

MATERIAL SAFETY DATA SHEET

H.C. Starck



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TRANSPORTATION EMERGENCY
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NON-TRANSPORTATION
HCST EMERGENCY PHONE : (216) 692-3990
HCST INFORMATION PHONE: (216) 692-3990

Section 1: Product and Company Identification

Product Name: Molybdenum (Alloy TZM)
Material Number: CSMTZM
Chemical Name: Molybdenum, titanium, zirconium billets and sheet
Formula: Mo, Ti, Zr Alloy

Section 2: Composition/Information on Ingredients

HAZARDOUS INGREDIENTS

Under normal conditions of use, this product meets the definition of an OSHA and TSCA Article and is non-hazardous. However, if this product is ground or otherwise processed, the following potentially hazardous ingredients could be generated.

<u>Ingredient Name/ CAS Number</u>	<u>Exposure Limits</u>	<u>Concentration</u>	
		<u>Min.</u>	<u>Max.</u>
Molybdenum 7439-98-7	OSHA (PEL): 15.00 mg/m ³ TWA Total Dust ACGIH (TLV): 10.00 mg/m ³ TWA	95%	

Section 3: Hazards Identification

EMERGENCY OVERVIEW

CAUTION! Non-regulated. **Color:** Grey-Metallic **Form:** Solid Sheet, Solid pieces of metal **Odor:** Odorless
May cause mechanical irritation to the eyes, skin and respiratory tract.

POTENTIAL HEALTH EFFECTS

Material Name: Molybdenum (Alloy TZM)

Product Code:

Route(s) of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

General Effects of Exposure

Acute Effects of Exposure: This product is listed as a hazardous ingredient because it is considered to be a nuisance particulate. Nuisance particulates can cause unpleasant or uncomfortable deposits in the eyes, ears and nose, but do not cause any toxic effect or disease when exposures are kept in reasonable control, at or below the recommended exposure limits. Excessive concentrations of nuisance dusts in the workroom air may also seriously reduce visibility, or cause injury to the skin or mucous membranes by chemical or mechanical action per se or by the rigorous skin cleansing procedures necessary for their removal.

Chronic Effects of Exposure: No applicable information was found concerning adverse chronic human health effects to this product.

Carcinogenic Components:

NTP: None

IARC: None

OSHA: None

Medical Conditions Aggravated by Exposure: Persons with pre-existing eye, skin or respiratory conditions may be more susceptible to the effects of this product.

Section 4: First Aid Measures

First Aid for Eye: In case of contact, flush eyes with plenty of lukewarm water. Get medical attention if irritation develops or persists.

First Aid for Skin: In case of skin contact, wash affected areas with soap and water. Wash clothing and shoes before reuse. Get medical attention if irritation develops or persists.

First Aid for Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Immediately call a physician.

First Aid for Ingestion: Give two glasses of water for dilution. Never give anything by mouth to an unconscious person. Immediately call a physician.

Section 5: Fire Fighting Measures

Flash Point: Not Applicable

Flammable Limits:

Upper Explosion Limit (UEL %): Not Applicable

Lower Explosion Limit (LEL %): Not Applicable
Auto-ignition Temperature: Not Established

Extinguishing Media:

Suitable: Sand, Dry powder type agents specially designed for metal powder fires.

Special Fire Fighting Procedures: Do not apply water to burning material. Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. During a fire, irritating and toxic gases and aerosols may be generated by thermal decomposition and combustion.

Unusual Fire/Explosion Hazards: Dust and fumes from this product may be a fire and explosion hazard when exposed to high temperatures or ignition sources. Particle size and dispersion in air determine reactivity.

Section 6: Accidental Release Measures

Spill or Leak Procedures: Vacuum or sweep up material and place in appropriate container. Avoid generation of dust. If dust is generated, use appropriate respiratory protection. After removal, flush contaminated area thoroughly with water. Collect wash water for approved disposal. Keep from entering water or ground water.

Section 7: Handling and Storage

Storage Temperature: Minimum: Room Temperature recommended 68-77F (20-25C)
Maximum: 122 F (50 C)

Shelf Life: Unlimited in tightly closed containers.

Special Sensitivity: None known.

Handling/Storage Precautions: Avoid breathing dust, vapors or mist. Avoid contact with eyes. Wash thoroughly after handling. Store in a dry place away from excessive heat. Avoid contact with moisture or water. Reseal containers immediately after use. Store away from food and beverages. Vent storage bins, conveyors, dust collectors, ground handling equipment, etc.

