Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: MO1525-A, MO1525-B, MO1525-C, MO1525-D, MO1525-P, MO1525-Q, MO1525-G, MO1525-T
Product Identity: Molybdenum Buffer

Chemical Family: Not Applicable
Synonyms: Not Applicable
Recommended Use: Laboratory chemicals

Manufacturer’s Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 1/3/07
Revision Date: 6/3/08, 06/22/10, 02/19/12, 06/06/12

Section 2 – Hazard Identification

Emergency Overview
Corrosive liquid. May be fatal if ingested. Causes burns to areas of contact. Harmful if inhaled, causing lung and tooth damage. Get medical attention. Wash areas of contact for at least 15 minutes. If ingested give large quantities of water. Do NOT induce vomiting.

Appearance: Clear, colorless Liquid
Odor: Acetic Acid Smell (Vinegar)

Target Organs: Respiratory system, eyes, skin, and teeth.
Potential Health Effects/ Routes of Exposure:
Eyes: May cause severe eye damage and loss of sight. Vapor exposure may cause watering and irritation to eyes.
Skin: May cause serious damage to the skin, redness, skin burns, and pain.
Ingestion: May cause severe injury, vomiting, sore throat, and death.
Inhalation: May cause severe damage to the lining of the throat, nose, and lungs.
Chronic Effect / Carcinogenicity: No information available (IARC, NTP, OSHA)
Aggravated Medical Conditions: No information available
These chemicals are considered hazardous by OSHA.
See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Acetic Acid, CAS# 64-19-7, 48% w/v
Sodium Acetate, Trihydrate, CAS# 6131-90-4, 15% w/v
Water, purified, CAS# 7732-18-5, 63% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.
Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.
Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: 109F
Autoignition Temperature: No information available.
Explosion Limits Upper: No data available
Explosion Limits Lower: No data available
**Extinguishing Media:** Use water, dry chemical, foam, or carbon dioxide to extinguish fire. Water spray can be used to dilute spills to non-flammable mixtures

**Unsuitable Extinguishing Media:** No information available

**Fire & Explosion Hazards:** Not considered to be a fire or explosion hazard.

**Fire Fighting Instructions / Equipment:** Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

**Hazardous Combustion Products:** Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

**Sensitivity to mechanical impact** No information available.

**Sensitivity to static discharge** No information available.

**Specific Hazards Arising from the Chemical:** No information available

**NFPA Rating:** (estimated) Health: 2; Flammable: 0; Reactivity: 0

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**Section 6 – Accidental Release Measures**

**Personal Precautions** Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

**Environmental Precautions** No information available.

**Methods for Containment and Clean Up** Absorb with suitable material and treat as normal refuse. Liquid may be flushed to sewer.

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**Section 7 – Handling and Storage**

**Handling:** Wash hands after handling. Avoid contact with skin and eyes.

**Storage:** Keep container tightly closed. Protect from freezing and physical damage.

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**Section 8 – Exposure Controls, Personal Protection**

Acetic Acid, CAS# 64-19-7, ACGIH TLV: 25mg/m3, OSHA PEL: 25mg/m3

Sodium Acetate, Trihydrate, CAS# 6131-90-4, ACGIH TLV: NA, OSHA PEL: NA

Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

**Engineering Measures/ General Hygiene:** Normal ventilation is adequate. Ensure eyewash and safety showers are available.

**Personal Protection Equipment:** Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles.

Respiratory Protection: Normal ventilation is adequate or wear respirator with acid gas/organic vapor cartridge.

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**Section 9 – Physical and Chemical Properties**

**Appearance/Physical State:** Clear, colorless liquid

**Odor:** Strong Acetic Acid Smell (Vinegar) % Volatility: No Information Available

**Boiling Point:** Approx 100°C Specific Gravity: Approx 1.1

**Melting Point:** Approx 0°C Vapor Pressure: No Information Available

**Vapor Density:** No Information Available Flash Point: >112.8 °C

**Evaporation Rate:** No Information Available Coefficient of water/oil distribution: Not Available

**pH:** 4 Odor Threshold: Not Available

**Flammability:** No Information Available Decomposition Temperature: No Information Available

**Solubility:** Infinite Partition Coefficient n-octanol/water: No data available

**Relative Density:** No Information Available

**Molecular Weight:** Not available

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**Section 10 – Stability and Reactivity**

**Chemical Stability:** Stable under normal conditions of use and storage. Acetic acid contracts upon freezing, which could cause the container to burst.

