

SUPPLIER



MATERIAL SAFETY DATA SHEET

GENERATED 03/15/2011, **REVISION** 12/01/2008, **SUPERCEDES REVISION** 08/26/2004,
DATE CREATED 12/04/1990

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Molybdenum sulfide, powder and pieces

PRODUCT CODE: M-MSDS0035
PRODUCT NAME: Molybdenum sulfide, powder and pieces
REFERENCE #: 1317-33-5

MANUFACTURER INFORMATION

COMPANY NAME: Materion Advanced Chemicals Inc.
1316 W. St. Paul Avenue
Milwaukee, WI 53233
EMERGENCY CONTACT: CHEMTREC (800)424-9300
ALTERNATE EMERGENCY CONTACT: Materion Advanced Chemicals Inc. (414)289-9800

CHEMICAL FAMILY: Metal sulfide
CAS NUMBER: 1317-33-5
RTECS #: QA4697000
UPC/EAN: 215-263-9

SYNONYMS

Molybdenum sulfide; molybdenum disulfide; natural molybdenite; molybdenum (IV) sulfide; molybdenic sulfide; molykote; mopolm.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Molybdenum sulfide, powder and pieces

Hazardous Components (Chemical Name)	CAS# / EC#	Concentration	OSHA PEL	ACGIH TLV
Molybdenum sulfide	1317-33-5 NA	0.0 -100.0 %	5 mg/m ³ Mo soluble compounds as Mo	5 mg/m ³ respirable fraction
See SECTION IX- ADDITIONAL COMMENTS FOR COSH Regulations	NA NA	0.0 -100.0 %		

SECTION 3. HAZARDS IDENTIFICATION

Molybdenum sulfide, powder and pieces

EMERGENCY OVERVIEW

ROUTE(S) OF ENTRY:

Inhalation? Yes , Skin? No , Eyes? Yes , Ingestion? No
Other: N

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Molybdenum compounds are poison by subcutaneous and intraperitoneal routes. Molybdenum and its compounds are highly toxic based upon animal experiments. Symptoms of acute poisoning include severe gastrointestinal irritation with diarrhea, coma and deaths from heart failure. Experimental animals exposed to high levels accumulated Mo in the lungs spleen, and heart, and showed a decrease of DNA and RNA in the liver, kidneys and spleen. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Sulfides have variable toxicity. Sulfides of the heavy metals are generally insoluble and hence have little toxic action except through the liberation of hydrogen sulfide. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

INHALATION:

Acute: May cause irritation to the upper respiratory system.
Chronic: May cause pneumoconiosis.

INGESTION:

Acute: May cause acute molybdenum poisoning.
Chronic: May cause chronic molybdenum poisoning.

SKIN:

Acute: Prolonged or repeated contact may cause irritation.
Chronic: No chronic health effects recorded.

EYE:

Acute: Prolonged or repeated contact may cause irritation.

Chronic: No chronic health effects recorded.

TARGET ORGANS: May affect the lungs, bones, spleen and heart.

RECOMMENDED EXPOSURE LIMITS

See "Section II"

LD 50 / LC 50

See "Carcinogenicity/Other Information"

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: May cause a red, dry throat and coughing.

INGESTION: Acute molybdenum poisoning may cause severe gastrointestinal irritation, diarrhea, coma, and death from cardiac failure. Chronic molybdenum poisoning as seen in animals may cause: loss of weight, anorexia, anemia, deficient lactation, male sterility, osteoporosis and bone-joint abnormalities.

SKIN: May cause redness, burning, and itching.

EYE: May cause redness, burning, itching and watering.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Pre-existing respiratory disorders.

SECTION 4. FIRST AID MEASURES

Molybdenum sulfide, powder and pieces

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention if symptoms persist.

INGESTION: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention if symptoms persist. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention if symptoms persist.

EYE: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

SECTION 5. FIRE FIGHTING MEASURES

Molybdenum sulfide, powder and pieces

FLASH PT:

N.A.

EXPLOSIVE LIMITS:LEL: NA
NA

UEL:

AUTOIGNITION PT:**FIRE FIGHTING INSTRUCTIONS**

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

FLAMMABLE PROPERTIES AND HAZARDS

When heated to decomposition, molybdenum metal may emit toxic fumes of molybdenum and oxides of sulfur.

Decomposes in air.

Mixtures with potassium nitrate are explosive.

Violent reaction with hydrogen peroxide.

Oxidizes above 315 C.

HAZARDOUS COMBUSTION PRODUCTS**EXTINGUISHING MEDIA**

USE: Not applicable. Use suitable extinguishing media for surrounding materials and type of fire.

