Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 28.04.2026 *Version number 3 (replaces version 2)* *Revision: 19.04.2026*

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

· **1.1 Product identifier**
· **Trade name: Hydrofluoric acid 50-55%**
· **SDS number:** CH5450
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
· **Life cycle stages**
F Formulation or re-packing
IS Use at industrial Sites
· **Application of the substance / the mixture** Chemicals products for laboratory

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
CARLO ERBA REAGENTS
Chaussée du Vexin
Parc d'Affaires des Portes - BP616
27106 VAL DE REUIL Cedex
Téléphone: +33 (0)2 32 09 20 00
Télécopie: +33 (0)2 32 09 20 20
· **Further information obtainable from:**
Q.A / Normative
email: MSDS_CER-SDS@cer.dgroup.it
· **1.4 Emergency telephone number:**
Ireland - Tel : 00 353 1 8092568 - 00 353 1 8379964 (24h/24)
EU Tel : 112

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.
Eye Dam. 1 H318 Causes serious eye damage.

· **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

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· ***Hazard-determining components of labelling:***
hydrofluoric acid
· ***Hazard statements***
H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
· ***Precautionary statements***
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing 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.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***Determination of endocrine-disrupting properties*** *Not applicable*

SECTION 3: Composition/information on ingredients

· ***3.2 Mixtures***
· ***Description:***
Mixture made by the following substances:

CAS: 7732-18-5 *EINECS: 231-791-2* *RTECS: ZC 0110000*	*water, distilled, conductivity or of similarpurity*	*≤100%*

· ***Dangerous components:***

CAS: 7664-39-3 *EINECS: 231-634-8* *Index number: 009-002-00-1* *Reg.nr.: 01-2119458860-33*	*hydrofluoric acid* *Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; Skin Corr. 1A, H314* *Specific concentration limits: 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 %*	*≥50-<55%*

SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information:***
Remove immediately any clothing soiled by the product and wash with plenty of water. The rescuer has to be equipped with individual protection
Remove breathing equipment only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
· ***After inhalation:***
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.

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· ***After skin contact:***
Call a doctor immediately.
Immediately wash with water and soap and rinse thoroughly. Wash contaminated clothing before reuse.
Seek immediate medical advice.
If skin irritation continues, consult a doctor.
· ***After eye contact:***
Call a doctor immediately.
Rinse opened eye for several minutes under running water. Then consult a doctor.
· ***After swallowing:***
Do not induce vomiting; call for medical help immediately.
Call for a doctor immediately.
Rinse out mouth and then drink plenty of water.
Call a doctor immediately.
· ***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 extinguishing methods suitable to surrounding conditions.*
· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet.*
· ***5.2 Special hazards arising from the substance or mixture*** *No further relevant information available.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:***
In closed rooms wear a self contained breathing apparatus.
Do not inhale gases in case or fire or combustion.
· ***Additional information*** *Keep receptacles cool with water spray.*

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
Wear protective equipment. Keep unprotected persons away.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to penetrate the ground/soil.
Dilute with plenty of water after collecting the liquid.
Do not allow to enter sewers/ surface or ground water.
In case of seepage into the ground inform responsible authorities.
· ***6.3 Methods and material for containment and cleaning up:***
Collect the liquid with vacuum in a suitable container and absorb the remainder with a porous material (diatomite, acid binders, universal binders, etc).
Ensure adequate ventilation.
Use neutralising agent.
Dispose contaminated material as waste according to section 13.
· ***6.4 Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
Store in cool, dry place in tightly closed receptacles.
Ensure good ventilation/exhaustion at the workplace.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
When diluting always pour product into water and not vice versa.
Open and handle receptacle with care.
· ***Information about fire - and explosion protection:***
The product is not flammable.
Keep respiratory protective device available.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Provide acid-resistant floor.
Provide floor trough without outlet.
Use only receptacles specifically permitted for this substance/product.
· ***Information about storage in one common storage facility:***
Do not store together with alkalis (caustic solutions).
· ***Further information about storage conditions:***
Keep receptacle tightly sealed.
Store under lock and key and with access restricted to technical experts or their assistants only.
· ***7.3 Specific end use(s)*** *No further relevant information available.*

