, permanganates, hydrogen peroxide, azides, perchlorates, nitromethane, phosphorous, and nitrites. Violent reaction with: cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, and phosphorous (III) oxide, Finely powdered metals.
Ammonium molybdate:	Stable	Strong bases, strong oxidizing agents.
Ferrous ammonium sulfate:	Stable	Strong oxidizing agents, Strong acids
Potassium Phosphate	Stable	Strong oxidizing agents.
Hazardous Decomposition Products Sulfuric acid → Sulfur oxides, Hydrogen sulfide gas. Ammonium molybdate → Carbon monoxide, Carbon dioxide. Ferrous ammonium sulfate → Ammonia, Sulfur oxides, Iron oxides. Potassium Phosphate → Phosphorous oxides, Potassium oxides.		Hazardous Polymerization Hazardous Polymerization: Will not occur.



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Section 11 – Toxicological information

(Note: The following information applies to the component materials at higher concentrations than present in the reagent or standard. Although lower concentrations are present in the reagent or standard, appropriate safety precautions should still be taken.)

<p>Route of exposure Sulfuric acid: Skin Contact: Causes burns. Skin Absorption: May be harmful if absorbed through the skin. Eye Contact: Causes burns. Inhalation: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be toxic by inhalation. Ingestion: May be harmful if swallowed. Ingestion of small quantities is usually nonfatal unless aspiration occurs. Aspiration may lead to chemical pneumonitis which is characterized by pulmonary edema and hemorrhage and may be fatal.</p>	<p>Signs and Symptoms of Exposure Sulfuric acid: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>
<p>Route of exposure Ferrous ammonium sulfate: Skin Contact: Causes skin irritation. Skin Absorption: May be harmful if absorbed through the skin. Eye Contact: Causes eye irritation. Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled. Ingestion: May be harmful if swallowed.</p>	<p>Signs and Symptoms of Exposure Ferrous ammonium sulfate: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.</p>
<p>Route of exposure Ammonium molybdate, Potassium phosphate: Skin Contact: May cause skin irritation. Skin Absorption: May be harmful if absorbed through the skin. Eye Contact: May cause eye irritation. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be harmful if swallowed.</p>	<p>Signs and Symptoms of Exposure Ammonium molybdate, Potassium phosphate: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.</p>

Toxicity Data: Sulfuric acid				
Species:	Dose:	Route of Application:	Result:	Remarks
Rat	2140 mg/kg	Oral	LD50	
Rat	510 mg/m3	Inhalation	LC50	
Mouse	320 mg/m3	Inhalation	LC50	
Guinea pig	18 mg/m3	Inhalation	LC50	Lungs, Thorax, or Respiration: Other changes.

Irritation Data:				
Species:	Route of Application:	Dose:	Exposure Time:	Remarks
Rabbit	Eyes	0.25 mg	---	Severe irritation effect
Rabbit	Eyes	5 mg	30S	Rinsed

Chronic Exposure – Carcinogen: Sulfuric acid
Result: The International Agency for Research on Cancer (IARC) has determined that occupational exposure to strong-inorganic-acid mists containing sulfuric acid is carcinogenic to humans (group 1). IARC Carcinogen List: Rating: Group 1 NTP Carcinogen List: Rating: Known to be carcinogenic. ACGIH Carcinogen List: Rating: A2

Chronic Exposure – Teratogen: Sulfuric acid				
Species:	Dose:	Route of Application:	Exposure Time:	Result:
Rabbit	20MG/M3/7H	Inhalation	6-18D PREG	Specific Developmental Abnormalities: Musculoskeletal system.

Chronic Exposure – Mutagen: Sulfuric acid			
Species:	Dose:	Cell Type:	Mutation Test:
Hamster	4 mmol/L	Ovary	Cytogenetic analysis

Toxicity Data: Ferrous ammonium sulfate			
Species:	Dose:	Route of Application:	Result:
Rat	3250 mg/kg	Oral	LD50

Toxicity Data: Potassium phosphate			
Species:	Dose:	Route of Application:	Result:
Rabbit	>4640 mg/kg	Skin	LD50



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Section 12 – Ecological information

No data available.

Section 13 - Disposal Considerations

Contact a licensed professional waste disposal service to dispose of this material.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: Non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Note: Both the reagent and standard are at concentrations below that requiring hazardous listing.

Section 15 - Regulatory Information

Sulfuric acid:

EU DIRECTIVES CLASSIFICATION
Symbol of Danger: C
Indication of Danger: Corrosive.
R: 35 Risk Statements: Causes severe burns.
S: 26 30 45 Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Sulfuric acid:

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Highly Toxic (USA) Toxic (EU).
Risk Statements: Causes severe burns. Toxic by inhalation.
Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Wear suitable protective clothing, gloves, and eye/face protection. Do not breathe vapor.
US Statements: Target organ(s): Teeth. Cardiovascular system.

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes, NDSL: No

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No
TSCA INVENTORY ITEM: Yes

Ammonium molybdate:

EU ADDITIONAL CLASSIFICATION
S: 24/25 22
Safety Statements: Avoid contact with skin and eyes. Do not breathe dust.

Ammonium molybdate:

US CLASSIFICATION AND LABEL TEXT
US Statements: Caution: Avoid contact and inhalation.

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes, NDSL: No

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No

Ferrous ammonium sulfate:

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: Xi
Indication of Danger: Irritant.
R: 36/37/38 Risk Statements: Irritating to eyes, respiratory system and skin.
S: 26 36 Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

Ferrous ammonium sulfate:

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Irritant.
Risk Statements: Irritating to eyes, respiratory system and skin.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No, NDSL: No

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No

Potassium phosphate:

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes, NDSL: No

Potassium phosphate:

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No
TSCA INVENTORY ITEM: Yes

Section 16 - Other Information

This Product is labeled in accordance with CFR21 (Food and Drugs), Section 809.10.

The information contained herein has been compiled from data presented in various technical sources believed to be accurate. We make no warranties, express or implied, and assume no liability in connection with the use of this information. It is the user's responsibility to determine the suitability of this information and to assure the adoption of necessary safety precautions.

N/A - Not Applicable or Not Available