

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

Revision: 13.07.2010

Printing date 13.07.2010

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

Trade name

**Molybdenum(VI) fluoride**

Stock number:

22713

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
Benzstrasse 3  
D-76185 Karlsruhe / GermanyE-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:



T Toxic

Information pertaining to particular dangers for man and environment

R 23 Toxic by inhalation.  
R 32 Contact with acids liberates very toxic gas.  
R 34 Causes burns.

GHS label elements

**Danger**

H314 - Causes severe skin burns and eye damage.

Prevention:

EUH032 - Contact with acids liberates very toxic gas.

Response:

P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage:

P309 IF exposed or if you feel unwell:  
P310 Immediately call a POISON CENTER or doctor/physician.  
P402+P404 Store in a dry place. Store in a closed container.**3 Composition/information on ingredients**

Chemical characterization:

Molybdenum(VI) fluoride (CAS# 7783-77-9)

Designation: (CAS#)

Identification number(s):

EINECS Number:

232-026-5

**4 First aid measures**

General information

Instantly remove any clothing soiled by the product.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.  
Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.  
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.

After swallowing

Rinse opened eye for several minutes under running water. Then consult doctor.  
Seek immediate medical advice.**5 Fire fighting measures**

Suitable extinguishing agents

Use fire fighting measures that suit the environment.

For safety reasons unsuitable extinguishing agents

Water.

Special hazards caused by the material, its products of combustion or flue gases:

Danger of containers bursting upon heating.

Reacts with water

Can be released in case of fire:

Hydrogen fluoride (HF)

Metal oxide

Protective equipment:

Wear self-contained breathing apparatus.

Wear full protective suit.

**6 Accidental release measures**

Person-related safety precautions:

Put on breathing apparatus.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose of contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

Additional information:

**7 Handling and storage**

Handling

Information for safe handling:

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.

Open and handle container with care.

Information about protection against explosions and fires:

The product is not flammable

Storage

Requirements to be met by storerooms and containers:

Unsuitable material for container: ceramic, glass

Information about storage in one common storage facility:

Do not store together with acids.

Store away from water.

Further information about storage conditions:

Store under dry inert gas.

This product is moisture sensitive.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

(Contd. on page 2)

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

Revision: 13.07.2010

Printing date 13.07.2010

Trade name **Molybdenum(VI) fluoride**

(Contd. of page 1)

Protect from humidity and keep away from water.  
Store in a locked cabinet or with access restricted to technical experts or their assistants.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

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

**Components with critical values that require monitoring at the workplace:**

Fluorides (as F)	
	mg/m <sup>3</sup>
ACGIH TLV	2.5
Austria MAK	2.5
Belgium TWA	2.5
Finland TWA	2.5
France TWA	2.5
Germany MAK	2.5
Hungary TWA	1; 2-STEL
Netherlands MAC-K	3.5
Norway TWA	0.6
Poland TWA	1; 3-STEL
Sweden NGV	2
Switzerland MAK-W	1.5; 3-KZG-W
United Kingdom TWA	2.5
Russia TWA	2
Denmark TWA	2.5
USA PEL	2.5

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
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**

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 in case of insufficient ventilation.  
Use breathing protection with high concentrations.  
Face protection  
Safety glasses  
Tightly sealed safety glasses.  
Full face protection  
Protective work clothing.

**Breathing equipment:****Eye protection:****Body protection:****9 Physical and chemical properties:****General Information**

<b>Form:</b>	Liquid
<b>Colour:</b>	Pale yellow
<b>Smell:</b>	Not determined

**Change in condition**

<b>Melting point/Melting range:</b>	17°C
<b>Boiling point/Boiling range:</b>	37°C
<b>Sublimation temperature / start:</b>	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:**

<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined

**Steam pressure at 35°C:** 1010.8 hPa**Density at 20°C:** 2.3 g/cm<sup>3</sup>**Solubility in / Miscibility with Water:** Not miscible or difficult to mix**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

**Materials to be avoided:**Bases  
Acids  
Water/moisture**Dangerous reactions:**

Contact with acids liberates very toxic gas.

**Dangerous products of decomposition:**Hydrogen fluoride  
Metal oxide

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

Revision: 13.07.2010

Printing date 13.07.2010

Trade name **Molybdenum(VI) fluoride**

(Contd. of page 2)

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**Inhalative LC50/4H 333 mg/m<sup>3</sup>/4H (rat)**Primary irritant effect:****on the skin:**

Corrosive effect on skin and mucous membranes.

**on the eye:**

Strong corrosive effect.

**Sensitization:**

No sensitizing effect known.

**Additional toxicological information:**

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

IARC-3: Not classifiable as to carcinogenicity to humans.

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

**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**

Hand over to disposers of hazardous waste.

Must be specially treated under adherence to official regulations.

Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:****Recommendation:**

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:**

6.1 (TC3) Toxic substances.

**Kemler Number:**

68

**UN-Number:**

3289

**Packaging group:**

II

**Label**

6.1+8

**Designation of goods:**

3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (Molybdenum(VI) fluoride)

**Limited quantities (LQ)**

LQ17

**Transport category**

2

**Tunnel restriction code**

D/E

**Maritime transport IMDG/GGVSea:****IMDG/GGVSea Class:**

6.1

**UN Number:**

3289

**Label**

6.1+8

**Packaging group:**

II

**EMS Number:**

F-A,S-B

**Marine pollutant:**

No

**Correct technical name:**

TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (Molybdenum(VI) fluoride)

**Air transport ICAO-TI and IATA-DGR:****ICAO/IATA Class:**

6.1

**UN/ID Number:**

3289

**Label**

6.1+8

**Packaging group:**

II

**Correct technical name:**

TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (Molybdenum(VI) fluoride)

**UN "Model Regulation":**

UN3289, TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S., 6.1 (8), II

**15 Regulatory information****Designation according to EC guidelines:****Code letter and hazard designation of product:**
 T Toxic
**Risk phrases:**

23 Toxic by inhalation.  
32 Contact with acids liberates very toxic gas.  
34 Causes burns.

**Safety phrases:**

7/8 Keep container tightly closed and dry.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**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.

GB  
(Contd. on page 4)

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

Printing date 13.07.2010

Revision: 13.07.2010

Trade name **Molybdenum(VI) fluoride**

(Contd. of page 3)

**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)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

GB