


SAFETY DATA SHEET

GHS
United States
English (US)

Section 1. Identification

Product identifier	MOLYVAN® L
Product code	29105
Chemical identity	Molybdenum, bis {O,O-bis (2-ethylhexyl) phosphorodithioate-S,S'}dioxodi-u-thioxodi
Other means of identification	Molybdenum di(2-ethylhexyl)phosphorodithioate in petroleum process oil.
Product type	Liquid.
Material uses	Friction Reducer
Supplier/Manufacturer	Vanderbilt Chemicals, LLC 30 Winfield Street Norwalk, CT 06855 1-203-853-1400
Emergency telephone number	Chemtrec: 1-800-424-9300 Outside US: +1-703-527-3887

Section 2. Hazard(s) identification

OSHA/HCS status	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	SKIN IRRITATION - Category 2 SKIN SENSITIZATION - Category 1B
GHS label elements	
Hazard pictograms	
Signal word	Warning
Hazard statements	Causes skin irritation. May cause an allergic skin reaction.
Precautionary statements	
Prevention	Wear protective gloves. Avoid breathing vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.
Response	IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
Storage	Not applicable.
Disposal	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	None known.

Section 3. Composition and ingredient information

Substance/mixture	Mixture
Chemical identity	Molybdenum, bis {O,O-bis (2-ethylhexyl) phosphorodithioate-S,S'}dioxodi-u-thioxodi
Other means of identification	Molybdenum di(2-ethylhexyl)phosphorodithioate in petroleum process oil.

Ingredient name	CAS number	% by weight
molybdenum di(2-ethylhexyl)phosphorodithioate	72030-25-2	75
petroleum process oil, <3.0% DMSO extractable material	64742-52-5	25

For Europe, EC number 947-946-9 applies for REACH registration purposes for molybdenum trioxide, reaction products with bis[O,O-bis(2-ethylhexyl)] hydrogen dithiophosphate.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

The total concentration of ingredients in this product, reported or not in this section, is 100%.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	No known significant effects or critical hazards.
Inhalation	No known significant effects or critical hazards.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Ingestion	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Section 4. First aid measures

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	None known.

Specific hazards arising from the chemical

In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products

Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
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Section 6. Accidental release measures

For emergency responders If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls and personal protection

Ingredient name	Exposure limits
<p>molybdenum di(2-ethylhexyl)phosphorodithioate</p> <p>petroleum process oil, <3.0% DMSO extractable material</p>	<p>CAL OSHA PEL (United States, 1/2025) [molybdenum, soluble compounds] TWA 8 hours: 0.5 mg/m³ (as Mo).</p> <p>OSHA PEL (United States, 5/2018) [Molybdenum Soluble compounds] TWA 8 hours: 5 mg/m³ (as Mo).</p> <p>OSHA PEL 1989 (United States, 3/1989) [Molybdenum (as Mo) Soluble compounds] TWA 8 hours: 5 mg/m³ (as Mo). Form: Soluble.</p> <p>ACGIH TLV (United States, 1/2024) [Molybdenum, soluble compounds] A3. TWA 8 hours: 0.5 mg/m³ (as Mo). Form: Respirable fraction.</p> <p>OSHA PEL (United States) TWA: 5 mg/m³.</p> <p>ACGIH TLV (United States) STEL: 10 mg/m³.</p> <p>NIOSH REL (United States, 10/2020) [OIL MIST MINERAL] TWA 10 hours: 5 mg/m³. Form: Mist. STEL 15 minutes: 10 mg/m³. Form: Mist.</p>

Appropriate engineering controls

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Recommended: splash goggles

Skin protection

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: lab coat

Section 8. Exposure controls and personal protection

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Personal protective equipment (Pictograms)



Recommended Personal Protective Equipment (when used in metal working fluid formulations)

Respiratory Protection Statement:

