

**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Revision: 14.07.2010

Printing date 14.07.2010

**1 Identification of substance****Product details**

**Trade name** Molybdenum (IV) oxide  
**Stock number:** 48117  
**Manufacturer/Supplier:** Alfa Aesar GmbH & Co.KG  
 Benzstrasse 3  
 D-76185 Karlsruhe / Germany

E-mail: gcat@matthey.com  
 www.alfa-chemcat.com

**Informing department:** Product safety department.  
**Emergency information:** Giftnotruf Universität Mainz / Poison Information Center Mainz  
 www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240

**2 Hazards identification****Hazard designation:**

Xn Harmful

**Information pertaining to particular dangers for man and environment****GHS label elements****Prevention:****Response:****Storage:  
Disposal:**

R 20/22 Harmful by inhalation and if swallowed.  
 R 36/37 Irritating to eyes and respiratory system.

**Warning**

H302 - Harmful if swallowed.  
 H332 - Harmful if inhaled.  
 H319 - Causes serious eye irritation.  
 H335 - May cause respiratory irritation.  
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
 P280 Wear protective gloves/protective clothing/eye protection/face protection.  
 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.  
 P405 Store locked up.  
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**3 Composition/information on ingredients**

**Chemical characterisation:**  
**Designation: (CAS#)** Molybdenum (IV) oxide (CAS# 18868-43-4), 100%  
**Identification number(s):**  
**EINECS Number:** 242-637-9

**4 First aid measures****After inhalation****After skin contact****After eye contact****After swallowing**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
 Seek immediate medical advice.  
 Instantly wash with water and soap and rinse thoroughly.  
 Seek immediate medical advice.  
 Rinse opened eye for several minutes under running water. Then consult doctor.  
 Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents  
Protective equipment:**

Use fire fighting measures that suit the environment.  
 Wear self-contained breathing apparatus.  
 Wear full protective suit.

**6 Accidental release measures****Person-related safety precautions:****Measures for environmental protection:  
Measures for cleaning/collecting:****Additional information:**

Wear protective equipment. Keep unprotected persons away.  
 Ensure adequate ventilation  
 Do not allow material to be released to the environment without proper governmental permits.  
 Dispose of contaminated material as waste according to item 13.  
 Ensure adequate ventilation.  
 See Section 7 for information on safe handling  
 See section 8 for information on personal protection equipment.  
 See Section 13 for information on disposal.

**7 Handling and storage****Handling  
Information for safe handling:****Information about protection against explosions and fires:****Storage  
Requirements to be met by storerooms and containers:  
Information about storage in one common storage facility:****Further information about storage conditions:**

Handle under dry protective gas.  
 Keep containers tightly sealed.  
 Store in cool, dry place in tightly closed containers.  
 Ensure good ventilation/exhaustion at the workplace.

The product is not flammable

No special requirements.

Do not store together with oxidizing and acidic materials.  
 Store away from air.

Store under dry inert gas.  
 Keep container tightly sealed.  
 Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:****Components with critical values that require monitoring at the workplace:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Molybdenum and compounds (as Mo)  
 mg/m<sup>3</sup>  
 ACGIH TLV 5  
 Austria MAK 15  
 Belgium TWA 5  
 Denmark TWA 5  
 Finland TWA 5

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France VME 5  
Germany MAK 5  
Netherlands MAC-TGG 5  
Sweden NGV 10 (total dust)  
5 (respirable dust)  
Switzerland TWA 5  
United Kingdom TWA 10; 20-STEL  
USA PEL 5  
No data

**Additional information:****Personal protective equipment****General protective and hygienic measures****Breathing equipment:****Eye protection:****Body protection:**

The usual precautionary measures should be adhered to in handling the chemicals.  
Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes.  
Avoid contact with the eyes and skin.  
Use breathing protection with high concentrations.  
Safety glasses  
Face protection  
Protective work clothing.

**9 Physical and chemical properties:****General Information**

**Form:** Powder  
**Colour:** Red-brown  
**Smell:** Odourless

**Change in condition**

**Melting point/Melting range:** Not determined  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined

**Flash point:** Not applicable**Ignition temperature:** Not determined**Decomposition temperature:** Not determined**Danger of explosion:** Product is not explosive.**Critical values for explosion:**

**Lower:** Not determined  
**Upper:** Not determined

**Steam pressure:** Not determined**Density at 20°C** 6.47 g/cm<sup>3</sup>**Solubility in / Miscibility with****Water:** Insoluble**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:****Materials to be avoided:****Dangerous reactions:****Dangerous products of decomposition:**

No decomposition if used and stored according to specifications.  
Acids  
Oxidizing agents  
Air  
No dangerous reactions known  
Metal oxide

**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:****on the eye:****Sensitization:****Additional toxicological information:**

Irritant for skin and mucous membranes.  
Irritant effect.  
No sensitizing effect known.  
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****Additional ecological information:****General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.  
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.  
Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:****Recommendation****Uncleaned packagings:****Recommendation:**

Consult state, local or national regulations for proper disposal.  
Hand over to disposers of hazardous waste.  
Must be specially treated under adherence to official regulations.

Disposal must be made according to official regulations.

**14 Transport information****Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)****ADR/RID-GGVS/E Class:** None**Maritime transport IMDG/GGVSea:****IMDG/GGVSea Class:** None**Marine pollutant:** No**Air transport ICAO-TI and IATA-DGR:****ICAO/IATA Class:** None**Transport/Additional information:**

Not dangerous according to the above specifications.

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**15 Regulatory information**

Designation according to EC guidelines:

Code letter and hazard designation of product:



Xn Harmful

Risk phrases:

20/22 Harmful by inhalation and if swallowed.  
36/37 Irritating to eyes and respiratory system.

Safety phrases:

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36/37 Wear suitable protective clothing and gloves.  
38 In case of insufficient ventilation, wear suitable respiratory equipment.

National regulations

Information about limitation of use:

Employment restrictions concerning young persons must be observed.  
For use only by technically qualified individuals.

Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing data specification sheet: Health, Safety and Environmental Department.

Contact: Zachariah Holt

Abbreviations and acronyms: ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

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