Safety Data Sheet

Section 1 Identification of the Substance/Preparation

(1.1)
Product name: Sod Moly 39.6% Sodium Molybdate
Chemical formula: $Na_2MoO_4.2H_2O$
(1.2)
Other Names: Sodium molybdate dihydrate; disodium molybdate dihydrate; sodium molybdate;
Index No. (Regulation (EC) No 1272/2008): None, not currently classified.
CAS No.: 10102-40-6 (7631-95-0 for the anhydrous Na_2MoO_4)
EC No.: 231-551-7 (assumed to cover both dihydrate and anhydrous form)

(1.2.1)
Product Use: A micro-nutrient in manufacture and use of fertilizers; an animal feed micro-nutrient additive; industrial detergent for metal surface treatment; cleaning & maintenance material; manufacture & use of water treatments chemicals.

Manufactured For
FERTILIZER COMPANY OF ARIZONA, INC.
2850 S. Peart Road
Casa Grande, AZ 85193

Emergency Phone Numbers Emergency
Telephone: CHEMTREC (24 Hours) 1-800-424-3900
EPA National Response Center: (800) 424-8802

Section 2 Hazards Identification

(2.1)
EU Regulation (EC) No. 1272/2008 [CLP]
(2.1.1)
EU Classification [Regulation (EC) No. 1272/2008 (CLP/GHS)]: None published in EU CLP
(2.2)
EU Label Elements - (EC) No. 1272/2008 (CLP/GHS):
Pictogram(s): EU – None / UN's GHS CLP – None

Signal Word: EU – None / UN's GHS CLP – None
Hazard Statement(s): EU – None / UN's GHS CLP – None
Precautionary: EU – None / GHS CLP see following
P260 Do not breathe dust/fume
P264 Wash skin thoroughly after handling
Storage: None indicated
Disposal: None indicated

Prevention: Use personal protective equipment as required. Wear respiratory protection. See your supervisor.
Response: If overly exposed or concerned, get medical advice/attention. Immediately call a poison center or doctor/physician. Wash contaminated clothing before reuse.
Storage: Keep container tightly closed.

(2.3)
Other Hazards: The substance does not meet the criteria for a PBT or vPvB substance. No environmental or physico-chemical hazards identified.

Section 3 Composition

(3.1)

Name	/ CAS No.	/ EC No.	/ Index No.	/ Percentage
Disodium molybdate dihydrate $Na_2MoO_4 \cdot 2H_2O$	10102-40-6	231-551-7	Not Listed	100

Classified impurities: None.

Section 4 First aid Measures

Note: Following generic first aid measures should be applied as usual when handling any chemical substance.

(4.1)
General Advice: First-aid responders should wear suitable personal protective equipment in case of insufficient ventilation or possible inhalation or eye contact.
If Excessive Inhalation: Remove patient from exposure and bring to fresh air. If breathing has stopped, perform artificial respiration and get medical advice/attention immediately.
If Excessive Skin Contact: Wash skin with water and soap, and rinse thoroughly. If skin irritation occurs, get medical advice/attention.
If Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water, occasionally lifting upper and lower eyelids, for several minutes. Seek medical advice/attention.
If Ingested: Seek medical advice/attention if feeling unwell.

(4.2 & 4.3)
Notes to Physician: Acute or delayed effects, not anticipated for sodium molybdate. No specific treatment expected to be required.

Section 5 Fire-fighting Measures

Note: Sodium molybdate is not flammable/combustible and it does not support fire (no oxidizing properties). Nevertheless, below are given some general fire fighting measures, which should be adjusted to the surroundings (e.g. other, hazardous chemicals involved, concerned packaging materials...).

(5.1.1)
Extinguishing Media: Use standard extinguishing media such as water, sand, or foam. Use fire fighting measures that suit the location and surroundings.

(5.1.2)
Media not to use: None prohibited.

(5.2)
Special Hazards: None

(5.3)
Fire Fighting: Standard extinguishing media such as water, sand, foam. Use fire fighting measures that suit the location and surroundings. Sodium molybdate is not considered flammable or combustible.

(5.3.1)
Fire/Explosion Hazard: Non-combustible or no significant fire risk.

(5.3.2)
Fire Incompatibility: None

(5.4)
Additional Information - PPG/PPE: Use fire fighters bulker gear or turnout gear. (**See Section 8 of the SDS for PPG/PPE advice.)**

Section 6 Accidental Release Measures

Note: Following generic accidental release measures should be applied as usual when handling any chemical substance.

