North Metal and Chemical Company

Sodium Molybdate Dihydrate
Safety Data Sheet

1. Company Identification and Product Hazard Overview:

Product Name: **Sodium Molybdate Dihydrate**

Synonyms: **Disodium Molybdate Dihydrate, Molybdic Acid Disodium Salt**

Recommended Use: Scale deposit and corrosion inhibitor, tracer in water treatments, micronutrient in fertilizers/food and medicine supplements, pigment agent, laboratory reagent.

Manufactured by:

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In Case of Emergency Call CHEMTREC (24 Hours): 1-800-424-9300

2. Hazard Identification:

GHS Classification: **Acute Toxicity—Dust Inhalation Category 4**

Signal Word: **WARNING**

Pictogram:

Hazard Statements: **Harmful if inhaled**

Precautionary Statements:

- **P261** : Avoid breathing dust.
- **P271** : Use only outdoors or in a well-ventilated area

Response Statements:

- **P304+P340** : IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
- **P312** : Call a POISON CENTER or doctor if you feel unwell.

Storage: : None

Disposal: : None

Potential Health Effects:

- **Eyes** : May cause eye irritation.
- **Skin** : May cause skin irritation after excessive contact.
- **Inhalation** : May be harmful if inhaled. May cause respiratory tract irritation.
- **Ingestion** : May be harmful if swallowed. May result in stomach discomfort. Do not swallow.

3. Composition/Information on Ingredient:

Common Name: **Sodium Molybdate Dihydrate**

CAS Number: **10102-40-6**

Chemical Formula: **$Na_2MoO_4 \times 2H_2O$**

EC Number: **231-551-7**

4. First Aid Measures:

Eyes : Flush eyes with running water for at least fifteen minutes. Remove any contact lenses. If irritation persists, get medical aid.

Skin : Flush skin with running water for fifteen minutes. If irritation persists, get medical attention.

Ingestion : Rinse mouth out and drink a glass of water. If the product is swallowed, do not induce vomiting.

Inhalation : If safe to do so**,** remove individual from further exposure. Supply fresh air. If cough or other symptoms develop, call doctor/poison center immediately.

PPE first responders : Dust mask, gloves and safety goggles are highly recommended.

5. Fire Fighting Measures:

Fire/Explosion Hazard : Negligible fire hazard when exposed to flame.

Extinguishing Media : Use any extinguishing media suitable for type of surrounding fire.

General Hazard : Evacuate personnel downwind in-order to avoid inhalation of irritating and/or harmful fumes and smoke.

Fire Fighting Procedures : This product is a non-flammable substance. No acute hazard.

Fire Fighting Equipment : Full protective equipment (bunker gear) and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. If possible, firefighters should control run-off water to prevent environmental contamination.

6. Accidental Release Measures:

Protective Gear for Personnel: : Gloves and dust mask.

Spill Clean-up Procedures: : Sweep up and dispose according to state, federal, and local non-hazardous waste laws and regulations. Do not let waste enter the environment.

Environmental Precaution: : Do not allow to enter sewers or ground water, or penetrate the soil.

7. Handling and Storage:

Handling : Use appropriate personal protective equipment as specified in Section 8. Handle in a well-ventilated area. Handle in a manner consistent with good industrial/manufacturing techniques and practices. Wash hands thoroughly with soap and water after use. Remove contaminated clothing and protective equipment before entering eating areas.

Storage : Store in a cool, dry well-ventilated area. Keep containers closed when not in use. Observe all federal, state and local regulations when storing or disposing of this substance.

8. Exposure Controls and Personal Protection:

Exposure Limits : Soluble Molybdenum

5 mg/m^3 OSHA TWA
5 mg/m^3 ACGIH TWA
5 mg/m^3 DFG MAK TWA (total dust)
50 mg/m^3 DFG MAK 30 minimum peak, average value, 1 time/shift

Exposure Controls : **Sodium Molybdate is not classified as a hazardous substance.** High airborne dust concentrations require mechanical ventilation or a respirator mask.

Engineering Controls : Use appropriate engineering controls to minimize exposure to dust generated via routine use. Maintain adequate ventilation of workplace and storage areas.

Personal Protective Equipment : **Eyes and face:** Wear safety glasses with side shields or goggles when handling this material.
Skin: Wear protective clothing when handling this product to prevent prolonged skin contact.
Respiratory: Avoid breathing dust or mist. Use NIOSH approved respiratory protection equipment when air borne exposure is excessive.

Work Hygienic Practices : Facilities storing or using this material should be equipped with emergency eyewash, and a safety shower. Good personal hygiene practices should always be followed.

9. Chemical and Physical Properties:

Appearance/Color	: White opaque powder	**Vapor Density**	: Not applicable
Odor	: Odorless	**Partition Coefficient**	: Not applicable
Odor threshold	: Not applicable	**Solubility**	: Soluble in water (840g/L at 20 °C)
Flash Point	: Not applicable	**pH (neat)**	: 7.0 - 10.0
Evaporation Rate	: Not applicable at ambient conditions	**Melting Point**	: 687 °C
Lower Explosive Limit	: Not explosive	**Freezing Point**	: -4 °C
Upper Explosive Limit	: Not explosive	**Boiling Range**	: Not applicable
Auto-ignition Temp	: Not applicable	**Molecular Weight**	: 241.948
Decomposition Temp	: 100°C	**Flammability**	: Not flammable
Vapor Pressure	: Negligible	**Relative Density**	: 3.28 at 20 °C

10. Stability and Reactivity:

Stability : The product is stable under normal ambient conditions of temperature and pressure.

