

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride
3100



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

Product identifier

Name of product Hydrogen fluoride
Art-Nr.: 3100
Name of substance hydrogen fluoride
Index No 009-002-00-6
EC No 231-634-8
CAS No 7664-39-3

Manufacturer/distributor

GHC Gerling, Holz & Co. Handels GmbH
Ruhrstraße 113, D-22761 Hamburg
Phone +49 (0) 40 853 123-0, Fax +49 (0) 40 853 123-66
E-Mail msds@ghc.de
Internet www.ghc.de

Advice

Phone +49 (0) 40 853 123-0
Fax +49 (0) 40 853 123-66

Emergency advice

GHC Gerling, Holz & Co. Handels GmbH
Phone +49 (0) 40 853 123-0

Recommended intended purpose(s)

Basic substance.
Etchant.

! 2. Hazards identification

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

T+; R26/27/28
C; R35

R-phrases

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

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
--------------------------------------	-------------------	--------------------------

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

Hazard statements for health hazards

H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 30.11.2010

Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS05



GHS06

Signal word

Danger

Hazard statements for health hazards

H300 Fatal if swallowed.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.
H330 Fatal if inhaled.

Precautionary Statements

Prevention

P260 Do not breathe gas/vapours.
P262 Do not get in eyes, on skin, or on clothing.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove 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.
P315 Get immediate medical advice/attention.

Storage

P403 Store in a well-ventilated place.
P405 Store locked up.

Supplemental Hazard information (EU)

Health properties

Corrosive to the respiratory tract.

! Information pertaining to special dangers for human and environment

Dangerous substances are released in case of decomposition.
Contact with liquid may cause cold burns/frostbite.
Receptacle under pressure.

3. Composition/information on ingredients

CAS No 7664-39-3

EC No 231-634-8

Index No 009-002-00-6

hydrogen fluoride

4. First aid measures

General information

Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.
Seek medical treatment immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100

In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).

Seek medical treatment immediately.

In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of contact with skin wash off immediately with soap and water.

Immediate medical treatment necessary, as untreated burns can result in slow-healing wounds.

In case of skin contact, wearing rubber gloves rub 2.5% calcium gluconate gel continuously into the affected area for 1.5 hours or until further medical care is available.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call for a doctor immediately.

In case of ingestion

Do not induce vomiting.

Call for a doctor immediately.

Rinse out mouth and give plenty of water to drink.

Physician's information / possible dangers

Risk of pulmonary oedema

Treatment (Advice to doctor)

Continue to monitor for pneumonia and pulmonary oedema.

Monitor circulation.

5. Firefighting measures

Suitable extinguishing media

Product does not burn, fire-extinguishing activities according to surrounding.

Extinguishing media which must not be used for safety reasons

Full water jet

Special hazards arising from the substance or mixture

In the event of fire the following can be released:

Hydrogen.

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated).

Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture/explode.

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

Collect contaminated firefighting water separately, must not be discharged into the drains.

6. Accidental release measures

Personal precautions

See chapter 8.

Remove persons to safety.

Evacuate area.

Keep people away and stay on the upwind side.

Environmental precautions

Do not discharge into the drains or bodies of water..

Collect contaminated water / firefighting water separately.

If possible, stop flow of product.

Prevent spread over a wide area (e.g. by containment or oil barriers).

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 30.11.2010

Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100

Suppress gases/vapours/mists with water spray jet
Do not discharge into the subsoil/soil.

Methods for cleaning up

Ensure adequate air ventilation.

Take up with absorbent material (e.g. sand, kieselguhr, acid binder, general-purpose binder, sawdust).

Clean contaminated objects and floor thoroughly under consideration of environment regulations.

After taking up the material dispose according to regulation.

Additional Information

Informations for personal protective equipment see chapter 8.

! 7. Handling and storage

! Advice on safe handling

Use only in thoroughly ventilated areas.

Transfer and handle only in enclosed systems.

Prevent cylinders from falling over.

Ensure valve outlet cap nut or plug is correctly fitted.

Ensure valve protection device is correctly fitted.

Open valve slowly to avoid pressure shock.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

Do not allow backfeed into the container.

Suck back of water into the container must be prevented.

No water to valves, flanges and other fittings.

Purging of pipes and valves with inert gases - to avoid: water, solvents.

Advice on protection against fire and explosion

The product is not combustible.

Requirements for storage rooms and vessels

Ventilate store-rooms thoroughly.

Do not use glass containers.

Do not use ceramic containers.

Use transportable pressure equipment.

Suitable materials: Normalised steel and carbon steel, tempered steel, stainless steel.

Valve: Suitable materials: Carbon steels, stainless steel.

Unsuitable materials: Aluminium alloys, brass, copper alloys.

Advice on storage compatibility

Do not store with combustible materials.

Do not store together with animal feedstuffs.

Do not store together with food.

Do not store together with oxidizing agents.

Further information on storage conditions

Ensure valve protection device is correctly fitted.

Store closed container at cool and aired place.

Store only in original container at temperature of 50°C maximum (=122°F).

Prevent cylinders from falling over.

Information on storage stability

Unlimited stability.