(6.1)
Personal precautions, protective equipment and emergency procedures

(6.1.1)
For non-emergency personnel: Avoid excessive dust generation and dust inhalation. Seek to ensure ventilation that maintains airborne concentrations below the Occupational Exposure Limits. Keep unprotected persons away. Although the substance has low acute toxicity, it is advised to avoid contact with skin, eyes, and clothing. Wear suitable personal protective gear.

(6.1.2)
For emergency responders: Avoid excessive dust generation and dust inhalation. Seek to ensure ventilation that maintains airborne concentrations below Occupational Exposure Limits. Keep unprotected persons away. Although the substance has low acute toxicity, it is advised to avoid contact with skin, eyes, and clothing. Wear suitable personal protective gear.

(6.2)
Environmental precautions: Although the substance is not classified as dangerous to the environment, it is advised that in the event of an accidental release the product should be prevented from reaching the sewage system or any waterway, and from penetrating the ground/soil. Dispose of spilled material in accordance with the relevant local regulations. See Section 13 for disposal considerations.

(6.3)
Methods and material for containment and clean-up: Avoid excessive formation and inhalation of dust. Use an appropriate industrial vacuum cleaner, equipped with ULPA or HEPA filters. Collect spilled material in suitable containers or bags for recovery or disposal. In the case of disposal, spilled material or contaminated material should be disposed of as waste as described in Section 13.

(6.4)
Reference to other sections: For more information on exposure controls/personal protection or disposal considerations, check both sections 8 and 13 of this Safety Data Sheet.

Section 7 Handling and Storage

Note: The following generic advice on handling and storage should be followed as for any chemical substance.

(7.1)
Procedure for Safe Handling

(7.1.1)
Protective measures: Avoid ingesting or inhaling excessive dust. As a precautionary occupational hygiene measure, wear gloves, long sleeved overalls and closed footwear that is designed to minimize skin contact. General occupational hygiene practice should always be followed (see Section 7.1.2 below).

(7.1.2)
Advice on general occupational hygiene: Avoid inhaling or ingesting excessive dust. Use general occupational hygiene measures to ensure safe handling of the substance. These measures involve good personal hygiene and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no eating, drinking and smoking in the workplace and wearing standard working clothes and shoes unless otherwise stated. Wash hands after excessive contact with this dust. As a good hygiene

practice, remove contaminated clothing and protective equipment before entering eating areas. Shower and change clothes at end of work shift. Do not wear contaminated clothing home. Do not blow dust off with compressed air.

(7.2)
Suitable Container: Store in a dry well-ventilated area. Do not store in mislabelled or open and inadequate containers.

(7.3)
Specific end use: Check identified uses in Section 1.2 of this Safety Data Sheet.

Section 8 Exposure Controls / Personal Protection

(8.1)
Control Parameters - US OSHA PEL control parameter for sodium molybdate is an 8-hour TWA of 5.0 mg/m³ soluble Molybdenum. This is only one of many country control limits that are in use worldwide but not the most restrictive. It is recommended that you consider as a control measure the OEL for your locality. Additional country and agency control limits are in Section 16.7 other information. The appropriate collection method is also country OEL related and you must follow the local country's protocols on collection and analysis which change from time to time and may not be codified.

(8.1.2)
PNECs and DNELs

Exposure pattern	Route	Descriptor	DNEL / PNEC
Long-term - systemic effects	Inhalation	DNEL	11.17 mg Mo/m³ - Note: derived for formal reasons in the REACH registration dossier; based on mass molybdenum per m³. Usually superseded by lower occupational exposure limits for (soluble) molybdenum compounds or general dust limits.
Long-term - chronic effects	Freshwater	PNEC (Predicted No Effect Concentration)	12.7 mg Mo/L, equivalent to 32 mg Na_2MoO_4*2 H_2O/L
Long-term - chronic effects	Marine	PNEC	1.9 mg Mo/L, equivalent to 4.8 mg Na_2MoO_4*2 H_2O/L
Long-term - chronic effects	Freshwater sediment	PNEC	22.6 g Mo/kg dw, equivalent to 57 g Na_2MoO_4*2 H_2O/kg dw
Long-term - chronic effects	Marine sediment	PNEC	1.98 g Mo/kg dw, equivalent to 5 g Na_2MoO_4*2 H_2O/kg dw
Long-term - chronic effects	Soil	PNEC	11.8-188 mg Mo/L, equivalent to 29.8 - 474 mg Na_2MoO_4·2 H_2O/ kg dw (dependent upon soil type)
Long-term – chronic effects	STP (sewer treatment plant)	PNEC	27.1 mg Mo/L, equivalent to 68.3 mg Na_2MoO_4*2 H_2O/L

Note: Also, see http://www.dguv.de/ifa/en/gestis/dnel/index.jsp.