**Incompatible Materials:** Strong bases, strong oxidizers, chromic acid, nitric acid, perchloric acid, sodium peroxide.

**Conditions to Avoid:** Excess heat

**Hazardous Decomposition Products:** Emits irritating fumes

**Hazardous Polymerization:** Does not occur
Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2
LD50 orl-rat: 3310 mg/kg (Acetic Acid), 3530mg/kg (Sodium Acetate)
LC50 inhalation-mouse: 5620 ppm/ 1hr (Acetic Acid)
Irritation: Causes burns by all exposure routes
Toxicologically Synergistic: No Information Available
Chronic Exposure
Carcinogenicity: No Information Available
Sensitization: No information available.
Mutagenic Effects: Mutagenic effects have occurred in experimental animals.
Reproductive Effects: Experiments have shown reproductive toxicity effects on laboratory animals.
Developmental Effects (Immediate/Delayed): No information available.
Teratogenicity: No information available.
Other Adverse Effects: No Information Available.
Endocrine Disruptor Information: No information available.

Section 12 – Ecological Information

Ecotoxicity: No information available.
Persistence and Degradability: No Information Available
Mobility: No Information Available
Bioaccumulation/Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Neutralize with 5% Sodium Hydroxide or Sodium Carbonate solutions, and flush to sewer with large quantities of water. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT – UN2790, Acetic Acid Solution, 8, III

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are considered hazardous by OSHA.
Canada DSL: These chemicals are on Canada’s DSL.
TSCA: The components of this solution are listed on the TSCA Inventory
SARA Title III Section 313: Not Applicable
RCRA Status: Not Applicable
CERCLA Reportable Quantity: Acetic Acid – 1000lbs..
WHMIS: E: Corrosive Material.
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.

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user’s responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.
Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: MO1546-A, MO1546-B, MO1546-C, MO1546-D, MO1546-P, MO1546-Q, MO1546-G, MO1546-T

Product Identity: Molybdenum Titrating Solution

Chemical Family: Not Applicable
Synonyms: Not Applicable
Recommended Use: Laboratory chemicals

Manufacturer’s Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 1/2/07
Revision Date: 07/07/08, 04/21/10, 02/19/12

Section 2 – Hazard Identification

Emergency Overview
Wash areas of contact with water.

Appearance: Clear, colorless liquid  Odor: Odorless
Target Organs: Eyes and skin.
Potential Health Effects/ Routes of Exposure:
Eyes: May cause slight irritation.
Skin: May cause irritation, pain, redness.
Ingestion: Large doses may cause gastrointestinal problems, calcium deficiency in the blood, vomiting, nausea, diarrhea.
Inhalation: Not likely to be a hazard by inhalation.
Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)
Aggravated Medical Conditions No information available
These chemicals are considered hazardous by OSHA.
See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Citric Acid, CAS# 77-92-9, <3% w/v
Water, purified, CAS# 7732-18-5, >97% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.
Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.
Ingestion: Do NOT induce vomiting. Dilute with water or milk. Get medical assistance.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.
Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures
Flash Point: Not Applicable  Autoignition Temperature: No information available.
Explosion Limits Upper: No data available  Lower: No data available
Extinguishing Media: Any means suitable for extinguishing fire.
Unsuitable Extinguishing Media: No information available
Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.
Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.
Hazardous Combustion Products: No information Available
Sensitivity to mechanical impact: No information available.
Sensitivity to static discharge: No information available.
Specific Hazards Arising from the Chemical: Thermal decomposition can lead to release of irritating gases and vapors.
NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions: Use proper personal protective equipment. Avoid contact with skin, eyes and clothing.
Environmental Precautions: Not Applicable
Methods for Containment and Clean Up: Absorb with suitable material. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.
Storage: Protect from freezing and physical damage. Refrigeration will help maintain strength of solution.

Section 8 – Exposure Controls, Personal Protection

Citric Acid, CAS# 77-92-9, ACGIH TLV: NA, OSHA PEL: NA
Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA
Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.
Personal Protection Equipment: Skin Protection: Chemical resistant gloves.
Eye/Face Protection: Safety Glasses or goggles. Respiratory Protection: Normal ventilation is adequate.