Recommendation(s) for intended use

no

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride
3100



8. Exposure controls/personal protection

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
7664-39-3	Hydrogen fluoride	WEL, 8 hours	1,5	1,8	UK (EH40 / 2005)
		Short-term	2,5	3	
7664-39-3	Hydrogen fluoride	TWA, 8 hours	2,5	3	USA (NIOSH)
		Short-term	5	6	
7664-39-3	Hydrogen fluoride	PEL, 8 hours		3	USA (OSHA, table Z-2)

Indicative occupational exposure limit values (91/322/EEC, 2000/39/EC, 2006/15/EC or 2009/161/EU)

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
7664-39-3	hydrogen fluoride	8 hours	1,5	1,8	
		Short-term	2,5	3	

Respiratory protection

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Short term: filter apparatus, combination filter E-P2

Breathing apparatus in the event of high concentrations.

Keep self contained breathing apparatus readily available for emergency use.

Hand protection

chemical-resistant gloves

Glove material specification [make/type, thickness, permeation time/life]: FKM, >= 0,7 mm, > 480 min

Eye protection

safety goggles, in case of increased risk add protective face shield

Skin protection

protective clothing

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink, smoke or take drugs.

Wash hands before breaks and after work.

9. Physical and chemical properties

Form	Colour	Odour
compressed liquified gas	colourless	pungent

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	< 1	20 °C	10 %		watery solution
Acid number	not applicable				
boiling point	19,5 °C		1013 hPa		
melting point	-83,4 °C				

Safety Data Sheet according to Regulation (EC)**No. 1907/2006 (REACH)**

Printed 30.11.2010

Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100

	Value	Temperature	at	Method	Remark
Flash point	no				
Flammability (gas)	no				
Ignition temperature	no				
Autoignition	no				
Lower explosion limit	no				
Upper explosion limit	no				
Vapour pressure	1031 hPa	20 °C			
Density	0,967 g/cm ³	20 °C			information concerns to liquid phase
Rel. vapour density	0,71				
Solubility in water					multimiscible
Partition coefficient (log p_{OW})	-1,4				
Viscosity dynamic	0,214 mPa*s	20 °C			information concerns to liquid phase
Solvent concentration	not applicable				
Oxidizing properties	no				
Explosive properties	no				
Additional information	Product effects hygroscopic. Vapours are less heavy than air.				

10. Stability and reactivity**Conditions to avoid**

Heat sources / heat - risk of bursting.

Humidity.

Materials to avoid

Reactions with organic substances.

Reactions with water.

Reactions with metals, with evolution of hydrogen.

Reactions with alkalies.

Safety Data Sheet according to Regulation (EC)**No. 1907/2006 (REACH)**

Printed 30.11.2010

Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100

Hazardous decomposition products

Hydrogen

Additional information

Stable under normal conditions.

11. Toxicological information**Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	792 - 1909 mg/m ³ (1 h)	rat		
Irritability skin	strong corrosive	rabbit	OECD 404	watery solution
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				No experimental information on genotoxicity in vitro and in vivo available.
Reproduction-Toxicity				Indications of toxic effects are available from reproduction studies in animals.
Carcinogenicity				No indications of carcinogenic effects are available from long-term trials.

Experiences made from practice

Risk of strong health injuries in case of long-term exposition.
Inhalation can cause damage to the respiratory tract or lungs.
Irritates respiratory tract.
Pulmonary damage is possible.
Irritates mucous membranes.

12. Ecological information**Data on elimination (persistence and degradability)**

	Elimination rate	Method of analysis	Method	Validation
Physico-chemical degradability				not determined

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride

3100



	Elimination rate	Method of analysis	Method	Validation
Biological degradability	Inorganic product, cannot be eliminated from the water by biological purification processes.			
Biological eliminability	Inorganic product, cannot be eliminated from the water by biological purification processes.			

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 51 mg/l (96 h)	Oncorhynchus mykiss		fluoride
Daphnia	EC50 97 mg/l (48 h)	Daphnia magna		fluoride
Algae	EC50 43 mg/l (96 h)	Scenedesmus subspicatus		fluoride

Additional ecological information

	Value	Method	Remark
COD			not determined
BOD			not determined

General regulation

Do not allow uncontrolled leakage of product into the environment.
Product is not allowed to be discharged into the ground water or aquatic environment.
Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants.

13. Disposal considerations

Waste code No.	Name of waste
16 05 04*	gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. Transport information

Land and inland navigation transport ADR/RID

UN 1052 HYDROGEN FLUORIDE, ANHYDROUS, 8 (6.1), I, (C/D), Classification code: CT1

Marine transport IMDG

UN 1052 HYDROGEN FLUORIDE, ANHYDROUS, 8 (6.1), I

Air transport ICAO/IATA-DGR

UN 1052 Hydrogen fluoride, anhydrous, 8 (6.1)

FORBIDDEN

**Safety Data Sheet according to Regulation (EC)
No. 1907/2006 (REACH)**

Printed 30.11.2010
Revision 30.11.2010 (GB) Version 7.1

Hydrogen fluoride
3100



15. Regulatory information

16. Other information

Recommend uses and restrictions

National and local regulations concerning chemicals shall be observed.

Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the 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.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.

R 35 Causes severe burns.

H300 Fatal if swallowed.

H310 Fatal in contact with skin.

H314 Causes severe skin burns and eye damage.

H330 Fatal if inhaled.