

Hydrofluoric Acid 49%

Version number: 1.0

SECTION 1: Identification

1.1 Product identifier

Trade name Hydrofluoric Acid 49%
CAS number not relevant (mixture)

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

Relevant identified uses Discharging agent
 Cleaning agent
 Semiconductors

Uses advised against Do not use for squirting or spraying
 Do not use for products which come into direct contact with the skin

1.3 Details of the supplier of the safety data sheet

Valudor Products, LLC Telephone: +1 (760) 635 8500
 179 Calle Magdalena Suite 100 e-mail: info@valudor.com
 Encinitas, California CA 92024 Website: www.valudor.com
 United States

1.4 Emergency telephone number

Emergency information 800-535-5053 (Infotrac)
 As above or nearest toxicological information centre.

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
A.1O	acute toxicity (oral)	2	Acute Tox. 2	H300
A.1D	acute toxicity (dermal)	1	Acute Tox. 1	H310
A.1I	acute toxicity (inhal.)	2	Acute Tox. 2	H330
A.2	skin corrosion/irritation	1A	Skin Corr. 1A	H314
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318

Hydrofluoric Acid 49%

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
B.16	substance or mixture corrosive to metals	1	Met. Corr. 1	H290

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Signal word danger

Pictograms

GHS05, GHS06



Hazard statements

- H290** May be corrosive to metals.
H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.

Precautionary statements

- P234** Keep only in original container.
P260 Do not breathe gas/mist/vapors/spray.
P262 Do not get in eyes, on skin, or on clothing.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 [In case of inadequate ventilation] wear respiratory protection.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304+P340 If inhaled: Remove person to fresh air and keep 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.
P310 Immediately call a poison center/doctor.
P320 Specific treatment is urgent (see on this label).
P330 Rinse mouth.
P352 Wash with plenty of water/...
P362 Take off contaminated clothing and wash it before reuse.
P390 Absorb spillage to prevent material damage.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Hydrofluoric Acid 49%

Precautionary statements

- P405** Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous ingredients for labelling hydrogen fluoride

2.3 Other hazards

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.



SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

Description of the mixture

Hazardous ingredients						
Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes	Specific Conc. Limits
hydrofluoric acid	CAS No 7664-39-3	49	Acute Tox. 2 / H300 Acute Tox. 1 / H310 Acute Tox. 2 / H330 Skin Corr. 1A / H314 Eye Dam. 1 / H318	 	B(a)	Skin Corr. 1A; H314: C ≥ 7 % Skin Corr. 1B; H314: 1 % ≤ C < 7 % Eye Dam. 1; H318: C ≥ 1 % Eye Irrit. 2; H319: 0.1 % ≤ C < 1 %

Notes

B(a): The classification refers to an aqueous solution

for full text of H-phrases: see SECTION 16

The specific exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

- Call a physician immediately.
- Immediate effects can be expected after short-term exposure.
- Self-protection of the first aider.
- Take off immediately all contaminated clothing.
- Remove affected person from the danger area and lay down.
- Do not leave affected person unattended.

Hydrofluoric Acid 49%

Following inhalation

Call a physician immediately.

Provide fresh air.

Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus.

Following skin contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.

Rub with a gel containing calcium gluconate.

Call a physician immediately. Causes poorly healing wounds.

Following eye contact

Call a physician immediately.

Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Remove contact lenses, if present and easy to do. Continue rinsing.

Rinse copiously with a calcium gluconate solution.

Following ingestion

Do NOT induce vomiting.

Rinse mouth immediately and drink plenty of water.

Immediately give to drink plenty of water, add calcium (in the form of calcium gluconate or calcium lactate).

Call a physician immediately.

Notes for the doctor

Seek the advice of a specialist.

4.2 Most important symptoms and effects, both acute and delayed

Corrosivity.

Acute respiratory distress.

Risk of blindness.

Vomiting.

Cardiovascular system.

Circulatory collapse.

Pneumonia.