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, colorless liquid
Odor: Odorless
Boiling Point: Approx 100°C
Melting Point: Approx 0°C
Vapor Density: >1
Evaporation Rate: Not available
pH: No information Available
Flammability: No Information Available
Solubility: Infinite
Relative Density: No Information Available
% Volatility: No Information Available
Specific Gravity: 1-1.08
Vapor Pressure: Not Applicable
Flash Point: Not Applicable
Coefficient of water/oil distribution: Not Available
Odor Threshold: Not Available
Decomposition Temperature: No Information Available
Partition Coefficient n-octanol/water: No data
Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.
Incompatible Materials: Strong oxidizers, copper, aluminum
Hazardous Decomposition Products: Carbon dioxide, carbon monoxide, nitrogen oxides
Hazardous Polymerization: Does not occur
Hazardous Reactions: Not Available
Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2
LD50 orl-rat: 3g/kg (Citric acid)  LC50 inhalation-rat: NA
Irritation: No Information Available
Toxicologically Synergistic: No Information Available

Chronic Exposure
Carcinogenicity: There are no known carcinogenic chemicals in this product
Sensitization: No information available.
Mutagenic Effects: No information available.
Reproductive Effects: No Information available.
Developmental Effects (Immediate/Delayed): No information available.
Teratogenicity: No information available.
Other Adverse Effects: No information available.

Endocrine Disruptor Information: No information available.

Section 12 – Ecological Information

Ecotoxicity: Not applicable
Persistence and Degradability: No Information Available  Mobility: No Information Available
Bioaccumulation/Accumulation: No Information Available

Section 13 – Disposal Considerations


Section 14 – Transport Information

DOT – Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are considered hazardous by OSHA.
Canada DSL: These chemicals are on Canada’s DSL list.
TSCA: The components of this solution are listed on the TSCA Inventory
SARA Title III Section 313: Not Applicable
RCRA Status: Not Applicable
CERCLA Reportable Quantity: Not Applicable
WHMIS: E: Corrosive Material.
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.

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user’s responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.
Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: MO1543-A, MO1543-B, MO1543-C, MO1543-D, MO1543-P, MO1543-Q, MO1543-G, MO1543-T
Product Identity: Molybdenum Indicator Solution

Chemical Family: Not Applicable
Synonyms: Not Available
Recommended Use: Laboratory chemicals

Manufacturer's Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 1/30/07
Revision Date: 07/07/08, 04/12/10, 10/06/10, 02/19/12

Section 2 – Hazard Identification

Emergency Overview
Flammable liquid. Toxic by ingestion; give large quantities of water and induce vomiting. Get medical attention. May cause dryness and cracking of the skin. May cause irritation to the respiratory tract, eyes and skin. Wash areas of contact. Get medical attention if irritation develops.

Appearance: Clear, red colored liquid
Odor: Alcohol

Target Organs: respiratory system, eyes, skin, central nervous system, liver, pancreas

Potential Health Effects/ Routes of Exposure:
Eyes: May cause irritation, burning, pain, and possible damage to the cornea and conjunctiva
Skin: May cause irritation, drying and cracking leading to secondary infection and dermatitis,
Ingestion: May affect the brain, lungs, kidneys, gastrointestinal tract, eyes, and respiratory system causing coma, blindness and death. May also cause hallucinations, sleep disorders, distorted perception, ataxia, motor function changes, convulsions, tremors, coma, and headaches.
Inhalation: May cause irritation to the upper respiratory tract, eyes, nose, and throat, headache, nervousness, acidosis, tremors, tearing, fatigue, dizziness, convulsions, and nausea.
Chronic Effect / Carcinogenicity: None. (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available
These chemicals are considered hazardous by OSHA. See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Methanol, CAS# 67-56-1, 10%v/v
Ethanol, CAS# 64-17-5, 90%v/v
S-Diphenylcarbazone, CAS# 538-62-8, 1% w/v,

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.
Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.
Ingestion: Induce vomiting. Dilute with water or milk. Get medical assistance.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.
Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable
Autoignition Temperature No information available.
Exploding Limits

Upper: No data available
Lower: No data available

Extinguishing Media:
Water, dry chemical, foam, or Carbon Dioxide. Water spray can keep containers cool.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards:
Moderate explosion hazard. Dangerous fire hazard when exposed to heat, sparks, and open flames.

