



## MSDS - Sodium Molybdate Dihydrate

Revised September 19, 2011

### Section 1. Product Information

Substance: Sodium Molybdate Anhydrous and Dihydrate

Form: Crystalline, powder and solution

Trade Names/Synonyms: Sodium Molybdenum Oxide, Disodium Molybdate, Disodium Molybdate Dihydrate, Sodium Molybdate

Chemical Family: Inorganic Salt

Distributed By Pestell Minerals & Ingredients, New Hamburg, ON Canada

24 Hour Emergency Telephone (Canutec): 613-996-6666

### Section 2. Hazards Information

Sodium Molybdate 100% as Anhydrous

CAS # 7631-95-0

RTECS No: QA5075000

#### Hazards Identification

NFPA Ratings (Scale 0-4): Health = 1 Fire = 0 Reactivity = 0

**Emergency Overview:** Odorless, white opaque powder or liquid

Avoid breathing dust. Avoid contact with eyes, skin and clothing. Keep container closed. Wash after handling. Use adequate ventilation.

#### Potential Health Effects

**Short Term:** Inhalation may cause irritation. May cause skin rash. May irritate eyes. Ingestion may cause vomiting, high blood pressure and coma. Additional effects from inhalation may include chest pains.

**Long Term Effects:** Ingestion may cause diarrhea

Carcinogen Status: OSHA: N NTP: N IARC: N

### Section 3. Physical and Chemical Properties

Description: Odorless, white opaque powder or clear solution

Molecular Weight: 205.97 (anhydrous), 241.948 (dihydrate)

Molecular: Na<sub>2</sub>MoO<sub>4</sub> (anhydrous); Na<sub>2</sub>MoO<sub>4</sub> x 2H<sub>2</sub>O (dihydrate)

Boiling Point of Solution: 105°C

Freezing Point of Solution: 687°C

## Section 4. Fire Fighting Measures

**Fire and Explosion Hazard:** Negligible fire hazard when exposed to heat or flame

**Extinguishing Media:** Extinguish using agent suitable for type of surrounding fire

**Fire Fighting:** No acute hazard. Move container from fire area if possible. Avoid breathing vapors or dusts, keep upwind.

**Fire Fighting Protective Equipment:** Full fire fighting turn-out gear (bunker gear). Any supplied air respirator with full face piece and operated in a pressure demand or other positive pressure mode in combination with a separate escape supply.

## Section 5. Stability and Reactivity

**Reactivity:** Stable under normal temperatures and pressures

**Conditions to Avoid:** May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks or open flame.

**Incompatibilities:** None identified

**Hazardous Decomposition:** Thermal decomposition products may include toxic sodium oxide.

**Polymerization:** Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

## Section 6. Toxicological Information

Dihydrate: LD50 - 520 mg/kg intra-peritoneal (rat)      LD50 - 257 mg/kg intra-peritoneal (mouse)

Reproductive Effects Data (RTECS)

Carcinogen Status: None

Acute Toxicity Level: Moderately toxic by ingestion

Target Organs: Not available

**Medical Conditions Aggravated by Exposure:** Blood system, bone, joint or tooth problems, respiratory problems.

Phange inhibition capacity: Escherichia coli 16 mmol/L; sex chromosome

Loss and Non Disjunction: Saccharomyces cerevisiae 80 mmol/L

Reproductive Effects Data: 16474 ug/kg intra-testicular - mouse TDLo 1 day (male)

Additional Data: The levels of copper, sulfur and zinc in the diet may have an effect on the toxicity.

### Health Effects

**Inhalation (Acute Exposure):** May cause respiratory tract irritation, coughing and chest discomfort

**Inhalation (Chronic Exposure):** Chronic exposure of workmen in a molybdenum-copper plant produced liver dysfunction with hyper-bilirubinemia. Similar hepatotoxic effects were found in animals given molybdenum salts.