(8.2)
Exposure Controls: Sodium molybdate is not classified as a hazardous substance and no substance-specific toxicological or eco-toxicological hazards are expected. In consequence, no specific exposure controls are applicable to sodium molybdate, other than good hygiene practice and adherence to national and regional provisions with regards to exposure to dusts in the workplace and with regard to air emissions.

(8.2.1)
Engineering Controls: Provide local exhaust ventilation as needed according to uses in Annex I. If risk of overexposure exists to acid mist, then wear approved respirator for acid gases.

(8.2.2)
PPE/PPG protection and selection (4)

(8.2.2.1)
Eye and Face: Use safety glasses with side shields; or as required, chemical goggles. Contact lenses may pose a special hazard (5); soft contact lenses may concentrate irritants. A written policy document, describing the wearing of contact lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and past injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lenses should be removed at the first signs of eye redness or irritation - lenses should be removed in a clean environment only after workers

have washed hands thoroughly. Where there is a high potential for eye contact, an eyewash station/unit should be readily available within a 10-second walk. To avoid eye and face contact, use a full-face shield (20 cm, 8 inch minimum) but never use as primary eye protection. Alternatively, a full-face respirator may replace both eye glasses and face shields. (4)

(8.2.2.2)
Skin, Hand and Feet: Sodium molybdate may cause slight skin irritation over a prolonged time. Wear ordinary cloth or leather work gloves with proper material weight or thickness that is suitable for each task type. For foot, use good quality safety shoes or boots approved by local code.
Other: Use overalls with cloth apron for light duty. Use a disposable protective suit if there is a high potential for skin contact.

(8.2.2.3)
Respirator: Use with the appropriate dust respirator. (4)

The following respirator types are acceptable for use up to the following concentrations, based on the US OSHA PEL.
Airborne concentration up to 50 mg/m3:
(APF=10) Half-mask air-purifying respirator with N95, R95, P95, N100, R100, or P100 particulate filter
Airborne concentration up to 125 mg/m3
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode.
(APF = 25) Any powered, air-purifying respirator with N100, R100, or P100 particulate filter
Airborne concentration up to 250 mg/m3
(APF = 50) Full-facepiece air-purifying respirator with N100, R100, or P100 particulate filter.
(APF = 50) Any self-contained breathing apparatus with a full facepiece.
(APF = 50) Any supplied-air respirator with a full-face piece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode.
(APF = 10,000) Any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.
Escape
Any appropriate escape-type self-contained breathing apparatus or escape-type air-purifying respirator

Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres; use a supplied air respirator if oxygen-deficient**.**

(8.2.2.4)
Thermal Hazards: None

Section 9 Physical and Chemical Properties

(9.1)
Appearance: Solid, crystalline, colourless to white, odourless, inorganic

(9.2)
Physical Properties: Granular powder, white crystalline powder.

(9.3)

Odor:	odorless.
Odor threshold:	Not applicable
pH (1% solution):	Not applicable, 9-10 (5% soln.)
pH (as supplied):	Not applicable
Melting Point (ºC):	dihydrate decomposes at 100°C; anhydrate melts at 687ºC.
Boiling Range (ºC):	Not available
Flash Point (ºC):	Not applicable
Evaporation Rate:	Negligible @ STP
Flammability:	Not flammable
Lower Explosive Limit (%):	Not explosive
Upper Explosive Limit (%):	Not explosive
Vapor pressure (kPa):	Low to negligible

Vapor density:	Not applicable
Relative density:	2.59 at 20°C
Solubility in water (g/L):	654 g/L at 20°C
Partition Coefficient:	Not applicable
Auto-ignition temp (ºC):	Not applicable
Decomposition temp (ºC):	Dihydrate decomposes at 100ºC.
Viscosity:	Not available
Explosive properties:	Non explosive
Oxidizing properties:	Not oxidizing.

