Material Safety Data Sheet
Molybdenum hexacarbonyl

MSDS# 04603

Section 1 - Chemical Product and Company Identification

MSDS Name: Molybdenum hexacarbonyl
Catalog Numbers: AC190390000, AC190390100, AC190390250, AC190390500, AC190392500
Synonyms: Hexacarbonylmolybdenum.

Company Identification: Acros Organics BVBA
Janssen Pharmaceuticalaal 3a
2440 Geel, Belgium

Company Identification: (USA) Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11
Emergency Number, Europe: +32 14 57 52 99
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#: 13939-06-5
Chemical Name: Molybdenum hexacarbonyl
%: 98
EINECS#: 237-713-3

Hazard Symbols: T+
Risk Phrases: 26/27/28

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Danger! May be fatal if inhaled, absorbed through the skin or swallowed. Very toxic by inhalation, in contact with skin and if swallowed. Target Organs: None known.

Potential Health Effects
Eye: May cause eye irritation.
Skin: May cause skin irritation. May be fatal if absorbed through the skin. Toxic in contact with skin.
Ingestion: May be fatal if swallowed. May cause irritation of the digestive tract. Poison by ingestion.
Inhalation: May be fatal if inhaled. May cause respiratory tract irritation. Toxic if inhaled.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Do not induce vomiting. Get medical aid immediately. Call a poison control center.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Autoignition Temperature: Not applicable.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 4; flammability: 1; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling: Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale. Use only in a chemical fume hood.

Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molybdenum hexacarbonyl</td>
<td>10 mg/m3 TWA</td>
<td>5000 mg/m3 IDLH</td>
<td>none listed</td>
</tr>
<tr>
<td></td>
<td>(inhalable)</td>
<td>(listed under</td>
<td></td>
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<tr>
<td></td>
<td>fraction); 3</td>
<td>Molybdenum).</td>
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<td></td>
<td>mg/m3 TWA</td>
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<td>Molybdenum).</td>
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</tbody>
</table>

OSHA Vacated PELs: Molybdenum hexacarbonyl: 10 mg/m3 TWA (listed under Molybdenum)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.
A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder
   Color: white to light yellow
   Odor: None reported.
   pH: Not available
   Vapor Pressure: 13 hPa @ 20 deg C
   Vapor Density: Not available
   Evaporation Rate: Not available
   Viscosity: Not available
   Boiling Point: Not available
   Freezing/Melting Point: 150 deg C (decom)
   Decomposition Temperature: Not available
   Solubility in water: insoluble
   Specific Gravity/Density: 1.960 g/cm3
   Molecular Formula: C6O6Mo
   Molecular Weight: 264

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, dust generation.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 13939-06-5: None listed
LD50/LC50: RTECS: Not available.
Carcinogenicity: Molybdenum hexacarbonyl - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: The toxicological properties have not been fully investigated.

Section 12 - Ecological Information

Other: Do not empty into drains.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: TOXIC SOLIDS, ORGANIC, N.O.S.
Hazard Class: 6.1
UN Number: UN2811
Packing Group: III
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

Section 15 - Regulatory Information

European/International Regulations
   European Labeling in Accordance with EC Directives
      Hazard Symbols: T+
Risk Phrases:
R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.

Safety Phrases:
S 22 Do not breathe dust.
S 28A After contact with skin, wash immediately with plenty of water.
S 36/37 Wear suitable protective clothing and gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 13939-06-5: Not available

Canada
CAS# 13939-06-5 is listed on Canada's NDSL List
Canadian WHMIS Classifications: D1A
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
CAS# 13939-06-5 is not listed on Canada's Ingredient Disclosure List.

US Federal
TSCA
CAS# 13939-06-5 is listed on the TSCA Inventory.

Section 16 - Other Information
MSDS Creation Date: 9/02/1997
Revision #7 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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