Pulmonary oedema.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

coordinate firefighting measures to the fire surroundings

Unsuitable extinguishing media

none

Hydrofluoric Acid 49%

5.2 Special hazards arising from the substance or mixture

Non-combustible.
Hazardous decomposition products: Section 10.
May be corrosive to metals.

Hazardous combustion products

hydrogen fluoride (HF)

5.3 Advice for firefighters

Non-combustible.
Coordinate firefighting measures to the fire surroundings.
Keep containers cool with water spray.
In case of fire and/or explosion do not breathe fumes.
Do not allow firefighting water to enter drains or water courses.
Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

chemical protection suit, self-contained breathing apparatus (SCBA)

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Follow emergency procedures such as the need to evacuate the danger area or to consult an expert.
Wear respiratory protection.
Remove persons to safety.
Ventilate affected area.
Do not breathe mist/vapors/spray.
Do not get in eyes, on skin, or on clothing.
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water.
Retain contaminated washing water and dispose of it.
If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to clean up a spill

Collect spillage.
Absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.).

Appropriate containment techniques

Neutralization techniques.

Hydrofluoric Acid 49%

Use of adsorbent materials.

Equipment required for containment/clean-up
material for neutralising like diluted soda or diluted caustic soda

Other information relating to spills and releases

Place in appropriate containers for disposal.
Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.
Personal protective equipment: see section 8.
Incompatible materials: see section 10.
Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.

Specific notes/details

None.

Handling of incompatible substances or mixtures

Do not mix with alkali.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.
Remove contaminated clothing and protective equipment before entering eating areas.
Do not breathe mist/vapors/spray.
Do not get in eyes, on skin, or on clothing.
Wash thoroughly after handling.
Preventive skin protection (barrier creams/ointments) is recommended.

7.2 Conditions for safe storage, including any incompatibilities

Corrosive conditions

Store in corrosive resistant container with a resistant inner liner.

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.
Observe compatible storage of chemicals.

Hydrofluoric Acid 49%

Protect against external exposure, such as

frost

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

Ventilation requirements

Keep any substance that emits harmful vapors or gases in a place that allows these to be permanently extracted.

Provision of sufficient ventilation.

Specific designs for storage rooms or vessels

Keep container tightly closed and in a well-ventilated place.

Store locked up.

Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

Store in corrosive resistant container with a resistant inner liner.

7.3 Specific end use(s)

Discharging agent.

Cleaning agent.

Semiconductors.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)									
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Notation	Source
US	hydrogen fluoride	7664-39-3	REL	3 (10 h)	2.5 (10 h)	-	-	-	NIOSH REL
US	hydrogen fluoride	7664-39-3	PEL	3	-	-	-	F	29 CFR 1910.1000
US	hydrogen fluoride (hydrofluoric acid)	7664-39-3	PEL (CA)	0.4	0.33	1	0.83	F	Cal/OSHA PEL

Notation

F calculated as F (fluorine)

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Hydrofluoric Acid 49%

8.2 Exposure controls

Appropriate engineering controls

Use local and general ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection. Wear face-shield.

Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
CR: chloroprene (chlorobutadiene) rubber	≥ 0,5 mm	>120 minutes (permeation: level 4)
IIR: isobutene-isoprene (butyl) rubber	≥ 0,5 mm	>240 minutes (permeation: level 5)
FKM: fluoro-elastomer	≥ 0,4 mm	>480 minutes (permeation: level 6)

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Other protection measures

Chemical protection suit.

Acid-proof, acid-resistant boots or safety shoes.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Type : E (against acidic gases like sulfur dioxide or hydrogen chloride, color code: Yellow).

Type: E-P3 (combined filters against acidic gases and particles, colour code: Yellow/White) .

Environmental exposure controls

Use appropriate container to avoid environmental contamination.