(9.3.1)

Other information

Molecular Weight: 205.92 anhydrous
n-Octanol/H_2O (log Po/w): Not applicable
Specific Gravity (water=1): 3.28
Volatile Component (%vol.): Not available

Section 10 Chemical Stability and Reactivity Information

(10.1)
Reactivity: Since sodium molybdate contains sodium and molybdenum in oxidized form (oxidation states +I and +VI respectively), reactions with strong reducing agents may be expected.

(10.2)
Chemical Stability: Sodium molybdate is stable under normal STP use and storage. Since sodium molybdate contains the metals sodium and molybdenum in oxidised form (oxidation states +I and +VI respectively), reactions with strong reducing agents may be expected.

(10.3)
Conditions Contributing to Instability: No specific hazardous reactions identified.

(10.4)
Conditions to Avoid: Avoid excessive dust generation. No other specific conditions have been identified.

(10.5)
Incompatible materials: No specific material has been identified. Since sodium molybdate contains the metals sodium and molybdenum in oxidized form (oxidation states +I and +VI respectively), reactions with strong reducing agents may be expected.

(10.6)
Hazardous decomposition products: No hazardous decomposition products have been identified.

Section 11 Toxicological Information

(11.1)
Information on toxicological effects: The information provided in this section is consistent with the information provided in the REACH Chemical Safety Report (CSR) for sodium molybdate. Further information can be obtained from the REACH Molybdenum Consortium, an initiative of the International Molybdenum Association (IMOA). For contact details, please refer to Section 16 of this SDS.

Toxicity endpoints	Description of effects
Toxicokinetics: Absorption, Distribution, Metabolism and Excretion	Molybdenum is an essential element. Up taken sodium molybdate dissolves and exists predominantly in the form of the molybdate ion (MoO_4^{2-}). **Oral absorption**: Rapid and almost complete absorption through GI tract. **Inhalation absorption:** Well absorbed based on animal data. Absorption in humans dependent on particle size, deposition/clearance. **Dermal absorption:** Low to negligible. **Metabolism:** No metabolism. Molybdenum compounds transform quickly to molybdate anions (MoO_4^{2-}) upon dissolution. **Excretion:** Rapidly eliminated from plasma predominantly via renal excretion (>80%), and faeces (<10%).
(a) acute toxicity	Low acute toxicity LD_{50}, oral, rat: between 2733 and 6556 mg/kg bw (male/female). LD_{50}, dermal, rat: > 2000 mg/kg bw (male/female). LC_{50}, inhalation, rat (4h): > 1.93 mg/L (male/female) not relevant for classifying
(b) skin corrosion/irritation	Not irritating / not corrosive to the skin.
(c) serious eye damage/irritation	Not irritant / not corrosive to the eyes.
(d) respiratory or skin sensitization	Sodium molybdate is not sensitising to the skin. There is no data indicating respiratory sensitisation.
(e) germ-cell Mutagenicity	Not a germ cell mutagen. Negative test results, three tests with sodium molybdate for: Bacterial reverse mutation assay, in vitro micronucleus assay in human lymphocytes, and in vitro gene mutation assay (tk) in mouse lymphoma cells.
(f) carcinogenicity	Not a carcinogen. (Read-across for absence of systemic carcinogenicity, based on chronic toxicity and carcinogenicity studies with molybdenum trioxide [38]. Local effects in the lung observed in these molybdenum trioxide studies are specific to molybdenum trioxide and not read-across to sodium molybdate).
(g) reproductive toxicity	There are currently no reliable scientific data available indicating adverse effects on reproduction or fertility.
(h) STOT- single exposure	There are no specific target organ effects after single exposure to sodium molybdate.

(i) STOT- repeated exposure	No reliable scientific data available indicating adverse systemic effects after repeated exposure to molybdenum substances.
(j) aspiration hazard	Not applicable (not an aerosol/mist).

Section 12 Ecological Information

Reliable acute aquatic toxicity test results: (tests conducted with molybdenum trioxide unless otherwise indicated).