Fire Fighting Instructions / Equipment:
Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment. Poisonous gas are produced in fire. Use water to keep surrounding containers cool.

Hazardous Combustion Products: No information Available

Sensitivity to mechanical impact: No information available.

Sensitivity to static discharge: No information available.

Specific Hazards Arising from the Chemical: No information available.

NFPA Rating:
(estimated) Health: 1; Flammable: 3; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions:
Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Remove all sources of ignition.

Environmental Precautions:
Should not be released into the environment.

Methods for Containment and Clean Up:
Remove all sources of ignition. Contain spill. Do not flush to sewer. Absorb with suitable material and place in chemical waste container. Ventilate area of spill. Use non-sparking equipment.

Section 7 – Handling and Storage

Handling:
Wash hands after handling. Avoid contact with skin and eyes.

Storage:
Keep container tightly closed in a cool, dry area. Protect from freezing and physical damage. Store in secure, flammable storage area away from sources of ignition. Empty containers can still be hazardous since they retain product residue. Storing in refrigeration will help maintain strength of solution.

Section 8 – Exposure Controls, Personal Protection

Methanol, CAS# 67-56-1, ACGIH TLV: 262mg/m3, OSHA PEL: 260mg/m3
Ethanol, CAS# 64-17-5, ACGIH TLV: 1880mg/m3, OSHA PEL: 1900mg/m3
S-Diphenylcarbazone, CAS# 538-62-8, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene:
Local/general exhaust is recommended. Ensure eyewash and safety showers are available.

Personal Protection Equipment:

Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles.

Respiratory Protection: Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State:
Clear, red colored liquid

Odor: Alcohol % Volatility: No Information Available
Boiling Point: No Information Available Specific Gravity: No Information Available
Melting Point: No Information Available Vapor Pressure: No Information Available
Vapor Density: No Information Available Flash Point: Not Applicable
Evaporation Rate: No Information Available Coefficient of water/oil distribution: Not Available
pH: No Information Available Odor Threshold: Not Available
Flammability: No Information Available Decomposition Temperature: No Information Available
Solubility: No Information Available Partition Coefficient n-octanol/water: No data
Relative Density: No Information Available Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability:
Stable under normal conditions of use and storage.
Incompatible Materials: Strong oxidizers, heat, sparks, open flames, platinum, sodium, bromine pentfluoride, potassium dioxide, acetyl bromide, acetyl chloride
Conditions to Avoid: No information available.
Hazardous Decomposition Products: Oxides of carbon, acrid and irritating fumes,
Hazardous Polymerization: Does not occur
Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2
LD50 0rl-rat: 5628mg/kg (Methanol), 7060mg/kg (Ethanol), >500mg/kg (S-Diphenylcarbazone)
LC50 inhalation-rat: NA
Irritation: No Information Available
Toxicologically Synergistic: No Information Available
Carcinogenicity No Information Available
Sensitization No information available.
Mutagenic Effects No Information Available
Reproductive Effects No Information Available
Developmental Effects (Immediate/Delayed) No information available.
Teratogenicity No information available.
Other Adverse Effects No Information Available
Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Methanol and Ethanol have slight acute and chronic toxicity to aquatic life.
Persistence and Degradability: No Information Available
Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Absorb with inert material and place in container for
disposal. Ventilate area of spill. Have fire extinguishing agent available in case of fire. Eliminate all
sources of ignition. Use non-sparking equipment. All chemical waster generators must determine
whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal
regulations.

Section 14 – Transport Information

DOT – UN1993, Flammable Liquids, N.O.S., (Ethanol Solution, Methanol Solution),
3, II

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are considered hazardous by OSHA.
Canada DSL: This items are listed on Canada’s DSL list.
TSCA: The components of this solution are listed on the TSCA Inventory
SARA Title III Section 313: Not Applicable
RCRA Status: Not Applicable
CERCLA Reportable Quantity: Methanol – 5000 lb
WHMIS: B-2: Flammable and combustible material. Flammable Material.
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.

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not
be valid for this material if it is used in combination with any other materials. It is the user’s
responsibility to determine the suitability and completeness of this information for his own
particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.