

1. Identification of the substance/preparation and of the company/undertaking

Identification of the product

Catalogue No.: 100338

Product name: Hydrofluoric acid 40% GR for analysis ISO

Company/undertaking identification

Company: Merck KGaA * 64271 Darmstadt * Germany * Tel: +49 6151 72-0

Emergency telephone No.: Please contact the regional Merck representation in your country.

2. Composition/information on ingredients

Aqueous solution.

Synonyms

Hydrofluoric acid solution

Hazardous ingredients:

Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Labelling according to EC Directives	Content:
Hydrofluoric acid 7664-39-3	231-634-8	009-003-00-1	T+, C R 26/27/28-35	40 %

3. Hazards identification

Very toxic by inhalation, in contact with skin and if swallowed. Causes severe burns.

4. First aid measures

Initiate measures immediately!

First aiders should see to their own protection!

After inhalation: Fresh air. Seek medical advice. Keep airways free. In respiratory arrest artificial ventilation.

After contact with skin: Rinse with plenty of water for at least 10 minutes. Immediately remove contaminated clothes. Apply calcium gluconate gel (preparation: boil 5 g of calcium gluconate in 85 ml of hot distilled water, add 10 g glycerol. Allow 5 g of Tylose™ C600 to swell in the hot solution. Stable for 6 months, store in a cool place) and massage into the skin until the pain subsides, in between rinse with water and apply fresh gel. Continue gel therapy for another 15 minutes after the pain has subsided. If no calcium gluconate gel is available, apply several dressings thoroughly moistened with 20 % calcium gluconate solution. Medical advice absolutely required!

After contact with eyes: Rinse with plenty of water with opened palpebral fissure, protecting the unaffected eye (at least 10 minutes). Seek medical advice immediately!

After swallowing: Immediately give to drink plenty of water, add calcium (in the form of calcium gluconate or calcium lactate). Caution: In the case of vomiting risk of perforation! Administer more calcium gluconate solution. Laxative: Sodium sulfate (1 tablespoon/1/4 l water). Seek medical advice immediately.

Injured persons should rest and be protected from loss of warmth.

Note for the doctor: It is recommended to consult a doctor with experience in the treatment of lesions caused by hydrofluoric acid.

Catalogue No.: 100338
Product name: Hydrofluoric acid 40% GR for analysis ISO

5. Fire-fighting measures

Suitable extinguishing media:
In adaption to materials stored in the immediate neighbourhood.

Special risks:
Non-combustible. Ambient fire may liberate hazardous vapours. Hydrogen may form upon contact with metals (danger of explosion!).
The following may develop in event of fire: hydrogen fluoride.

Special protective equipment for fire fighting:
Do not stay in dangerous zone without suitable chemical protection clothing and self-contained breathing apparatus.

Other information:
Contain escaping vapours with water. Prevent fire-fighting water from entering surface water or groundwater.

6. Accidental release measures

Person-related precautionary measures:
Do not inhale vapours/aerosols. Avoid substance contact. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:
Do not allow to enter sewerage system.

Procedures for cleaning / absorption:
Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Forward for disposal. Clean up affected area.

Additional notes:
Render harmless: Treat with a mixture of lime in sodium carbonate solution (precipitation as calcium fluoride).

7. Handling and storage

Handling:

Notes for safe handling:
Work under hood. Do not inhale substance. Avoid generation of vapours/aerosols.

Storage:

Tightly closed. In a well-ventilated place. Protected from light. In plastic containers. Storage temperature: no restrictions. Accessible only for authorized persons.

8. Exposure controls/personal protection

Specific control parameter

EC

Name	Hydrogen fluoride
Value	1.8 ml/m ³
	1.5 mg/m ³

Catalogue No.: 100338
Product name: Hydrofluoric acid 40% GR for analysis ISO

Personal protective equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when vapours/aerosols are generated. Filter B (acc. to DIN 3181) for inorganic gases and vapours.

Eye protection: required.

Hand protection: required.

Other protective equipment: Acid-resistant protective clothing, Rubber boots.

Industrial hygiene:

Work under hood. Do not inhale substance. Avoid generation of vapours/aerosols. Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance. Under no circumstances eat or drink at workplace.

9. Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	pungent
pH value at (20 °C)	strongly acid
Melting point	~ -44 °C
Boiling point	~ 112 °C
Ignition temperature	not available
Flash point	not available
Explosion limits lower	not available
upper	not available
Density (20 °C)	1.13 g/cm ³
Solubility in water (20 °C)	soluble

10. Stability and reactivity*Conditions to be avoided*

Heating.

Substances to be avoided

metals, alkali metals, strong alkalis, silicon compounds, fluorine, potassium permanganate, phosphorus oxides, bismuth acid.

Hazardous decomposition products

in the event of fire: See chapter 5.

Further information

unsuitable working materials: metals, glass, quartzes/silicate ceramics.

Catalogue No.: 100338
Product name: Hydrofluoric acid 40% GR for analysis ISO

11. Toxicological information*Acute toxicity*

LC₅₀ (inhalation, rat): 1610 ppm(V) /1 h (anhydrous substance).
LCLo (inhalation, human): 50 ppm(V) /30 min (anhydrous substance).
TDLo (oral, human): 143 mg/kg (anhydrous substance).

The literature data available to us do not conform with the labelling prescribed by the EC. The EC has dossiers which have not been published.

Skin irritation test (rabbit): burns.
Eye irritation test (rabbit): burns.

Subacute to chronic toxicity

No indication of carcinogenic activity.
No indication of teratogenic properties.

Bacterial mutagenicity:
Ames-Test: negative.

Further toxicological information

Property that must be anticipated on the basis from the components of the preparation:
After inhalation of vapours: burns, damage of respiratory tract.
Resultant lesions may affect the following: bronchitis, pneumonia, pulmonary oedema.
After skin contact: burns. Possible damages: necrosis. Danger of skin absorption. Tendency of poor wound-healing after penetration of the substance.
After eye contact: Burns. Risk of corneal clouding.
After swallowing: Burns in oesophagus and stomach. Possible symptoms: pain, nausea and vomiting, spasms.
Systemic effects: After absorption of large quantities: collapse, coma. Latency time until onset of action.
Countermeasurements must be implemented at once.

Further data

Further hazardous properties cannot be excluded.
This substance should be handled with particular care.

12. Ecological information

Behavior in environmental compartments:
No bioaccumulation is to be expected (log P(o/w) <1).

Ecotoxic effects:
Quantitative data on the ecological effect of this product are not available.

Biological effects:
Harmful effect on aquatic organisms. Endangers drinking-water supplies if allowed to enter soil or water. Harmful effect due to pH shift. Forms toxic and corrosive mixtures with water even if diluted.
Toxic effect on fish and plankton.

Further ecologic data:
Henry constant: 1.96 Pa·m³/mol (anhydrous substance) (volatile).

Do not allow to enter waters, waste water, or soil!

Merck Safety Data SheetAccording to EC Directive
91/155/EECCatalogue No.: 100338
Product name: Hydrofluoric acid 40% GR for analysis ISO**13. Disposal considerations***Product:*

There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding laws and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste.

Packaging:

Disposal in compliance with official regulations. Handle contaminated packaging in the same way as the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

14. Transport information

Land transport	GGVS, GGVE, ADR, RID
Classification	8/7b
Name	1790 FLUORWASSERSTOFFSAEURE
Transport by river	ADN, ADNR
Classification	not tested
Transport by sea	IMDG, GGVSee
Classification	8/UN 1790/PG II
Ems	8-03
MFAG	
Name	HYDROFLUORIC ACID
Transport by air	ICAO, IATA
Classification	8/6.1/UN 1790/PG II
Name	HYDROFLUORIC ACID

The transport regulations are cited according to international regulations and in the form applicable in Germany (GGVS/GGVE). Possible national deviations in other countries are not considered.

THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !

15. Regulatory information*Labelling according to EC Directives*

Symbol:	T+ C	Very toxic Corrosive
R-phrases:	26/27/28-35	Very toxic by inhalation, in contact with skin and if swallowed. Causes severe burns.
S-phrases:	7/9-26-28-36/37/39-45	Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Merck Safety Data Sheet

According to EC Directive
91/155/EEC

Catalogue No.: 100338
Product name: Hydrofluoric acid 40% GR for analysis ISO

16. Other information

Text of any R phrases referred to under heading 2:

26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.
35 Causes severe burns.

Change in the chapter on toxicology.

General update.

Regional representation:

This information is given on the authorised Safety Data Sheet
for your country.

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.