Test Organisms	End-point	Range of values	References
Freshwater fish: *Pimephales promelas*	96h-LC_{50}	577 mg Mo/L **(= 865.5 mg MoO_3/L)**	[1]
Invertebrates: *Daphnia magna*	48h-LC_{50}	203.2 mg Mo/L **(= 304.8 mg MoO_3/L)**	[1]
Algae: *Pseudokirchneriella subcapitata*	72h-ErC_{50} (growth rate)	295.0 – 390.9 mg Mo/L 289.2 – 369.6 mg Mo/L Geom. mean: 333.1 mg Mo/L **(= 499.7 mg MoO_3/L)** [(A)]	[2] [3]

[(A)]**:** test conducted with sodium molybdate; UV-spectra of aqueous solutions of molybdenum trioxide demonstrated that the only dissolved molybdenum species, originating directly from molybdenum trioxide is molybdate.
Reference 1: Test conducted according to the methods outlined in OECD test guidelines.
References 2 & 3: Tests conducted in accordance with OECD test guidelines.

Reliable chronic toxicity test results *(*read-across from tests with sodium molybdate; UV-spectra of aqueous solutions of sodium molybdate dihydrate demonstrated that the only dissolved molybdenum species, originating directly from sodium molybdate dihydrate is molybdate):

Test organisms	Range of values (EC_{10} or NOEC)	References
Aquatic freshwater toxicity data		
Oncorhynchus mykiss, Pimephales promelas, Pseudokirchneriella subcapitata, Ceriodaphnia dubia, Daphnia magna, Chironomus riparius, Brachionus calyciflorus, Lymnaea stagnalis, Xenopus laevis, Lemna minor	43.3–241.5 mg Mo/L	[1], [4], [7], [8], [9], [10], [11]
Most sensitive species were the fish *O. mykiss* (43.3 mg Mo/L) and *P. promelas* (60.2 mg Mo/L). Symptoms of toxicity were effects on biomass growth, reproduction, (population) growth rate and malformation during development.		
Aquatic marine toxicity data		
Mytilus edulis, Acartia tonsa, Phaeodactylus tricornutum, Cyprinodon variegatus, Americamysis bahia, Crassostrea gigas, Dendraster excentricus, Dunaliella tertiolecta, Ceramium tenuicorne, Strongylocentrotus purpuratus,	4.4–1,174 mg Mo/L	[12], [13], [14], [15], [16], [17], [18], [19]
Most sensitive species were the mussel *M. edulis* (4.4 mg Mo/L) and the copepod *A. tonsa* (7.96 mg Mo/L). Symptoms of toxicity include effects on biomass growth, growth rate, reproduction and malformation during development		
Chronic sediment toxicity		
No reliable acute/chronic sediment data for molybdenum available. PNEC derivation was based on the equilibrium partitioning method, taking into account the $PNEC_{freshwater}$ and the sediment K_d given in section 12.4.		
Chronic terrestrial toxicity test results (values were determined in different topsoils with contrasting properties and spiked with sodium molybdate):		
Annelid worms: *Enchytraeus crypticus, Eisenia Andrei*	7.88-1661 mg Mo/kg dw (n=11)	[20]
Arthropod: *Folsomia candida*	37.9– >3,395 mg Mo/kg dw	[20]
Plants: *Hordeum vulgare, Brassica napus, Trifolium pratense, Lolium perenne, Lycopersicon esculentum*	4–3,476 mg Mo/kg dw	[21]
Soil micro-organisms (nitrification, glucose-induced respiration, plant residue mineralisation)	10–3,840 mg Mo/kg dw	[22]
Plants are most sensitive, with reduced shoot yield being the most first symptoms of toxicity, followed by reduced reproduction of invertebrates. Toxicity of sodium molybdate dihydrate in soils is dependent on the soil type. Sandy soils (e.g., 5% clay) with low organic carbon content (e.g., 1%), a low iron oxide content (e.g., 0.5 g/kg) and high pH (e.g., 7) are most sensitive, while clay soils (e.g., 30% clay) with high organic carbon content (e.g., 12%), high iron oxide content (e.g., 10 g/kg) and low pH (e.g., 4.5) are least sensitive.		

Tests were conducted according to international test guidelines (e.g., OECD, ASTM, ISO, EPA).

Toxicity data for micro-organisms (for STP) *(values were determined using MoO_3 unless indicated otherwise):*

Test Organisms	End-point	Range of values	References
Domestic activated sludge population	3h-EC_{50} (respiration inhibition)	1,926 mg Mo/L **(= 2,889 mg MoO_3/L)**	[20]
Domestic activated sludge population	3h-EC_{50} (respiration inhibition)	216.5 mg Mo/L **(= 324.8 mg MoO_3/L)**	[20]
Domestic activated sludge population	30 min-NOEC (O_2 utilization)	> 950 mg Mo/L **(= >1,425 mg MoO_3/L)** [(a)]	[21]

[(a)]: test conducted with sodium molybdate

Note - Tests were conducted according to international accepted test guidelines or scientifically acceptable methods.