Section 8: Exposure Controls/Personal Protection

Personal Protection Equipment

Eye Protection Requirements: Safety glasses or goggles.

Skin Protection Requirements: Chemically resistant gloves and clothing are recommended to minimize skin contact., Employees should wash their hands and face

before eating, drinking or using tobacco products.

Ventilation Requirements:	Use local exhaust ventilation if dusting is a problem, to maintain air levels below the recommended exposure limit.
Respirator Requirements:	Work ambient concentrations should be monitored and if the recommended exposure limits are exceeded, a NIOSH approved dust respirator should be worn.
Additional Protective Measures:	Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product.

Section 9: Physical and Chemical Properties

Physical Form:	Solid
Appearance:	Sheet, Solid pieces of metal
Color:	Grey-Metallic
Odor:	Odorless
pH:	Not Established
Melting/Freezing Point:	4,270 °F (2,610 °C)
Viscosity:	Not Applicable
Solubility in Water:	Insoluble
Specific Gravity:	10.2
Bulk Density:	Not Established
Vapor Pressure:	Not Applicable

Section 10: Stability and Reactivity

Stability:	Stable, however, powder or dust in fine size may ignite during intensive mechanical treatment.
Hazardous Polymerization:	Will not occur
Substances to Avoid:	Evolves flammable hydrogen gas upon contact with acids and bases.
Conditions to Avoid:	Keep away from sparks or ignition sources.
Decomposition Temperature:	Not Established
Decomposition Products:	Thermal decomposition may produce toxic oxides and fumes of the components of this product and other potentially toxic fumes.

Section 11: Toxicological Information

Toxicity Data for Molybdenum (Alloy TZM)

Toxicity Note: No data available for this product.

Toxicity Data for Molybdenum

Acute oral toxicity: LD50 = > 2,000 mg/kg

Section 12: Ecological Information

Ecological Data for Molybdenum (Alloy TZM)

Ecological Note: No data available for this product.

Ecological Data for Molybdenum

Ecological Note: No data available for this component.

Section 13: Disposal Considerations

Waste Disposal Method: May be reclaimed or sold for scrap. Disposal must be in compliance with federal, state and local environmental control regulations.

Section 14: Transportation Information

Technical shipping name: Articles

Freight Class

Bulk: Articles

Package: Articles

Domestic Surface Transportation (DOT)

Hazard Class or Division: Non-Regulated

Marine Transportation (IMO / IMDG)

Hazard Class Division Number: Non-Regulated

Air Transportation (ICAO / IATA)

Hazard Class Division Number: Non-Regulated

Radioactive?: Non-Radioactive

Section 15: Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Rating: Non-Hazardous

TSCA Inventory List: On TSCA Inventory

CERCLA Hazardous Substance:

Material Name: Molybdenum (Alloy TZM)

Product Code:

Component(s)
None

Reportable Quantity

SARA Title III

SARA Section 302 Extremely Hazardous Substances:

Component(s)/
CAS Number
None

Concentration
Min. Max.

SARA Section 311/312 Hazard Categories: Non-hazardous under Section 311/312

SARA Section 313 Toxic Chemicals:

Component(s)/
CAS Number
None

Reporting
Threshold

Concentration
Min. Max.

RCRA Status:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

State Right-to-Know Information

Component(s)/
CAS Number
Molybdenum
7439-98-7

State Code
PA-H, NJ-H, MA-H

Concentration
Min. Max.
95%

The following component(s) are listed under New Jersey Special Hazards:

Zirconium
7440-67-7

NJ-S

1%

State Code Translation Table

PA-H = Pennsylvania Hazardous Substance List
NJ-H = New Jersey Hazardous Substance List
NJ-S = New Jersey Special Health Hazardous Substance List
MA-H = Massachusetts Hazardous Substance List

Section 16: Other Information

HMIS Rating

Health		1
Flammability		1
Reactivity		0

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

*=Chronic Health Hazard

Material Name: Molybdenum (Alloy TZM)

Product Code:

H.C. STARCK (Ohio), Inc.'s method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by H.C. STARCK (Ohio), Inc. as a customer service.

Contact Person: Product Safety Department
Telephone: (412) 777-2835
MSDS Number: 000000001580
Version Date: 11/10/2005
MSDS Version: 1.5

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|| Indicates Relevant Change Made.