When used in metal working fluid (MWF) formulations where liquid aerosol concentrations ("oil mist") may be generated and detected in accordance with NIOSH analytical method 5524, or any other application where liquid aerosol concentrations may be generated and detected in accordance with NIOSH Method 5026, one of the following types of respirators may be necessary:

- An oil proof (class P) air-purifying, half mask respirator capable to filtering 99.97% of particles 0.3 microns or larger and an organic vapor cartridge when aerosol ("oil mist") concentrations are 5.0 mg/m³ (total particulate mass) or less;
- a supplied-air respirator operated in a continuous-flow mode when aerosol ("oil mist") concentrations are 12.5 mg/m³ (total particulate mass) or less;
- a powered, air-purifying respirator with an oil proof (class P) high-efficiency particulate filter and an organic vapor cartridge when aerosol ("oil mist") concentrations are 12.5 mg/m³ (total particulate mass) or less;
- an air-purifying, full-facepiece respirator with an oil proof (class P) filter capable to filtering 99.97% of particles 0.3 microns or larger and an organic vapor cartridge when aerosol ("oil mist") concentrations are 25.0 mg/m³ (total particulate mass) or less; or
- a supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Appropriate respiratory equipment depends on conditions of work and use. Consult a safety professional for process-specific guidance. Safety procedures should be developed for each intended application.

Dermal Protection Statement:

Hand Protection

When used in metal working fluids, and / or when cleaning up spills, or if there is a risk of splashing, use neoprene, nitrile or butyl rubber gloves to avoid direct skin contact.

Breakthrough time:

Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are considered. Most gloves provide protection for only a limited time before they must be discarded and replaced because they will break through after repeated use. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.

Recommendations on the selection of gloves are as follows:

Continuous contact:

Gloves with a minimum breakthrough time of 240 minutes, or >480 minutes if suitable gloves can be obtained. If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to.

Short-term / splash protection:

Recommended breakthrough times as above.

Section 8. Exposure controls and personal protection

It is recognized that for short-term, transient exposures, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Glove Thickness:

For general applications, gloves with a thickness typically greater than 0.35 mm are recommended.

It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times. Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be considered to ensure selection of the most appropriate glove for the task.

Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:

- Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
- Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Skin and Body

When used in metal working fluids, neoprene, nitrile, or butyl rubber coated aprons and/or impervious neoprene, nitrile, or butyl rubber coated suits and boots should be used.

Breakthrough time:

Breakthrough time data are generated by protective clothing manufacturers under laboratory test conditions and represent how long a garment can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are considered. Most protective clothing provides protection for only a limited time before it must be discarded and replaced because it will break down after repeated chemical exposures. Always consult with your protective clothing supplier for up-to-date technical information on breakthrough times for the recommended protective clothing type.

Recommendations on the selection of protective clothing are as follows:

Continuous contact:

Protective clothing with a minimum breakthrough time of 240 minutes, or >480 minutes if suitable clothing can be obtained. If suitable clothing is not available to offer that level of protection, clothing with shorter breakthrough times may be acceptable as long as appropriate clothing maintenance and replacement regimes are determined and adhered to.

Short-term / splash protection:

Recommended breakthrough times as above.

It is recognized that for short-term, transient exposures, clothing with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Clothing Thickness:

For general applications, clothing with a thickness typically greater than 0.35 mm is recommended.

Clothing thickness is not necessarily a good predictor of clothing resistance to a specific chemical, as the permeation efficiency of the clothing will be dependent on the composition of the material. Selection should also be based on consideration of the task and knowledge of breakthrough times. Thickness may also vary depending on the manufacturer, type and model. The manufacturers' technical data should always be considered to ensure selection of the most appropriate clothing for the task.

Note: Depending on the activity being conducted, clothing of varying thickness may be required for specific tasks. For example:

- Thinner clothing (down to 0.1 mm or less) may be required where a high degree of mobility is needed. However, these types of clothing are only likely to give short duration protection and would normally be just for single use applications, then disposed of.