*
SECTION 8: Exposure controls/personal protection

· ***8.1 Control parameters***

· ***Ingredients with limit values that require monitoring at the workplace:***	
CAS: 7664-39-3 hydrofluoric acid	
IOELV	*Short-term value: 2.5 mg/m³, 3 ppm* *Long-term value: 1.5 mg/m³, 1.8 ppm*

· ***DNELs***		
CAS: 7664-39-3 hydrofluoric acid		
Inhalative	*DNEL (workers-acute systemic)*	*2.5 mg/m3*
	DNEL (workers-local acute effects)	*2.5 mg/m3*
	DNEL (workers-local chronic effects)	*0.0015 mg/m3*
	DNEL (workers-systemic chronic effects)	*1.5 mg/m3*

· ***PNECs***	
CAS: 7664-39-3 hydrofluoric acid	
PNEC (Fresh water)	*0.9 mg/l*
PNEC (Marine water)	*0.9 mg/l*
PNEC (STP)	*51 mg/l*
PNEC (Soil)	*11 mg/kg*

· ***Additional information:*** *The lists valid during the making were used as basis.*

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· ***8.2 Exposure controls***
· ***Appropriate engineering controls***
Safety shower and eye bath. Mechanical exhaust required.
No further data; see section 7.
· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Do not inhale gases / fumes / aerosols.
Do not inhale dust / smoke / mist.
Avoid contact with the eyes and skin.
Clean skin thoroughly immediately after handling the product.
· ***Respiratory protection:***



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Suitable respiratory protective device recommended in case of leakages or handling in open devices.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
· ***Hand protection***
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation



Protective gloves

Rubber gloves
Only use chemical-protective gloves with CE-labelling of category III.
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
· ***Material of gloves***
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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· ***Eye/face protection***



Face protection

· ***Body protection:***
Protective work clothing
Acid resistant protective clothing
Apron
· ***Environmental exposure controls***
In case of unintended release of the product: See section 6 of the Safety Data Sheet.

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· **Risk management measures** Keep good industrial hygiene.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **Molecular weight**	
· **Physical state**	Liquid
· **Colour:**	Colourless
· **Odour:**	Unpleasant
· **Odour threshold:**	Not determined
· **Melting point/freezing point:**	-35 °C
· **Boiling point or initial boiling point and boiling range**	104 °C
· **Flammability**	Not applicable
· **Lower and upper explosion limit**	
· **Lower:**	Not determined
· **Upper:**	Not determined
· **Flash point:**	Not applicable
· **pH at 20 °C**	<2
· **Viscosity:**	
· **Kinematic viscosity**	Not determined
· **Dynamic:**	Not determined
· **Solubility**	
· **water:**	Fully miscible.
· **Partition coefficient n-octanol/water (log value)**	Not determined
· **Vapour pressure at 20 °C:**	40 hPa (CAS: 7664-39-3 hydrogen fluoride)
· **Vapour pressure at 50 °C:**	123 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	1.17 g/cm³
· **Relative density**	Not determined
· **Vapour density**	Not determined

· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Product is not selfigniting.
· **Explosive properties:**	Product does not present an explosion hazard.
· **Solvent separation test:**	
· **Water:**	>45.0 %
· **Solids content:**	0.0 %
· **Change in condition**	
· **Evaporation rate**	Not determined

· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Void
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void

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· ***Pyrophoric liquids***	*Void*
· ***Pyrophoric solids***	*Void*
· ***Self-heating substances and mixtures***	*Void*
· ***Substances and mixtures, which emit flammable gases in contact with water***	*Void*
· ***Oxidising liquids***	*Void*
· ***Oxidising solids***	*Void*
· ***Organic peroxides***	*Void*
· ***Corrosive to metals***	*Void*
· ***Desensitised explosives***	*Void*

