

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

**Hydrofluoric acid, 47-51%**

Stock number:

38746

**1.2 Relevant identified uses of the substance or mixture and uses advised against.**

Identified use:

SU24 Scientific research and development

**1.3 Details of the supplier of the safety data sheet**

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
A Johnson Matthey Company  
Zeppelinstr. 7b  
76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com

Informing department:

Product safety Tel + +049 (0) 7275 988687-0

**1.4 Emergency telephone number:**

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008



GHS06 skull and crossbones

Acute Tox. 2 H300 Fatal if swallowed.

Acute Tox. 1 H310 Fatal in contact with skin.

Acute Tox. 2 H330 Fatal if inhaled.



GHS05 corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

T+; Very toxic

R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed.

C; Corrosive

R35: Causes severe burns.

**Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

**Other hazards that do not result in classification**

No information known.

**2.2 Label elements**

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

Signal word

The product is classified and labelled according to the CLP regulation.

GHS05, GHS06

Danger

**Hazard-determining components of labelling:**

hydrogen fluoride

H300 Fatal if swallowed.

H310 Fatal in contact with skin.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

P260

Do not breathe dust/fume/gas/mist/vapours/spray.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P320 Specific treatment is urgent (see on this label).

P361 Remove/Take off immediately all contaminated clothing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**2.3 Other hazards**

Results of PBT and vPvB assessment

PBT:

Not applicable.

vPvB:

Not applicable.

**SECTION 3: Composition/information on ingredients****3.2 Mixtures****Dangerous components:**

CAS: 7664-39-3 hydrogen fluoride

EINECS: 231-634-8

T+ R26/27/28; C R35

Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; Skin Corr. 1A, H314

50,0%

**Additional information**

None known.

**Non-Hazardous Ingredients**

CAS: 7732-18-5

Water

EINECS: 231-791-2

50,0%

**SECTION 4: First aid measures****4.1 Description of first aid measures****General information**

Special First Aid training required.

Instantly remove any clothing soiled by the product.

Remove breathing apparatus only after soiled clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

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

**After inhalation**

Seek immediate medical advice.

Instantly wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

Rub in Ca-gluconate solution or Ca-gluconate gel immediately.

Rinse opened eye for several minutes under running water. Then consult doctor.

**After skin contact****After eye contact**

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**After swallowing** Do not induce vomiting; instantly call for medical help.

**4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.

**4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**  
**Suitable extinguishing agents** Use fire fighting measures that suit the environment.  
**For safety reasons unsuitable extinguishing agents** Water.

**5.2 Special hazards arising from the substance or mixture** Reacts with metals forming hydrogen.  
If this product is involved in a fire, the following can be released:  
Hydrogen fluoride (HF)

**5.3 Advice for firefighters**  
**Protective equipment:** Wear self-contained breathing apparatus.  
Wear full protective suit.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures** Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation

**6.2 Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.  
Do not allow product to reach sewage system or water bodies.  
Do not allow to enter the ground/soil.

**6.3 Methods and material for containment and cleaning up:** 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.  
No special measures required.

**Prevention of secondary hazards:** See Section 7 for information on safe handling

**6.4 Reference to other sections** See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling** 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

**7.2 Conditions for safe storage, including any incompatibilities**

**Storage Requirements to be met by storerooms and containers:** Unsuitable material for container: ceramic, glass  
Unsuitable material for containers: metals and alloys.

**Information about storage in one common storage facility:** Store away from metals.  
Store away from strong bases.  
Water reacts with many metals to give hydrogen, often violently. Water also reacts violently with many reactive organic and inorganic chemicals.

**Further information about storage conditions:** Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Store in a locked cabinet or with access restricted to technical experts or their assistants.

**7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/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.

**8.1 Control parameters****Components with critical values that require monitoring at the workplace:****7664-39-3 hydrogen fluoride (50,0%)**

AGW (Germany)	0,83 mg/m <sup>3</sup> , 1 ppm 2(l);DFG, EU, Y, H
MAK (TRGS 900) (Germany)	2,5 mg/m <sup>3</sup> , 3 ppm H; DFG
PEL (USA)	3 ppm as F
REL (USA)	Short-term value: C 5* mg/m <sup>3</sup> , C 6* ppm Long-term value: 2,5 mg/m <sup>3</sup> , 3 ppm *15-min, as F
TLV (USA)	Short-term value: C 1,64 mg/m <sup>3</sup> , C 2 ppm Long-term value: 0,41 mg/m <sup>3</sup> , 0,5 ppm as F; Skin, BEI

**Ingredients with biological limit values:****7664-39-3 hydrogen fluoride (50,0%)**(Contd. on page 3)  
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BGW (Germany)	7,0 mg/g Kreatinin U b Fluorid
BEI (USA)	4,0 mg/g Kreatinin U d Fluorid 3 mg/g creatinine urine prior to shift Fluorides (background, nonspecific)  10 mg/g creatinine urine end of shift Fluorides (background, nonspecific)

**Additional information:** No data**8.2 Exposure controls****Personal protective equipment****General protective and hygienic measures****Breathing equipment:****Protection of hands:****Material of gloves****Penetration time of glove material****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.  
Store protective clothing separately.  
Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.  
Use self-contained respiratory protective device in emergency situations.  
Check protective gloves prior to each use for their proper condition.  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.  
Impervious gloves  
Not determined  
Tightly sealed safety glasses.  
Full face protection  
Protective work clothing.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:**

<b>Form:</b>	Liquid
<b>Colour:</b>	Colourless
<b>Smell:</b>	Acrid
<b>Odour threshold:</b>	Not determined.