Conclusion on the environmental classification and labelling

Sodium molybdate is not hazardous to the aquatic environment as:

- The lowest acute reference values for fish, invertebrates and algae are > 100 mg Mo/L
- The lowest aquatic NOEC for these three trophic levels is > 1 mg mo/L (i.e., 43. 2 mg Mo/L for the rainbow trout)
- There is no evidence for bioaccumulation or bio-magnification in the environment

(12.2)
Persistence and degradability: Sodium molybdate – when released into the environment - will rapidly dissolve and will be present as the molybdate species under normal environmental conditions.

(12.3)
Bioaccumulation potential: Available BCF/BAF data for the aquatic environment show a distinct inverse relationship with the exposure concentration. This finding demonstrates that molybdenum is homeostatically controlled by these organisms and this up to the milligram range of exposure. Available information on transfer of molybdenum through the food chain indicates that molybdenum does not bio-magnify in aquatic food chains. Although not homeostatically controlled in terrestrial plants and invertebrates, molybdenum is not largely concentrated from soil into plants, or soil to invertebrates. There is no significant concentration increase from diet to mammals or birds. It is concluded that bio-magnification is not significant in the terrestrial food-chain.

(12.4)
Mobility: Molybdate originating from sodium molybdate is soluble in water and with its relatively low Kd value, the molybdate ions are leachable through normal soil and are mobile in sediment. Typical log Kd-values of 3.25 and 2.94 have been determined for sediment and soil, respectively.

(12.5)
PBT and vPvB assessment: The PBT and vPvB criteria of “Annex XIII to the Regulation” do not apply to inorganic substances, such as sodium molybdate. Therefore a PBT and vPvB assessment is not required.

(12.6)
Other Adverse Effects: Molybdate originating from sodium molybdate can contribute to the onset of molybdenosis (which is a molybdenum-induced copper deficiency) in ruminants such as cattle, deer, and sheep. The level and bio-availability of copper in the animal diet are critical factors in the onset of molybdenosis. The recommended minimum dietary Cu : Mo ratio threshold to prevent molybdenosis is 1.30, i.e. there should be 30% more copper than molybdenum in the diet. Cu & Mo content in the diet can be monitored, and if the ratio is < 1.3 then provide Cu supplements such as copper sulphate enriched feeds or copper sulphate enriched salt blocks for ruminants to use ad libitum. If there are ruminants in the vicinity of the plant, identify direct and diffuse air emission sources at the plant and carry out and record emission minimization measures. Have an animal health check program in place (e.g. blood tests for copper) to verify that the measures are effective.

Conversely, a lack of dietary molybdenum in the human population may increase oesophageal cancer and gastro-intestinal cancer. Sodium molybdate is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

Section 13 Disposal Considerations

(13.1)
Waste Treatment methods: (EU) According to the European Waste Catalogue, waste codes are not product specific but application specific. Waste codes should be assigned by the user based on the application in which the product is used. Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to local laws and regulations operating in their area.

(13.1.1)
Product/Packaging disposal: Containers may still present a chemical hazard or danger when empty. If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, and then puncture containers, to prevent re-use, and bury at an authorized landfill.

(13.1.2)
Waste treatment-relevant information: Before disposing, try to reuse or recycling if possible. Where possible retain label warnings and SDS and observe all notices pertaining to the product. User should investigate reduction as a method. Do not allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. Disposal to a sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 Transportation Information

Note: Data in this section is voluntarily in the U.S.A. but may be required in the EU and/or other countries.

Regulation (abbreviation)	**Regulation** (title)	**Sodium molybdate transport classification**
ADR	European Agreement concerning the International Carriage of Dangerous Goods by **Road**	None
RID	Regulations concerning the International Carriage of Dangerous Goods by **Rail**	None
ADN	European Agreement concerning the International Carriage of Dangerous Goods by **Inland Waterways**	None
IMDG	International **Maritime** Dangerous Goods	None
IATA	Technical Instructions for the Safe Transport of Dangerous Goods by **Air**	None

(14.1)
UN number: Not Dangerous for Transport

(14.2)
UN proper shipping name: Not Dangerous for Transport

(14.3)
Transport hazard class(es): Not Dangerous for Transport

(14.4)
Packing group: Not Dangerous for Transport

(14.5)
Environmental hazards: Not Dangerous for Transport

(14.6)
Special precautions for user: Not Dangerous for Transport

(14.7)
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not Dangerous for Transport

Section 15 Regulatory Information

Note: Data in this section is voluntarily in the U.S.A. but may be required in the EU and/or other countries.