SECTION 10: Stability and reactivity

· ***10.1 Reactivity*** *See 10.3*
· ***10.2 Chemical stability***
· ***Thermal decomposition / conditions to be avoided:***
No decomposition if used and stored according to specifications.
· ***10.3 Possibility of hazardous reactions***
Reacts with various metals.
Reacts dangerously with alkali (lyes) or amines in bulk.
· ***10.4 Conditions to avoid*** *No further relevant information available.*
· ***10.5 Incompatible materials:*** *Metals*
· ***10.6 Hazardous decomposition products:***
No decomposition products known, more dangerous than the product as such.

SECTION 11: Toxicological information

· ***11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008***
· ***Acute toxicity*** *Fatal if swallowed, in contact with skin or if inhaled.*

· ***LD/LC50 values relevant for classification:***

CAS: 7664-39-3 hydrofluoric acid		
Oral	*LD50*	*5 mg/kg (ATE)*
Dermal	*LD50*	*5 mg/kg (ATE)*
Inhalative	*LC50/4 h*	*0.5 ppm (ATE)*

· ***Primary irritant effect:***
· ***Skin corrosion/irritation*** *Causes severe skin burns and eye damage.*
· ***Serious eye damage/irritation***
Strong caustic effect.
Strong irritant with the danger of severe eye injury.
Causes serious eye damage.
· ***Ingestion:*** *Fatal if swallowed.*
· ***Inhalation:***
Inhalation may result in spasm, inflammation and edema of the larynxand bronchi, chemical pneumonitis, and pulmonary edema.
Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Fatal if inhaled.
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Germ cell mutagenicity*** *Based on available data, the classification criteria are not met.*
· ***Carcinogenicity*** *Based on available data, the classification criteria are not met.*
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*

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· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.
· **11.2 Information on other hazards**

· **Endocrine disrupting properties**
None of the ingredients is listed.

SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** No further relevant information available.
· **Method**
· **Ecological information** Not available
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable
· **vPvB:** Not applicable
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects**
· **Remark:** Local effects: may change the environmental pH endangering the aquatic life.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Danger to drinking water if even small quantities leak into the ground.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Reutilise if possible or contact a waste processors for recycling or safe disposal.
· **Waste disposal key:**
The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.
2014/955/UE: Council Decision of 18 December 2014 amending the list of wastes contained in Decision 2000/532/EC.
Directive 2008/98/EC of the european parliament and of the council of 18 November 2008, in ist latest valid version.

· **European waste catalogue**	
06 00 00	WASTES FROM INORGANIC CHEMICAL PROCESSES
06 01 00	wastes from the manufacture, formulation, supply and use (MFSU) of acids
06 01 03*	hydrofluoric acid

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HP6	Acute Toxicity
HP8	Corrosive

· ***Uncleaned packaging:***
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.
Directive 94/62/EC of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.
· ***Recommendation:***
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.
· ***Recommended cleansing agents:*** *Water, if necessary together with cleansing agents.*

SECTION 14: Transport information

· ***14.1 UN number or ID number***
· ***ADR/RID, IMDG, IATA*** *UN1790*

· ***14.2 UN proper shipping name***
· ***ADR/RID*** *1790 HYDROFLUORIC ACID*
· ***IMDG*** *HYDROFLUORIC ACID*
· ***IATA*** *Hydrofluoric acid*