**pH-value:** Not determined.**Change in condition**

<b>Melting point/Melting range:</b>	Not determined
<b>Boiling point/Boiling range:</b>	112 °C
<b>Sublimation temperature / start:</b>	Not determined
<b>Inflammability (solid, gaseous)</b>	Not determined.
<b>Ignition temperature:</b>	Not determined
<b>Decomposition temperature:</b>	Not determined
<b>Self-inflammability:</b>	Product is not selfigniting.
<b>Critical values for explosion:</b>	
<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined
<b>Steam pressure at 20 °C:</b>	40 hPa
<b>Density at 20 °C</b>	1,16 g/cm <sup>3</sup>
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Fully miscible
<b>Partition coefficient (n-octanol/water):</b>	Not determined.
<b>Viscosity:</b>	
<b>dynamic:</b>	Not determined.
<b>kinematic:</b>	Not determined.

**Solvent content:**

<b>Organic solvents:</b>	0,0 %
<b>9.2 Other information</b>	No further relevant information available.

**SECTION 10: Stability and reactivity****10.1 Reactivity****10.2 Chemical stability****Thermal decomposition / conditions to be avoided:****10.3 Possibility of hazardous reactions****10.5 Incompatible materials:****10.6 Hazardous decomposition products:**

No information known.  
Stable under recommended storage conditions.  
No decomposition if used and stored according to specifications.  
Reacts with metals forming hydrogen  
Water reacts violently with alkali metals.  
Bases  
Metals  
Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many reactive organic and inorganic chemicals.  
Hydrogen fluoride

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity:**

Danger by skin resorption.  
Fatal if inhaled.  
Fatal in contact with skin.  
Fatal if swallowed.

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Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

**LD/LC50 values that are relevant for classification:****7664-39-3 hydrogen fluoride**

Inhalative LC50/1H | 1276 ppm/1H (rat)

**Skin irritation or corrosion:**

Causes severe skin burns.

**Eye irritation or corrosion:**

Causes serious eye damage.

**Sensitization:**

No sensitizing effect known.

**Germ cell mutagenicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.

**Carcinogenicity:**

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.

**Specific target organ system toxicity -****repeated exposure:**

No effects known.

**Specific target organ system toxicity - single****exposure:**

No effects known.

**Aspiration hazard:**

No effects known.

**Additional toxicological information:**

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

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:

Corrosive

Very toxic

**SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:**

No further relevant information available.

**12.2 Persistence and degradability**

No further relevant information available.

**12.3 Bioaccumulative potential**

No further relevant information available.

**12.4 Mobility in soil**

No further relevant information available.

**Additional ecological information:****General notes:**

Do not allow product to reach ground water, water bodies or sewage system.

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

Water hazard class 2 (Self-assessment): hazardous for water.

Danger to drinking water if even small quantities leak into soil.

Avoid transfer into the environment.

**12.5 Results of PBT and vPvB assessment****PBT:**

Not applicable.

**vPvB:**

Not applicable.

**12.6 Other adverse effects**

No further relevant information available.

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****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.

**Recommended cleaning agent:**

Water, if necessary with cleaning agent.

**SECTION 14: Transport information****UN-Number****ADR, IMDG, IATA**

UN1790

**14.2 UN proper shipping name****ADR** 1790 HYDROFLUORIC ACID**IMDG, IATA** HYDROFLUORIC ACID**14.3 Transport hazard class(es)****ADR****Class**

8 (CT1) Corrosive substances.

**Label****IMDG, IATA**

8+6.1

**Class**

8 Corrosive substances.

**Label**

8+6.1

**Packing group****ADR, IMDG, IATA**

II

**14.5 Environmental hazards:****Marine pollutant:**

No

**14.6 Special precautions for user****Kemler Number:**

Warning: Corrosive substances.

**EMS Number:**

86

**Segregation groups**

F-A, S-B

Acids

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC****Code**

Not applicable.

**Transport/Additional information:****ADR****Excepted quantities (EQ):**

E2

**Limited quantities (LQ)**

1L

**Transport category**

2

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Tunnel restriction code

E

UN "Model Regulation":

UN1790, HYDROFLUORIC ACID, 8 (6.1), II

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Australian Inventory of Chemical Substances**

All ingredients are listed.

**Standard for the Uniform Scheduling of Drugs and Poisons**

7664-39-3 | hydrogen fluoride

S5, S6, S7

**National regulations****Information about limitation of use:**Employment restrictions concerning young persons must be observed.  
For use only by technically qualified individuals.**Classification according to VbF:**

Not applicable

**Water hazard class:**

Water hazard class 2 (Self-assessment): hazardous for water.

**Other regulations, limitations and prohibitive regulations****ELINCS (European List of Notified Chemical Substances)**

None of the ingredients is listed.

**Substances of very high concern (SVHC) according to REACH, Article 57**

None of the ingredients are listed.

**REACH - Pre-registered substances**

All ingredients are listed.

**15.2 Chemical safety assessment:**

A Chemical Safety Assessment has not been carried out.

**SECTION 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.

**Relevant phrases**

H300 Fatal if swallowed.  
 H310 Fatal in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H330 Fatal if inhaled.  
 R26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.  
 R35 Causes severe burns.

**Department issuing data specification sheet:**

Health, Safety and Environmental Department.

**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)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent

DE/E