(15.1)
Safety, Health and Environmental regulations/legislation specific for the substance or mixture:

(15.1.1)
Worldwide Chemical Inventories: Sodium molybdate is listed in the following international chemical inventories: See section 16.7.3 for most complete list as of December 2011.
Sodium molybdate is not a SEVESO substance, not an ozone-depleting substance and not a persistent organic pollutant.

(15.1.2)
Other regulatory information:

Imports to EU - None

US Federal

RCRA: Not listed.
Clean Air Act: Not listed.
Clean Water Act: This product is not identified in 40 CFR § 116.4, but in contact with water could dissociate into compounds listed in 40 CFR § 116.4.
Safe Drinking Water Act: This product could contain minor impurities, such as chromium, for which there are Maximum Concentration Limits established. See 40 CFR § 141.62.
EPCRA, SARA Title III, Section 313 (chemicals subject to reporting requirements, see Section II for CAS number and percentage in mixture: Section 312 reporting may be required for this product, depending on the quantity stored on-site.
CERCLA Hazardous Substances: CERCLA reporting for releases into the environment may be required in the event of thermal decomposition.
DOT: See Section 14 Transport Information

U.S. Federal Regulations

TSCA Inventory Status:	YES, dihydrate exemption
TSCA 12(b) Export Notification:	Not listed
CERCLA Section 103 (40 CFR 302.4):	N
SARA Section 302 (40 CFR 355.30):	N
SARA Section 304 (40 CFR 355.40):	N
SARA Section 313 (40 CFR 372.65):	N
OSHA Process Safety (29 CFR 1910.119):	N
SARA Hazard Categories, SARA Sections 311/312 (40 CFR 370.21)	
Acute Hazard:	N
Chronic Hazard:	N
Fire Hazard:	N
Reactivity Hazard:	N
Sudden Release Hazard:	N

U.S. State Regulations: Not on California Proposition 65 list. Does not contain any contaminants or by-products known to the State of California to cause cancer or reproductive toxicity.

(15.2)
Chemical safety assessment: A Chemical Safety Assessment has been carried out by the Molybdenum Consortium for its members in the context of the REACH registration. For contact details, see Section 16.

Section 16 Other Information

(16.1.1)
Creation Date: April 2019
Previous Version: December 2011

OSHA Standards - 29 CFR:
1910.132 - Personal Protective Equipment - General requirements
1910.133 - Eye and face protection
1910.134 - Respiratory Protection; must be NIOSH approved.
1910.136 - Occupational foot protection
1910.138 - Hand Protection
ANSI
Eye and face protection - ANSI Z87.1
Foot protection - ANSI Z41

[48] Reserved

(16.4)

Classification procedure for mixtures: Sodium molybdate is a pure substance.

(16.5)

H-statements: Embedded in document.

(16.6)

Advice on any training appropriate for workers to ensure protection of human health and the environment: Use this SDS as a Hazard Communication tool and provide training to assist in your risk assessment. Be mindful that many factors determine whether the reported hazards are risks in the workplace or other settings. Before handling sodium molybdate workers should receive appropriate training about safe handling conditions as described in this SDS or attachments.

(16.7)

US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Wisconsin Control of Hazardous Pollutants - Emission Thresholds, Standards and Control Requirements (Hazardous Air Contaminants)
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US ACGIH Threshold Limit Values (TLV)
US ACGIH Threshold Limit Values (TLV) – Carcinogens
US DOE Temporary Emergency Exposure Limits (TEELs)
US NIOSH Recommended Exposure Limits (RELs)
US OSHA Permissible Exposure Levels (PELs) - Table Z1
US Toxic Substances Control Act (**TSCA**) - Chemical Substance Inventory"

(16.7.5)

REACH Statement and Point of Contact Information

Climax Molybdenum has pre-registered and registered this substance as required by the European Union's Registration, Evaluation, Authorization, and Restriction of Chemicals regulation, EC 1907/2006 (REACH). Additional registration information is available upon request. Any REACH-related inquiries regarding this substance should be directed to climax@fmi.com.

(16.7.6)

Disclaimer

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