UNSUITABLE EXTINGUISHING MEDIA**SECTION 6. ACCIDENTAL RELEASE MEASURES**
Molybdenum sulfide, powder and pieces**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

SECTION 7. HANDLING AND STORAGE
Molybdenum sulfide, powder and pieces**HAZARD LABEL INFORMATION:**

Store in cool, dry area Store in tightly sealed container Wash thoroughly after handling

PRECAUTIONS TO BE TAKEN IN HANDLING

None

PRECAUTIONS TO BE TAKEN IN STORING

None

OTHER PRECAUTIONS

None

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Molybdenum sulfide, powder and pieces****PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION:**

NIOSH approved respirator Impervious gloves Safety glasses Clothes to prevent skin contact

RESPIRATORY EQUIPMENT (SPECIFY TYPE)

NIOSH - approved respirator

EYE PROTECTION

Safety glasses

PROTECTIVE GLOVES

Rubber gloves

OTHER PROTECTIVE CLOTHING

Protective gear suitable to prevent contamination

ENGINEERING CONTROLS (VENTILATION ETC.)

Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

Good general ventilation is recommended.

WORK/HYGIENIC/MAINTENANCE PRACTICES

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**Molybdenum sulfide, powder and pieces****PHYSICAL STATES:**

☐ Gas ☐ Liquid ☒ Solid

MELTING POINT:

2375.00 C

BOILING POINT:

N.A.

FLASH PT:

N.A.

EXPLOSIVE LIMITS:

LEL: NA UEL: NA

SPECIFIC GRAVITY (WATER = 1):

4.80 g/cc at 14.0 C

VAPOR PRESSURE (VS. AIR OR MM HG):**VAPOR DENSITY (VS. AIR = 1):****EVAPORATION RATE (VS BUTYL ACETATE=1):****SOLUBILITY IN WATER:**

insoluble

PERCENT VOLATILE:

N.A.

FORMULA: MoS₂
MOLECULAR WEIGHT: 160.06
APPEARANCE AND ODOR
Black lustrous powder or pieces, odor.

SECTION 10. STABILITY AND REACTIVITY
Molybdenum sulfide, powder and pieces

STABILITY: Unstable [☐] Stable [☒]

CONDITIONS TO AVOID - INSTABILITY

None

INCOMPATIBILITY - MATERIALS TO AVOID

Potassium nitrate and hydrogen peroxide.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

Fumes of molybdenum, carbon monoxide, sulfur dioxide and other oxides of sulfur.

HAZARDOUS POLYMERIZATION: Will occur [☐] Will not occur [☒]

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

None

SECTION 11. TOXICOLOGICAL INFORMATION
Molybdenum sulfide, powder and pieces

None recorded

**CHRONIC TOXICOLOGICAL
EFFECTS**

CARCINOGENICITY/OTHER INFORMATION

----- MOLYBDENUM SULFIDE OTHER TOXICITY DATA -----

oral-rat: >15000 mg/kg - no effect
dermal-rabbit: 0.5 grams - no irritation
eye-rabbit: 0.1 grams - no irritation

CARCINOGENICITY: NTP? No IARC Monographs? No OSHA Regulated?
No

SECTION 12. ECOLOGICAL INFORMATION
Molybdenum sulfide, powder and pieces

None recorded

SECTION 13. DISPOSAL CONSIDERATIONS
Molybdenum sulfide, powder and pieces

WASTE DISPOSAL METHOD

Dispose of in accordance with local, state and federal regulations.

SECTION 14. TRANSPORT INFORMATION
Molybdenum sulfide, powder and pieces

LAND TRANSPORT (US DOT)

DOT PROPER SHIPPING NAME

Not restricted

LAND TRANSPORT (EUROPEAN ADR/RID)

AIR TRANSPORT (ICAO/IATA)

ICAO/IATA SHIPPING NAME

Not Regulated

ADDITIONAL TRANSPORT INFORMATION

SECTION 15. REGULATORY INFORMATION
Molybdenum sulfide, powder and pieces

EUROPEAN COMMUNITY HAZARD SYMBOL CODES

EUROPEAN COMMUNITY RISK AND SAFETY PHRASES

SECTION 16. OTHER INFORMATION
Molybdenum sulfide, powder and pieces

Control of Substances Hazardous to Health Regulations
EH40 Occupational Exposure Limits

MOLYBDENUM INSOLUBLE COMPOUNDS

Maximum Exposure Limit: NE

Occupational Exposure Standard: 10 mg/m³

20 mg/m³ Short-term Exposure Limit

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