

MOLY-D SAFETY DATA SHEET

Date 10/26/2022

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Molybdenum Disilicide Heating Elements

Brand: Moly-D

CAS-No.: 12136-78-6

1.2 Details of the supplier of the safety data sheet

Company: I Squared R Element Co., Inc.
12600 Clarence Center Rd.
Akron, NY 14001-0390
USA

Telephone: +1 716-542-5511

Fax: +1 716-542-2100

1.3 Emergency telephone number

Emergency Phone #: +1 716-542-5511

2. HAZARDS IDENTIFICATION

2.1 Not applicable for solid elements as supplied

3. COMPOSITION/INFORMATION OF INGREDIENTS

3.1 Substances

Formula: Molybdenum Disilicide (MoSi_2)

CAS-No.: 12136-78-6

Ends of elements sprayed with aluminum

Product as Delivered

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a doctor. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If dust inhaled

Remove person from source of exposure and supply fresh air; consult a doctor if irritation persists.

In case of skin contact

Wash area with soap and water. If skin irritation continues, consult a doctor.

In case of eye contact

Immediately remove contact lenses if possible. Rinse opened eye for several minutes under running water. If irritation persists, consult a doctor.

If swallowed

Rinse out mouth and then drink plenty of water. Consult a doctor if irritation persists.

- 4.2 Information to health personnel
None

5. FIRE-FIGHTING MEASURES

- 5.1 Extinguishing media
Use suitable extinguishing media, no special requirements.

- 5.2 Advice for firefighters
Material is non-combustible and non-explosive.
There is no material off-gassing.
No special precautions required.

6. ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation.
For large spills, wear protective clothing and use respiratory protective device against the effects of dust.
For personal protection see section 8.

- 6.2 Environmental precautions
No special measures required

- 6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up pieces and dispose of in suitable container (no special procedures required). Avoid methods that result in water pollution

- 6.4 Reference to other sections
See section 7 for information on safe handling.
For disposal see section 13.

7. HANDLING AND STORAGE

- 7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust.
Normal measures for preventive fire protection.
Elements are fragile. Be careful when handling broken elements, as broken pieces may have sharp edges that pose a cut hazard. Moly-D elements which have been operating for a long time at high temperature and have then cooled down, sometimes have internal stresses which cause the glaze to splinter into small fragments. There have been instances where elements which have been cold for several days have emitted a shower of fine glaze particles when touched. Always use eye protection even when handling cooled down Moly-D elements.

- 7.2 Conditions for safe storage, including any incompatibilities
Store in cool, dry conditions. Protect from humidity and water.

- 7.3 Specific end use(s)
MoSi₂ heating elements

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control Parameters	Basis
Molybdenum Disilicide	12136-78-6	TWA (Total Weight Average) (8 Hour Reference Period)	Long-term value: 15* 5** mg/m ³ as Mo *total dust, **respirable fraction	PEL (USA)
		TWA	Long-term value: 10* 5** mg/m ³ *total dust, **respirable fraction	REL (USA)
		TWA	Long-term value: 10* 3** mg/m ³ as Mo *inhalable, **respirable	TLV (USA)
		TWA	Long-term value: 10* 3** mg/m ³ *inhalable, **respirable	EL (Canada)
		TWA	Long-term value: 10* 3** mg/m ³ *inhalable, **respirable	EV (Canada)
		TWA	Long-term value: 10* 3** mg/m ³ *inhalable, **respirable	LMPE (Mexico)

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Moly-D elements which have been operating for a long time at high temperature and have then cooled down, sometimes have internal stresses which cause the glaze to splinter into small fragments. There have been instances where elements which have been cold for several days have emitted a shower of fine glaze particles when touched. Always use eye protection even when handling cooled down Moly-D elements.

Skin protection

Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules. The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Be careful when handling broken elements, as broken pieces may have sharp edges that pose a cut hazard.
Wash and dry hands.

Respiratory protection

Not required for solid elements as supplied

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|-------------------|---|
| a) Appearance | Form: solid rods typically u-shaped with 2 or more legs
Color: dark grey |
| b) Odor | odorless |
| c) Odor Threshold | no data available |

d) pH-Value	neutral
e) Change in Condition	
Sublimation Temperature:	1870 - 2030°C (3686 °F)
Boiling Point/Boiling Range:	no data available
f) Flash point	not applicable
g) Flammability (solid, gaseous)	non-flammable
h) Auto-ignition temperature	no data available
i) Decomposition Temperature	no data available
j) Auto Igniting	no data available
k) Danger of Explosion	Product does not present an explosion hazard
l) Upper/lower explosive limits	no data available
m) Vapor pressure	not applicable
n) Density	5.6 – 7.5 g/cm ³ (nominal)
o) Relative Density	no data available
p) Vapor density	not applicable
q) Evaporation Rate	not applicable
r) Water solubility	insoluble
s) Partition Coefficient (n-octanol/water)	no data available
t) Viscosity	not applicable
u) MoSi ₂ oxidizes to form SiO ₂ at elevated temperatures	

