

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name **Buffer HF-Improved**

Stock number: 44627

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:

Thermo Fisher (Kandel) GmbH
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. 3 H301 Toxic if swallowed.


Acute Tox. 2 H310 Fatal in contact with skin.

Acute Tox. 3 H331 Toxic 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; Toxic

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.

 C; Corrosive

R34: Causes burns.

 Xi; Irritant

R37: Irritating to respiratory system.

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

Hazard pictograms



GHS05 GHS06

Signal word Danger

Hazard-determining components of labelling:

Ammonium fluoride

Hydrogen fluoride

Hazard statements

H301 Toxic if swallowed.

H310 Fatal in contact with skin.

H331 Toxic if inhaled.

H314 Causes severe skin burns and eye damage.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P303+P361+P353 IF ON SKIN (or hair): 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.

P361 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: 12125-01-8 EINECS: 235-185-9 Index number: 009-006-00-8	Ammonium fluoride  T R23/24/25  Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331	33,0%
CAS: 7664-39-3 EINECS: 231-634-8 Index number: 009-002-00-6	Hydrogen fluoride  T+ R26/27/28;  C R35  Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330;  Skin Corr. 1A, H314	6,0%

Additional information None known.

Trade name **Buffer HF-Improved**

(Contd. of page 1)

Non-Hazardous Ingredients

CAS: 7732-18-5	Water	61,0%
EINECS: 231-791-2		

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Special First Aid training required.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
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.

After inhalation

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

After skin contact

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

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

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

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

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns.

Causes serious eye damage.

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 Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

5.2 Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Hydrogen fluoride (HF)

Nitrogen oxides (NOx)

Ammonia

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 product to reach sewage system or water bodies.

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 section 13.

Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required.

6.4 Reference to other sections

See Section 7 for information on safe handling

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.

Prevent formation of aerosols.

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 containers: metals and alloys.

Unsuitable material for container: ceramic, glass

Information about storage in one common storage facility:

Store away from strong bases.

Store away from metal powders.

Water reacts with many metals to give hydrogen, often violently. Water also reacts violently with many reactive organic and inorganic chemicals.

Store away from amines.

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 (6,0%)

AGW (Germany) Long-term value: 0,83 mg/m³, 1 ppm

2(l):DFG, EU, Y, H

PEL (USA) Long-term value: 3 ppm

as F

(Contd. on page 3)
DE

Trade name **Buffer HF-Improved**

(Contd. of page 2)

REL (USA)	Long-term value: 2,5 mg/m ³ , 3 ppm Ceiling limit: 5* mg/m ³ , 6* ppm *15-min, as F
TLV (USA)	Long-term value: 0,41 mg/m ³ , 0,5 ppm Ceiling limit: 1,64 mg/m ³ , 2 ppm as F; Skin, BEI

Ingredients with biological limit values:

7664-39-3 Hydrogen fluoride (6,0%)

BGW (Germany)	7,0 mg/g Kreatinin Untersuchungsmaterial: Urin Probennahmezeitpunkt: Expositionsende bzw. Schichtende Parameter: Fluorid
BEI (USA)	4,0 mg/g Kreatinin Untersuchungsmaterial: Urin Probennahmezeitpunkt: vor nachfolgender Schicht Parameter: Fluorid 3 mg/g creatinine Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific) 10 mg/g creatinine Medium: urine Time: end of shift Parameter: Fluorides (background, nonspecific)

Additional information: No data

8.2 Exposure controls

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.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment: Use self-contained respiratory protective device in emergency situations.

Recommended filter device for short term use:

Use a respirator with acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

Protection of hands:

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.

Material of gloves Impervious gloves

Penetration time of glove material (in minutes) Not determined

Eye protection:

Tightly sealed safety glasses.

Full face protection

Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form:	Liquid
Colour:	Colourless
Smell:	Acrid
Odour threshold:	Not determined.

pH-value: Not determined.

Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	103-105 °C
Sublimation temperature / start:	Not determined
Inflammability (solid, gaseous)	Not determined.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Self-inflammability:	Product is not selfigniting.

Danger of explosion: Not determined.

Critical values for explosion:

Lower:	Not determined
Upper:	Not determined
Steam pressure at 20 °C:	23 hPa
Density at 20 °C	1,12 g/cm ³
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Fully miscible
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not determined.
kinematic:	Not determined.

Solvent content:
Organic solvents: 0,0 %

Solids content: 33,0 %

9.2 Other information No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No information known.

10.2 Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

(Contd. on page 4)
DE

Trade name **Buffer HF-Improved**

(Contd. of page 3)

10.3 Possibility of hazardous reactions

Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many reactive organic and inorganic chemicals. Water reacts violently with alkali metals.

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials:

Cyanides
Sulfides
Bases
Metal powders
Amines

10.6 Hazardous decomposition products:

Hydrogen fluoride
Nitrogen oxides (NOx)
Ammonia

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

Toxic in contact with skin.
Toxic if inhaled.
Toxic if swallowed.
Danger by skin resorption.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

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: No effects known.

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

Reproductive toxicity: No effects known.

Specific target organ system toxicity - repeated exposure: No effects known.

Specific target organ system toxicity - single exposure: May cause respiratory irritation.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: No effects known.

Additional toxicological information:

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

Toxic in contact with skin.

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:

Toxic
Corrosive
Irritant

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.

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

UN2817

14.2 UN proper shipping name

ADR
IMDG, IATA

2817 AMMONIUM HYDROGENDIFLUORIDE SOLUTION
AMMONIUM HYDROGENDIFLUORIDE SOLUTION

14.3 Transport hazard class(es)

ADR



Class
Label
IMDG, IATA

8 (CT1) Corrosive substances.
8+6.1



Class
Label

8 Corrosive substances.
8+6.1

(Contd. on page 5)

Trade name **Buffer HF-Improved**

(Contd. of page 4)

Packing group ADR, IMDG, IATA	II
14.5 Environmental hazards: Marine pollutant:	No
14.6 Special precautions for user Kemler Number: EMS Number: Segregation groups	Warning: Corrosive substances. 86 F-A,S-B Acids, ammonium compounds
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): Limited quantities (LQ) Transport category Tunnel restriction code	E2 1L 2 E
UN "Model Regulation":	UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 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

Technical instructions (air):

Class	Share in %
Wasser	61,0
III	33,0

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.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.

None of the ingredients are listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

None of the ingredients is listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)

None of the ingredients is 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.
H301	Toxic if swallowed.
H310	Fatal in contact with skin.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.
H331	Toxic if inhaled.

R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

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

R35 Causes severe burns.

Department issuing SDS: Global Marketing 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

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

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

VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)