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state

liquid

Color

colorless - clear

Odor

pungent

Hydrofluoric Acid 49%

Other safety parameters

pH (value) ~2 (20 °C), acid

Melting point/freezing point -36 °C

Boiling point or initial boiling point and boiling range 105 °C

Flash point not determined

Evaporation rate not determined

Flammability (solid, gas) not relevant
(fluid)

Explosive limits

Vapor pressure 36 hPa at 20 °C

Density 1.17 g/cm³ at 20 °C

Vapor density 1.27 (air = 1)

Relative density this information is not available

Solubility(ies)

Water solubility miscible in any proportion

Partition coefficient

n-octanol/water (log KOW) not relevant
(inorganic)

Auto-ignition temperature not determined

Decomposition temperature not relevant

Viscosity

Kinematic viscosity not determined

Dynamic viscosity not determined

Explosive properties none

Oxidizing properties none

Information for relevant hazard classes according to GHS

Corrosive to metals category 1: corrosive to metals

9.2 Other information there is no additional information

Hydrofluoric Acid 49%

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.
Substance or mixture corrosive to metals.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

Metals (due to the release of hydrogen in an acid/alkaline medium).
Vigorous reactions with:
Alkali hydroxide (caustic alkali).
Alkali metal.
Phosphorus oxides (P_xO_y).
Permanganates, e.g. potassium permanganate.

10.4 Conditions to avoid

Heat.

10.5 Incompatible materials

alkalines, glass, metals, methanesulfonic acid, oxidizers

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.
Hydrogen fluoride (HF).
Hydrogen.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification procedure

If not otherwise specified the classification is based on:
Ingredients of the mixture (additivity formula).

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Test data are not available for the complete mixture.
Fatal if swallowed.
Fatal in contact with skin.
Fatal if inhaled.

Acute toxicity estimate (ATE)

Oral	10.2 mg/kg
Dermal	10.2 mg/kg
Inhalation: vapor	1.02 mg/l/4h

Hydrofluoric Acid 49%

Acute toxicity of components of the mixture

Name of substance	CAS No	Exposure route	ATE
hydrofluoric acid	7664-39-3	oral	5 mg/kg
hydrofluoric acid	7664-39-3	dermal	5 mg/kg
hydrofluoric acid	7664-39-3	inhalation: vapor	0.5 mg/l/4h

Skin corrosion/irritation

Causes severe burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Skin sensitization

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory sensitization

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Germ cell mutagenicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Carcinogenicity

IARC Monographs

None of the ingredients are listed.

National Toxicology Program (United States)

None of the ingredients are listed.

OSHA Carcinogens

None of the ingredients are listed.

Reproductive toxicity

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - single exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Hydrofluoric Acid 49%

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

If swallowed:

corrosivity, severe abdominal pain, vomiting

If in eyes:

causes severe burns, risk of blindness

If inhaled:

cough, pain, choking, and breathing difficulties, causes severe burns, pneumonia, pulmonary oedema

If on skin:

risk of absorption via the skin, skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis

11.2 Other information

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Test data are not available for the complete mixture.

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Exposure time
hydrofluoric acid	7664-39-3	EC50	26 – 48 mg/l	Trichoptera	-	96 h
hydrofluoric acid	7664-39-3	EbC50	43 mg/l	algae	-	96 h

Aquatic toxicity (chronic)

Test data are not available for the complete mixture.

Aquatic toxicity (chronic) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Exposure time
hydrofluoric acid	7664-39-3	NOEC	4 mg/l	rainbow trout (Oncorhynchus mykiss)	-	21 d
hydrofluoric acid	7664-39-3	NOEC	3.7 mg/l	daphnia magna	-	21 d
hydrofluoric acid	7664-39-3	NOEC	50 mg/l	algae	-	7 d

Hydrofluoric Acid 49%

12.2 Persistence and degradability

Biodegradation

Data are not available.

Persistence

No data available.

12.3 Bioaccumulative potential

Test data are not available for the complete mixture.

n-octanol/water (log KOW) not relevant
(inorganic)

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	BCF	Log KOW
hydrofluoric acid	7664-39-3	53 – 58	-

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Other adverse effects

This information is not available.