Section 8. Exposure controls and personal protection

- Thicker clothing (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Refer to the follow standards for further information:

- Respiratory protection: EN 529
- Gloves: EN 420, EN 374
- Eye protection: EN 166
- Filtering half-mask: EN 149
- Filtering half-mask with valve: EN 405
- Half-mask: EN 140 plus filter
- Full-face mask: EN 136 plus filter
- Particulate filters: EN 143
- Gas/combined filters: EN 14387

Eye / Face Protection Statement:

When used in metal working fluids, and / or when cleaning up spills, or if there is a risk of splashing, use safety glasses with side shields or splash resistant goggles.

General Information:

Specific work environments and material handling practices may vary. Safety procedures should be developed for each application. The correct choice of personal protective equipment (PPE) depends upon the chemicals being handled, and the conditions of work and use.

Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organization for standards.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Engineering Controls:

When used in metal working fluids, or any other application where liquid aerosol concentrations ("oil mist") may be generated, provide local exhaust ventilation or other engineering controls to keep the liquid aerosol concentrations ("oil mist") below applicable occupational exposure limits.

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated.

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Color	Green. [Dark]
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	Not available.
Flash point	Closed cup: 139°C (282.2°F) [Pensky-Martens]
Burning time	Not applicable.
Burning rate	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Lower and upper explosive (flammable) limits	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Density	1.08 g/cm ³
Relative density	1.08
Solubility(ies)	

Media	Result
cold water	Not soluble

Solubility in water	Not available.
Partition coefficient: n-octanol/water	Not applicable.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
SADT	Not available.
Viscosity	Dynamic (room temperature): Not available. Kinematic (room temperature): 176 mm ² /s (176 cSt) [at 25°C] Kinematic (40°C (104°F)): Not available.

Section 10. Stability and reactivity

Reactivity	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	No specific data.
Incompatible materials	No specific data.

Section 10. Stability and reactivity

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
molybdenum di(2-ethylhexyl) phosphorodithioate petroleum process oil, <3.0% DMSO extractable material	LD50 Dermal	Rabbit	10 mL/kg	-
	LD50 Oral	Rat	6.81 mL/kg	-
	LC50 Inhalation Dusts and mists	Rat	2.18 mg/l (Based on tests of similar materials)	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg (Based on tests of similar materials)	-
	LD50 Oral	Rat	>5000 mg/kg (Based on tests of similar materials)	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
petroleum process oil, <3.0% DMSO extractable material	Eyes - Not irritant (Based on tests of similar materials)	Rabbit	-	-	-
	Skin - Not irritant (Based on tests of similar materials)	Rabbit	-	-	-

Conclusion/Summary

Skin

molybdenum di(2-ethylhexyl)phosphorodithioate: Causes skin irritation. (EPISKIN Human Skin Model Test)

Eyes

molybdenum di(2-ethylhexyl)phosphorodithioate: Non-irritating to the eyes. (Bovine Corneal Opacity and Permeability Test Method)

Sensitization

Product/ingredient name	Route of exposure	Species	Result
molybdenum di(2-ethylhexyl) phosphorodithioate petroleum process oil, <3.0% DMSO extractable material	skin	Mouse	Sensitizing
	skin	Guinea pig	Not sensitizing (Based on tests of similar materials)

Mutagenicity

Section 11. Toxicological information

Product/ingredient name	Test	Experiment	Result
molybdenum di(2-ethylhexyl)phosphorodithioate	OECD 471	Experiment: In vitro Subject: Bacteria	Negative
	OECD 490	Experiment: In vitro Subject: Mammalian-Animal	Negative
	OECD 487	Experiment: In vitro Subject: Mammalian-Human	Negative
petroleum process oil, <3.0% DMSO extractable material	OECD 471	Experiment: In vitro Subject: Bacteria	Positive (Based on tests of similar materials)
	OECD 474	Experiment: In vivo Subject: Mammalian-Animal	Negative (Based on tests of similar materials)

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Conclusion/Summary

molybdenum di(2-ethylhexyl)phosphorodithioate:
Rat, Oral, OECD 422, 28d, NOAEL: 100 mg/kg bw/day (nominal)
Rat, Oral, OECD 422, 6d, NOAEL: 300 mg/kg bw/day (nominal)

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact

No known significant effects or critical hazards.