10. STABILITY AND REACTIVITY

10.1 Reactivity	Stable under normal conditions of use
10.2 Chemical stability	Stable under recommended storage conditions
10.3 Thermal Decomposition	None if used/stored according to specifications
10.4 Possibility of hazardous reactions	none known
10.5 Conditions to avoid	no data available
10.6 Incompatible materials	no data available
10.7 Hazardous decomposition products	No dangerous decomposition products known.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Effects (acute toxicity, irritation and corrosivity)

From product as supplied: May be harmful if swallowed or dust inhaled. May be irritating to the skin, eyes and respiratory tract

Skin corrosion/irritation

Abrasive action may cause cuts and abrasions.

Serious eye damage/eye irritation

Slight irritant effect on eyes. Abrasive action may cause damage.

Sensitization

No sensitizing effects known

Additional Toxicological Information

Product dust may cause respiratory tract irritation.

Carcinogenic Categories

No data available.

Reproductive toxicity

No data available.

Repeated Dose Toxicity

Repeated or long-term inhalation of product dusts/particles of respirable size may cause severe respiratory disease.

Probable Routes of Exposure

Ingestion.

Eye contact.

Skin contact.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic Toxicity

Generally not hazardous for water

Persistence and degradability

no data available

12.2 Behavior in Environmental Systems

Bioaccumulative Potential

Does not accumulate in organisms

Mobility in soil

no data available

12.3 Additional Ecological Information

General Notes

Negative ecological effects are, according to the current state of knowledge, not expected.

Other Adverse Effects

no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product as Delivered

Smaller quantities can be disposed of with household waste.

Contact waste processors for recycling information.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

Contaminated packaging

Disposal must be made according to official regulations

Used Product

After product has been in service at elevated temperatures it may undergo partial conversion to Cristobalite (form of crystalline silica). Airborne exposure limit must not exceed 0.05mg/m³ TWA respirable dust

14. TRANSPORT INFORMATION

Like all ceramics, treat as glass – FRAGILE

UN-Number

DOT, ADR, ADN, IMDG, IATA

Not Regulated

UN Proper Shipping Name

DOT, ADR, ADN, IMDG, IATA

Not Regulated

Transport Hazard Class(es)

DOT, ADR, ADN, IMDG, IATA

Class Not Regulated

Packing Group

DOT, ADR, IMDG, IATA

Not Regulated

Environmental Hazards

Marine Pollutant

No

Special Precautions for User

Not applicable

Transport in Bulk According to Annex II of
MARPOL73/78 and the IBC Code

Not applicable

UN "Model Regulation"

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15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
United States (USA)

SARA

Section 355 (extremely hazardous substances)

Substance is not listed.

Section 313 (Specific toxic chemical listings)

Substance is not listed.

TSCA (Toxic Substances Control Act)

Substance is listed.

Proposition 65 (California)

Chemicals known to cause cancer:

Substance is not listed.

Chemicals known to cause reproductive toxicity for females

Substance is not listed.

Chemicals known to cause reproductive toxicity for males

Substance is not listed.

Chemicals known to cause developmental toxicity

Substance is not listed.

Carcinogenic Categories

EPA (Environmental Protection Agency)

Substance is not listed.

IARC (International Agency for Research on Cancer)

Substance is not listed.

TLV (Threshold Limit Value established by ACGIH)

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NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

State Right to Know Listings

Substance is not listed.

Canadian Substance Listings

Canadian Domestic Substances List (DSL)

Substance is listed.

Canadian Ingredient Disclosure list (limit 0.1%)

Substance is not listed.

Canadian Ingredient Disclosure list (limit 1%)

Substance is not listed.

Chemical Safety Assessment

A Chemical Safety Assessment has not been carried out

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Date of Preparation / Last Revision: 10/26/2022

Prepared by:

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Akron, NY, USA, 14001

Notice:

This material safety data sheet complements the technical data sheets but does not replace them. Users should be warned about the risks associated with using the product for a different purpose than that for which it was developed, and particularly for uses for which we are not qualified to give advice. These regulatory prescriptions are provided with a view to helping users meet their obligations when using this product. This list should not be considered exhaustive and does not exempt users from ensuring that they are not required to comply with any further prescriptions other than those mentioned above concerning product possession and handling for which they are solely responsible. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.