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 2 Keep away from drains, surface and ground water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packages

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

Hydrofluoric Acid 49%

SECTION 14: Transport information

14.1 UN number

DOT	UN1790
IMDG-Code	UN1790
ICAO-TI	UN1790

14.2 UN proper shipping name

DOT	Hydrofluoric acid
IMDG-Code	HYDROFLUORIC ACID
ICAO-TI	Hydrofluoric acid

14.3 Transport hazard class(es)

DOT	8 (6.1)
IMDG-Code	8 (6.1)
ICAO-TI	8 (6.1)

14.4 Packing group

DOT	II
IMDG-Code	II
ICAO-TI	II

14.5 Environmental hazards

-

14.6 Special precautions for user


-

14.7 Transport in bulk according to IMO instruments

-


14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information


Particulars in the shipper's declaration	UN1790, Hydrofluoric acid, 8 (6.1), II
Reportable quantity (RQ)	204.1 lbs (92.65 kg) (hydrofluoric acid)
Danger label(s)	8+6.1
	
Special provisions (SP)	A6, A7, B15, IB2, N5, N34, T8, TP2, TP12
ERG No	157

Hydrofluoric Acid 49%

International Maritime Dangerous Goods Code (IMDG) Additional information

Marine pollutant	-
Danger label(s)	8+6.1
	
Special provisions (SP)	-
Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 L
EmS	F-A, S-B
Stowage category	D
Segregation group	1 - Acids.

International Civil Aviation Organization (ICAO-IATA/DGR) Additional information

Danger label(s)	8+6.1
	
Excepted quantities (EQ)	E2
Limited quantities (LQ)	0,5 L

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) all ingredients are listed

Superfund Amendment and Reauthorization Act (SARA TITLE III)

The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

none of the ingredients are listed

Specific Toxic Chemical Listings (EPCRA Section 313)

none of the ingredients are listed

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

none of the ingredients are listed

Clean Air Act

none of the ingredients are listed

Hydrofluoric Acid 49%

Right to Know Hazardous Substance List

Hazardous Substance List (NJ-RTK)

none of the ingredients are listed

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

none of the ingredients are listed

Drug precursors, Chemicals designated within the Controlled Substances Act, 21 U.S.C. § 802, paragraphs 34 (list I) and 35 (list II)

none of the ingredients are listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System.

American Coatings Association.

Category	Rating	Description
Chronic	/	none
Health	4	life-threatening; major or permanent damage may result from single or repeated overexposures
Flammability	0	material that will not burn under typical fire conditions
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	-

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	0	material that will not burn under typical fire conditions
Health	4	material that, under emergency conditions, can be lethal
Instability	0	material that is normally stable, even under fire conditions
Special hazard	-	-

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

Hydrofluoric Acid 49%

SECTION 16: Other information, including date of preparation or last revision

Date of preparation: 2022-11-07

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
Acute Tox.	Acute toxicity
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DOT	Department of Transportation (USA)
EbC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EmS	Emergency Schedule
ERG No	Emergency Response Guidebook - Number
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IARC	International Agency for Research on Cancer
IARC Mono-graphs	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code

Hydrofluoric Acid 49%

Abbr.	Descriptions of used abbreviations
IMDG-Code	International Maritime Dangerous Goods Code
log KOW	n-Octanol/water
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)
NOEC	No Observed Effect Concentration
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
ppm	Parts per million
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
STEL	Short-term exposure limit
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT).

International Maritime Dangerous Goods Code (IMDG).

Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties.

Health hazards.

Environmental hazards.

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H290	May be corrosive to metals.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H330	Fatal if inhaled.

Hydrofluoric Acid 49%

Responsible for the safety data sheet

Chemical Regulatory Compliance Company Telephone: +1 (630) 410-1660
Jasper, GA e-Mail: GHS@crc-us.com
USA Website: www.crc-us.com

Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.