Hazardous Decomposition Products : Thermal decomposition may include toxic sodium oxide.

Incompatible Materials : None identified.

Conditions to Avoid : Avoid exposure to extreme temperatures, contact with incompatible chemicals, uncontrolled contact with accelerants. Sodium Molybdate will explode on contact with molten magnesium. Its reaction with hot potassium, sodium, or lithium is incandescent. It is incompatible with oxidizing agents and alkali metals. Sodium Molybdate with will violently react with interhalogens (e.g., bromine pentafluoride; chlorine trifluoride).

11. Toxicological Information:

Toxicity Data : LD_{50} oral, rat 4233 mg/kg

LD_{50} dermal, rat >2,000 mg/kg

LD_{50} intraperitoneal, rat 520 mg/kg

LD_{50} intraperitoneal, mouse 257 mg/kg

LC_{50} inhalation, rat, 4h, 2080 mg/m^3

Carcinogen Status : None

Acute Toxicity Level : Low acute toxicity by ingestion. Irritant, gastrointestinal.

Target Organs : Lungs, spleen, heart.

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

Mutagenic Data : Phange inhibition capacity - Escherichia coli 16 mmol/L; sex chromosome Loss and non disjunction - Saccharomyces cerevisae 80 mmol/L

Reproductive Effects Data:16474 ug/kg intratesticular - 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.

Chronic Exposure: Chronic exposure of workmen in a molybdenum-copper plant produced liver dysfunction with hyperbilirubinemia. Similar hepatotoxic effects were found in animals given molybdenum salts.

SKIN CONTACT

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.

Chronic Exposure: Prolonged contact with dry skin may cause irritation. Among chemists handling 4 molybdenum and tungsten solutions, there was a high incidence of gout**.**

11. Toxicological Information continued:

EYE CONTACT
Acute Exposure: May cause irritation. A 20% solution applied to animal eyes caused conjunctivitis with discharge, but no irritation to the cornea and iris.
Chronic Exposure: No data available.
INGESTION
Acute Exposure: Large doses may cause cramping, vomiting and hypertension. With lethal doses of molybdenum compounds, death was preceded by lethargy and coma.
Chronic Exposure: 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, diarrhea and reduced growth rate. Animals on high dietary levels of molybdenum showed anemia and deformities of the joints of the extremities.

12. Ecological Information:

Sodium Molybdate is used as a micronutrient for plants and animals. Excess molybdenum in some animals may result in a molybdenum induced copper deficiency known as molybdenosis. A lack of molybdenum in humans is known to contribute to gastro-intestinal cancers. A healthy balance of copper and molybdenum in a diet includes approximately 30% more Copper than Molybdeum.

All work practices must be aimed at eliminating environmental contamination.

ERMA Classifications	**:** 61.E
Terrestrial Ecotoxicity	**:** This material may be harmful or fatal to contaminated plants or animals, especially if large volumes are released into the environments.
Aquatic Ecotoxicity	**:** >79800 µg/L 96 hour LC50 (Mortality) striped bass (Morone saxatilis).
Invertebrate Toxicity	**:** 2650000 µg/L 96 week EC50 (Immobilization) amphipod (Crangonyx pseudogracilis).
Algal Toxicity	**:** 960000 µg/L 48 week (Cytogenetic) flagellate euglenoid (Euglena gracilis).
Reptile Toxicity	**:** 960 µg/L 7 day LC50 (Mortality) narrow mouthed frog (Microhyla carolinensis).
Mobility in Soil	**:** No data available.

13. Disposal Considerations:

Disposal Method	**:** Dispose of waste at an appropriate waste disposal facility according to current applicable laws and regulations.
Product Disposal	**:** Recycle or reuse whenever possible. Uncontaminated waste may be returned to the manufacturer. Dispose of any contaminated waste product as non-hazardous waste, unless contamination is hazardous in nature.
Packaging Disposal	**:** Dispose of at a supervised incineration facility or an appropriate waste disposal facility.

14. Transport Information:

Shipping Name	**:** Not D.O.T regulated
Hazard Class	**:** Not Dangerous for Transport
UN Number	**:** None

15. Regulatory Information:

U.S. Federal Regulations:

TSCA Inventory Status : All components of this product are listed on the TSCA inventory.

TSCA 12b Export Notification : Not listed.

EINECS listed: 231-551-7

CERCLA Section 103: No

SARA TITLE III (EPCRA) Section 302/304: This product was not found to be on the hazardous chemicals list.

SARA TITLE III (EPCRA) Section 311/312: This product was not found to be on the acute hazard, chronic hazard, fire hazard, or reactivity hazard chemicals lists.

California Proposition 65: This product is not listed.

OSHA process Safety (29CFR1910.119): This product is not listed.

Canadian Domestic Substance List: WHMIS Class D—Division 2B

16. Other Information:

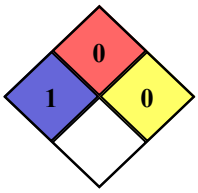
HMIS Rating:*

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	D

***HMIS Key:**

HEALTH -1 Can cause irritation or minor reversible injury.
FLAMMABILITY 0- Will not burn
PHYSICAL HAZARD 0—Product stable under ambient temperature and condition.
PERSONAL PROTECTION D —Face shield, gloves, and apron

NFPA Rating:*



***NFPA Key:**

HEALTH -1 Can cause significant irritation
FLAMMABILITY 0- Will not burn
REACTIVITY 0—Normally stable
SPECIFIC HAZARD —None

Revision Date: July 24, 2014

Reasons for Revision : Add necessary data to meet GHS requirements.

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