Safety data sheet

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

Printing date 02.04.2026 *Version number 17 (replaces version 16)* *Revision: 02.04.2026*

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

· **1.1 Product identifier**
· **Trade name: Hanus's reagent**
· **SDS number:** CH0451
· **Registration number** 01-2119475328-30
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
No further relevant information available.
· **Life cycle stages** 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**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



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**



GHS02 GHS05

· **Signal word** Danger

· **Hazard-determining components of labelling:**
Acetic acid glacial
Iodine bromide

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· ***Hazard statements***
H226 Flammable liquid and vapour.
H314 Causes severe skin burns and eye damage.
· ***Precautionary statements***
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves / eye protection / face 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.
P310 Immediately call a POISON CENTER/doctor.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
· ***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:*

· ***Dangerous components:***

CAS: 64-19-7 *EINECS: 200-580-7* *Index number: 607-002-00-6* *RTECS: AF 1225000* *Reg.nr.: 01-2119475328-30*	*Acetic acid glacial* *Flam. Liq. 3, H226; Skin Corr. 1A, H314* *Specific concentration limits: Skin Corr. 1A; H314: C ≥ 90 %* *Skin Corr. 1B; H314: 25 % ≤ C < 90 %* *Skin Irrit. 2; H315: 10 % ≤ C < 25 %* *Eye Irrit. 2; H319: 10 % ≤ C < 25 %*	*≥90-≤100%*
	Iodine bromide *Skin Corr. 1B, H314; STOT SE 3, H335*	*≥1-<2.5%*

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
· ***After inhalation:*** *In case of unconsciousness place patient stably in side position for transportation.*
· ***After skin contact:***
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:*** *Rinse opened eye for several minutes under running water. Then consult a doctor.*
· ***After swallowing:***
Drink plenty of water and provide fresh air.
Do not induce vomiting; call for medical help immediately.

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Call for a doctor immediately.
Rinse out mouth and then drink plenty of water.
· ***Information for doctor:*** *Show the doctor this Material Safety Data Sheet.*
· ***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:***
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet.*
· ***5.2 Special hazards arising from the substance or mixture*** *Carbon monoxide and carbon dioxide*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *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.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
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.
· ***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.
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.
Keep away from heat and direct sunlight.
Ensure good ventilation/exhaustion at the workplace.
Pneumatic conveyance only with nitrogen or other inert gases.
When diluting always pour product into water and not vice versa.
· ***Information about fire - and explosion protection:***



Keep ignition sources away - Do not smoke.

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Protect from heat.
Protect against electrostatic charges.
Do not spray onto a naked flame or any incandescent material.
Use explosion-proof apparatus / fittings and spark-proof tools.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Store in a well-ventilated place. Keep container tightly closed.
Store in a cool location.
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:*** *Store in cool, dry conditions in well sealed receptacles.*
· ***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: 64-19-7 Acetic acid glacial	
IOELV	*Short-term value: 50 mg/m³, 20 ppm* *Long-term value: 25 mg/m³, 10 ppm*

· ***DNELs***		
CAS: 64-19-7 Acetic acid glacial		
Inhalative	*DNEL (workers-local effects Acute)*	*25 mg/m3*
	DNEL (workers-local chronic effects)	*25 mg/m3*

· ***PNECs***	
CAS: 64-19-7 Acetic acid glacial	
PNEC (Fresh water)	*3.058 mg/l*
PNEC (Intermittent rejection)	*30.58 mg/l*
PNEC (Freshwater sediment)	*11.36 mg/kg*
PNEC (Marine water)	*0.3058 mg/l*
PNEC (Seawater sediment)	*1.136 mg/l*
PNEC (STP)	*85 mg/l*
PNEC (Soil)	*0.478 mg/kg*

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

· ***8.2 Exposure controls***
· ***Appropriate engineering controls*** *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.
Do not inhale gases / fumes / aerosols.
Do not inhale dust / smoke / mist.

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Avoid contact with the eyes and skin.

· ***Respiratory protection:***
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
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.
Neoprene gloves

· ***Penetration time of glove material***
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· ***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.