· ***14.3 Transport hazard class(es)***

· ***ADR/RID***



· ***Class*** *8 (CT1) Corrosive substances.*
· ***Label*** *8+6.1*

· ***IMDG***



· ***Class*** *8 Corrosive substances.*
· ***Label*** *8/6.1*

· ***IATA***



· ***Class*** *8 Corrosive substances.*
· ***Label*** *8 (6.1)*

· ***14.4 Packing group***
· ***ADR/RID, IMDG, IATA*** *II*

· ***14.5 Environmental hazards:*** *Not applicable*

· ***14.6 Special precautions for user*** *Warning: Corrosive substances.*

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· ***Hazard identification number (Kemler code):***	*86*
· ***EMS Number:***	*F-A,S-B*
· ***Segregation groups***	*(SGG1) Acids*
· ***Stowage Category***	*D*
· ***Stowage Code***	*SW1 Protected from sources of heat.* *SW2 Clear of living quarters.*
· ***Handling Code***	*H2 Keep as cool as reasonably practicable*
· ***Segregation Code***	*SG36 Stow "separated from" SGG18-alkalis.* *SG49 Stow "separated from" SGG6-cyanides*
· ***14.7 Maritime transport in bulk according to IMO instruments***	*Not applicable*
· ***Transport/Additional information:***	
· ***ADR/RID***	
· ***Limited quantities (LQ)***	*1L*
· ***Excepted quantities (EQ)***	*Code: E2* *Maximum net quantity per inner packaging: 30 ml* *Maximum net quantity per outer packaging: 500 ml*
· ***Transport category***	*2*
· ***Tunnel restriction code***	*E*
· ***IMDG***	
· ***Limited quantities (LQ)***	*1L*
· ***Excepted quantities (EQ)***	*Code: E2* *Maximum net quantity per inner packaging: 30 ml* *Maximum net quantity per outer packaging: 500 ml*
· ***UN "Model Regulation":***	*UN 1790 HYDROFLUORIC ACID, 8 (6.1), II*

SECTION 15: Regulatory information

· ***15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***

· ***SARA Section 355 (extremely hazardous substances)***

CAS: 7664-39-3	*hydrofluoric acid*

· ***SARA Section 313 (specific toxic chemical listings)***

CAS: 7664-39-3	*hydrofluoric acid*

· ***Prop 65 - Chemicals known to cause cancer***

None of the ingredients is listed.

· ***Directive 2012/18/EU***
· ***Named dangerous substances - ANNEX I*** *None of the ingredients is listed.*
· ***Seveso category*** *H1 ACUTE TOXIC*
· ***Qualifying quantity (tonnes) for the application of lower-tier requirements*** *5 t*
· ***Qualifying quantity (tonnes) for the application of upper-tier requirements*** *20 t*

· ***REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)***

None of the ingredients is listed.

· ***LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)***

None of the ingredients is listed.

· ***REGULATION (EC) No 1907/2006 ANNEX XVII*** *Conditions of restriction: 3*

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· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

· **REGULATION (EU) 2024/590 on substances that deplete the ozone layer**

None of the ingredients is listed.

· **National regulations:**

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

· **Other regulations, limitations and prohibitive regulations**

>0.0 g/l

0.00 %

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

None of the ingredients is listed.

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H300 Fatal if swallowed.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.

· **Training hints** Deploy only trained chemical workers.

· **Department issuing SDS:** Q.A./Normative

· **Date of previous version:** 21.08.2023

· **Version number of previous version:** 2

· **Abbreviations and acronyms:**

RCR : Risk Characterisation Ratio
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised 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)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Acute Tox. 2: Acute toxicity – Category 2
Acute Tox. 1: Acute toxicity – Category 1
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1

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· ***Sources***

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006, REACH, in the latest valid version.
Regulation (EC) N° 1272/2008 of the European Parliament and of the Council of 16 December 2008, CLP, in the latest valid version.
Globally Harmonized System, GHS
ADR/RID, IMDG, IATA
PubChem : an open chemistry database at the National Institutes of Health (NIH)
ECHA : European CHemicals Agency
GESTIS : Information system on hazardous substances of the German Social Accident Insurance

· **** Data compared to the previous version altered.*** .