Inhalation

No known significant effects or critical hazards.

Skin contact

Causes skin irritation. May cause an allergic skin reaction.

Ingestion

No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Long term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
petroleum process oil, <3.0% DMSO extractable material	Sub-chronic LOAEL Oral	Rat	125 mg/kg (Based on tests of similar materials)	-

General	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information Not available.

Section 12. Ecological information

Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
molybdenum di(2-ethylhexyl) phosphorodithioate	Acute EC50 100 mg/l	Algae	72 hours
	Acute EC50 100 mg/l	Daphnia	48 hours
petroleum process oil, <3.0% DMSO extractable material	Acute EC50 1000 mg/l	Micro-organism	3 hours
	Acute LC50 100 mg/l	Fish	96 hours
	Acute EC50 >10000 mg/l (Based on tests of similar materials)	Daphnia	48 hours
	Acute LC50 >100 mg/l (Based on tests of similar materials)	Fish	96 hours
	Acute NOEL >100 mg/l (Based on tests of similar materials)	Algae	72 hours
	Acute NOEL >1000 mg/l (Based on tests of similar materials)	Daphnia	48 hours
	Acute NOEL >100 mg/l (Based on tests of similar materials)	Fish	96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
molybdenum di(2-ethylhexyl) phosphorodithioate	OECD 301B	11 % - Not readily - 28 days	-	-
petroleum process oil, <3.0% DMSO extractable material	-	2 to 4 % - Not readily - 28 days (Based on tests of similar materials)	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
molybdenum di(2-ethylhexyl) phosphorodithioate	-	-	Not readily
petroleum process oil, <3.0% DMSO extractable material	-	-	Not readily (Based on tests of similar materials)

Bioaccumulative potential

Not available.

Mobility in soil

Soil/Water partition coefficient

Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been

Section 13. Disposal considerations

cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
ADR/RID Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

Section 15. Regulatory information

U.S. Federal regulations

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

TSCA 12(b) - Chemical export notification

Not applicable.

Clean Air Act Section 112 Not listed

(b) Hazardous Air Pollutants (HAPs)

Clean Air Act Section 602 Not listed

Class I Substances

Clean Air Act Section 602 Not listed

Class II Substances

DEA List I Chemicals Not listed

(Precursor Chemicals)

DEA List II Chemicals Not listed

(Essential Chemicals)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ Not applicable.

SARA 311/312

Classification SKIN IRRITATION - Category 2
SKIN SENSITIZATION - Category 1B

Composition/information on ingredients

Section 15. Regulatory information

Name	%	Classification
molybdenum di(2-ethylhexyl) phosphorodithioate	75	SKIN IRRITATION - Category 2 SKIN SENSITIZATION - Category 1B

State regulations

Massachusetts	The following components are listed: OIL MIST, MINERAL
New York	None of the components are listed.
New Jersey	None of the components are listed.
Pennsylvania	None of the components are listed.
California Prop. 65	None of the components are listed.

Inventory list

For Europe, EC number 947-946-9 applies for REACH registration purposes for molybdenum trioxide, reaction products with bis[O,O-bis(2-ethylhexyl)] hydrogen dithiophosphate.

Australia	All components are listed or exempted.
Canada	All components are listed or exempted.
China	All components are listed or exempted.
Japan	All components are listed or exempted.
New Zealand	All components are listed or exempted.
Philippines	All components are listed or exempted.
Republic of Korea	All components are listed or exempted.
Taiwan	All components are listed or exempted.
United States	All components are active or exempted.

Section 16. Any other relevant information

Hazardous Material Information System (U.S.A.)

Health	/	2
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



Section 16. Any other relevant information

History

Date of printing	2/4/2026
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Version	6

Key to abbreviations

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

Not available.

Information contact

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