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

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***	
· ***Molecular weight***	*60.05 g*
· ***Physical state***	*Liquid*
· ***Colour:***	*Light yellow*
· ***Odour:***	*Pungent*

· ***Odour threshold:***

64-19-7	*Acetic acid glacial*	*24,3 ppm*

· ***Melting point/freezing point:***	*16.6 °C*
· ***Boiling point or initial boiling point and boiling range***	*104 °C*
· ***Flammability***	*Not applicable*
· ***Lower and upper explosion limit***	
· ***Lower:***	*4 Vol %*

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· **Upper:**	17 Vol %
· **Flash point:**	>55 °C
· **Auto-ignition temperature:**	485 °C
· **Decomposition temperature:**	Not determined
· **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:**	16 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	1.12246 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:**	Not determined
· **Solvent separation test:**	
· **Organic solvents:**	98.0 %
· **Solids content:**	2.0 %
· **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**	Flammable liquid and vapour.
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **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

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· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used 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**
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
· **10.5 Incompatible materials:** Metals
· **10.6 Hazardous decomposition products:**
Hydrogen bromide
Carbon monoxide, Carbon dioxide.

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**		
Oral	LD50	3,310 mg/kg (rat)

CAS: 64-19-7 Acetic acid glacial		
Oral	LD50	3,310 mg/kg (rat)

· **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:** It can be harmfull if swallowed.
· **Inhalation:**
Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
· **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.
· **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.
· **Other information (about experimental toxicology):** No further relevant information available.
· **11.2 Information on other hazards**

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

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
CAS: 64-19-7 Acetic acid glacial	
EC50/48h	>300.82 mg/l (Daphnia)
EC50	>300.82 mg/L (72h)
LC50/96h	>300.82 mg/l (fishes)

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LC50	*>300.82 mg/l (fishes) (96h)*
LC50/72h	*>300.82 mg/l*

· ***12.2 Persistence and degradability*** *No further relevant information available.*
· ***Method***
· ***Ecological information*** *Not available*
· ***12.3 Bioaccumulative potential*** *BOD5/ThOD = 85%*
· ***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 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
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***	
07 00 00	*WASTES FROM ORGANIC CHEMICAL PROCESSES*
07 07 00	*wastes from the MFSU of fine chemicals and chemical products not otherwise specified*
07 07 99	*wastes not otherwise specified*
HP3	*Flammable*
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.

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Packagings that may not be cleansed are to be disposed of in the same manner as the product.
· ***Recommended cleansing agents:***
Alcohol
Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· ***14.1 UN number or ID number***	
· ***ADR/RID, IMDG, IATA***	*UN2920*
· ***14.2 UN proper shipping name***	
· ***ADR/RID***	*2920 CORROSIVE LIQUID, FLAMMABLE, N.O.S. (ACETIC ACID, GLACIAL)*
· ***IMDG***	*CORROSIVE LIQUID, FLAMMABLE, N.O.S. (ACETIC ACID, GLACIAL)*
· ***IATA***	*Corrosive liquid, flammable, n.o.s. (ACETIC ACID, GLACIAL)*
· ***14.3 Transport hazard class(es)***	
· ***ADR/RID***	



· ***Class***	*8 (CF1) Corrosive substances.*
· ***Label***	*8+3*
· ***IMDG***	



· ***Class***	*8 Corrosive substances.*
· ***Label***	*8/3*
· ***IATA***	



· ***Class***	*8 Corrosive substances.*
· ***Label***	*8 (3)*
· ***14.4 Packing group***	
· ***ADR/RID, IMDG, IATA***	*II*
· ***14.5 Environmental hazards:***	
· ***Marine pollutant:***	*No*
· ***14.6 Special precautions for user***	*Warning: Corrosive substances.*
· ***Hazard identification number (Kemler code):***	*83*
· ***EMS Number:***	*F-E,S-C*
· ***Segregation groups***	*(SGG1) Acids*

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· **Stowage Category**	E
· **Stowage Code**	SW1 Protected from sources of heat. SW2 Clear of living quarters.
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable
· **Transport/Additional information:**	
· **ADR/RID**	
· **Excepted quantities (EQ):**	E2
· **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**	D/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 2920 CORROSIVE LIQUID, FLAMMABLE, N.O.S. (ACETIC ACID, GLACIAL), 8 (3), 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)**

None of the ingredients is listed.

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

None of the ingredients is listed.

· **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** P5c FLAMMABLE LIQUIDS
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 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

· **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.

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

None of the ingredients is listed.

· ***National regulations:***

· ***Technical instructions (air):***

Class	Share in %
II	50-100

· ***Waterhazard class:*** *Water hazard class 1 (Self-assessment): slightly 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***
H226 Flammable liquid and vapour.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
· ***Department issuing SDS:*** *Q.A./Normative*
· ***Date of previous version:*** *24.03.2021*
· ***Version number of previous version:*** *16*
· ***Abbreviations and acronyms:***
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
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
Flam. Liq. 3: Flammable liquids – Category 3
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

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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.*** .