**Skin (Acute Exposure):** Brief contact with dry skin is unlikely to cause irritation. On wet skin, irritation and a difficult to heal rash may occur. Primary irritation which appeared after 24 hours and cleared up after 72 hours has been reported in animals.

**Skin (Chronic Exposure):** Prolonged contact with dry skin may cause irritation. Among chemists handling molybdenum and tungsten solutions, there was a high incidence of gout.

**Eye (Acute Exposure):** May cause irritation. A 20% solution applied to animal eyes caused conjunctivitis with discharge, but no irritation to the cornea and iris.

**Eye (Chronic Exposure):** No data available

**Ingestion (Acute):** Large doses may cause cramping, vomiting and hypertension. With lethal doses of

molybdenum compounds death was preceded by lethargy and coma.

**Ingestion (Chronic):** Chronic feeding to rabbits at dietary levels of 0.1% or higher was uniformly fatal within a few weeks. There is a correlation between the molybdenum content in food and the incidence of gout, uricemia and xanthine oxidase activity. Signs of molybdenum poisoning include loss of appetite, listlessness, diarrhoea, and reduced growth rate. Animals on high dietary level of molybdenum showed anaemia and deformities of the joints of the extremities.

### Ecological Information

Fish Toxicity: >79800 ug/L 96 hour LC50 (Mortality) Striped Bass (*Morone saxatilis*).

Invertebrate Toxicity: 2650000 ug/L 96 week EC50 (Immobilization) Amphipod (*Crangonys Pseudogracilis*).

Algal Toxicity: 960000 ug/L 48 week (Cytogenic) Flagellate euglenoid (*Euglena gracilis*).

Other Toxicity: 960 ug/L 7 day LC50 (Mortality) Narrow Mouthed Frog (*Microhylla carolinensis*)

## Section 7. Preventive Measures

### Exposure Controls/Personal Protection

**Exposure Limits:** Molybdenum, Soluble Compound (as Mo): 5mg/m3 OSHA TWA, ACGIH TWA, DFG MAK TWA (total dust)

50 mg/m3 DFG MAK 30 minute peak, average value, 1 time/shift

**Ventilation:** Provide local exhaust ventilation system to meet published exposure limits.

**Eye Protection:** Employee should wear splash proof or dust resistant safety goggles to prevent eye contact with this substance.

**Emergency Eye Wash:** Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eyewash fountain within the immediate work area for emergency use.

**Clothing:** Employee should wear appropriate protective gloves to prevent contact with this substance.

**Respirator:** The following respirators are recommended based on information found in the physical data, toxicity and health effects sections. They are ranked in order from minimum to maximum respiratory protection. **The specific respirator selection must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).**

- o any dust, mist and fume respirator
- o any chemical cartridge respirator with a dust, mist and fume filter
- o any powered air purifying respirator with a dust, mist and fume filter
- o any Type "C" supplied air respirator with a full face piece operated in pressure demand or other positive pressure mode or with a full face piece, helmet or hood operated in continuous flow mode
- o any self contained breathing apparatus with a full face piece operated in pressure demand or other pressure mode

### Accidental Release Measures

Occupational Spill: Contain liquid or sweep up dry material and place in suitable clean, dry container for reclamation or later disposal. Do not flush spilled material into sewer. Keep unnecessary people away.

### Handling and Storage

Observe all federal, state and local regulations when storing or disposing of this substance

Disposal Information: Observe all federal, state and local regulations when disposing of this substance.

## Section 8. First Aid Measures

**Inhalation:** Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Get medical attention.

**Skin Contact:** Remove contaminated clothing and shoes. Wash affected area with soap or mild detergent and large

amounts of water until no evidence of chemical remains (approximately 15 - 20 minutes). Get medical attention.

**Eye Contact:** Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids until no evidence of chemical remains (approximately 15 - 20 minutes). Get medical attention.

**Ingestion:** If vomiting occurs, keep head lower than hips to prevent aspiration. Get medical attention if needed.

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