



XI'AN FUNCTION MATERIAL GROUP CO., LTD  
Material Safety Data Sheet  
Molybdenum (V) chloride

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1. Product and Company Identification

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Trade Name: Molybdenum (V) chloride  
Chemical Formula: MoCl<sub>5</sub>  
Recommended Use: Scientific research and development

Manufacturer/Supplier: XI'AN FUNCTION MATERIAL GROUP CO., LTD  
Street: No. 69, Gazelle Valley, High-Tech Zone  
City: XI'AN  
State: Shannxi  
Zip Code: 710077  
Country: China  
Tel #: +86-29-88993870/+86-13519132051

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2. Hazards Identification

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Signal Word: Danger



Hazard Statements: H314: Causes severe skin burns and eye damage.  
H351: Suspected of causing cancer

Precautionary Statements: P260: Do not breathe dust or mist.  
P264: Wash skin thoroughly after handling.  
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353: IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P363: Wash contaminated clothing before reuse.  
P405: Store locked up.  
P501: Dispose of contents/ container to an approved waste disposal plant.

HMIS Health Ratings (0-4):  
Health: 3  
Flammability: 0  
Physical: 2

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### 3. Composition

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|  |                          |
|--|--------------------------|
| Chemical Family:                       | Salt                     |
| Additional Names:                      | Molybdenum pentachloride |
| Bismuth triiodide (BiI <sub>3</sub> ): |                          |
| Percentage:                            | 100 wt%                  |
| CAS #:                                 | 10241-05-16              |
| EC #:                                  | 233-575-3                |

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### 4. First Aid Procedures

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|                     |   |
|---------------------|---|
| General Treatment:  | Seek medical attention if symptoms persist.   |
| Special Treatment:  | None  |
| Important Symptoms: | None  |
| Inhalation:         | Remove victim to fresh air. Supply oxygen if breathing is difficult. Keep patient warm. Seek immediate medical attention.                                       |
| Ingestion:          | Seek immediate medical attention.   |
| Skin:               | Immediately wash affected area with mild soap and water. Remove any contaminated clothing. Seek immediate medical attention.                                    |
| Eyes:               | Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention. |

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### 5. Firefighting Measures

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|                                |   |
|--------------------------------|---|
| Flammability:                  | Non-flammable   |
| Extinguishing Media:           | No special restrictions – use suitable extinguishing agent for surrounding material and type of fire.   |
| Spec. Fire Fighting Procedure: | Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products. |

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### 6. Accidental Release Measures

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|                                  |   |
|----------------------------------|---|
| If Material Is Released/Spilled: | Wear appropriate respiratory and protective equipment specified in special protection information. Keep unprotected persons away. Isolate spill area and provide ventilation. Use neutralizing agent. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust. |
| Environmental Precautions:       | Isolate runoff to prevent environmental pollution.  |

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### 7. Handling and Storage

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|                            |   |
|----------------------------|---|
| Handling Conditions:       | Wash thoroughly after handling.   |
| Storage Conditions:        | Store in a cool dry place in a tightly sealed container. This product is hygroscopic. Store apart from materials and conditions listed in section 10. |
| Work/Hygienic Maintenance: | 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.        |
| Ventilation:               | Provide sufficient ventilation to maintain concentration at or below threshold limit.   |

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## 8. Exposure Controls and Personal Protection

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|                              |   |
|------------------------------|---|
| Permissible Exposure Limits: | N/A   |
| Threshold Limit Value:       | 3 mg/m <sup>3</sup> as Mo, long-term value, respirable fraction   |
| Special Equipment:           | Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. |
| Respiratory Protection:      | Dust Respirator   |
| Protective Gloves:           | Rubber gloves   |
| Eye Protection:              | Safety glasses or goggles   |
| Body Protection:             | Protective work clothing. Wear close-toed shoes and long sleeves/pants.   |

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## 9. Physical and Chemical Characteristics

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|                           |  |
|---------------------------|--|
| Color                     | Dark grey  |
| Form:                     | Powder, Granules, Pellets, Sputtering target, Custom parts |
| Odor:                     | Pungent  |
| Water Solubility:         | N/A  |
| Boiling Point:            | 268°C  |
| Melting Point:            | 194 °C   |
| Flash Point:              | N/A  |
| Autoignition Temperature: | N/A  |
| Density:                  | 2.928 g/cc   |
| Molecular weight:         | 273.21 g/mol   |

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## 10. Reactivity

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|                                   |   |
|-----------------------------------|---|
| Stability:                        | Stable under recommended storage conditions       |
| Reacts With:                      | Oxidizing agents, Sodium/sodium oxides            |
| Incompatible Conditions:          | None  |
| Hazardous Decomposition Products: | Metal oxide fume, hydrogen iodide, Bismuth oxides |

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## 11. Toxicological Information

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### Potential Health Effects:

|             |                           |
|-------------|---------------------------|
| Eyes:       | Causes serious eye damage |
| Skin:       | Causes severe skin burns  |
| Ingestion:  | May cause irritation      |
| Inhalation: | May cause irritation      |
| Chronic:    | N/A                       |

### Signs & Symptoms:

Cough, shortness of breath

### Aggravated Medical Conditions:

N/A

### Median Lethal Dose:

N/A

Suspected of causing cancer. ACGIH A3 Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes of exposure

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## 12. Ecological Information

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### Aquatic Toxicity:

N/A

### Persistent Bioaccumulation Toxicity:

N/A

### Very Persistent, Very Bioaccumulative:

N/A

### Notes:

Do not allow material to be released to the environment without proper governmental permits.  
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.  
Avoid transfer into the environment.

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## 13. Disposal Considerations

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Dispose of in accordance with local, state, national, and international regulations.

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#### 14. Transportation Data

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Hazardous: Hazardous for transportation.



Hazard Class: 8 Corrosive substances  
Packing Group: III  
UN Number: UN2508  
Proper Shipping Name: Molybdenum pentachloride

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#### 15. Regulatory Information

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Sec 302 Extremely Hazardous: No  
Sec 304 Reportable Quantities: N/A  
Sec 313 Toxic Chemicals: No

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#### 16. Other Information

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This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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