

Safety data sheet according to 1907/2006/EC, Article 31

Printing date 30.10.2023

Version number 4

Revision: 30.10.2023

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

· **1.1 Product identifier**

· **Product name:** Reference Standard AOCS 1.6R 9.0Y

· **Catalog number:** 56Z068098, 56L0680, 134250

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

· **Application of the substance / the preparation:** Coloured Standard Solution for calibration purposes

· **1.3 Details of the supplier of the safety data sheet**

· **Supplier:**

Tintometer GmbH
Schleefstraße 8-12
44287 Dortmund
Made in Germany
www.lovibond.com

phone: +49 (0)231 94510-0
e-mail: sales@lovibond.com

The Tintometer Limited
Lovibond® House
Sun Rise Way
Amesbury
Wiltshire SP4 7GR
United Kingdom

phone : +44 1980 664800
e-mail: SDS@lovibond.uk

· **Informing department:**

e-mail: sds@lovibond.com
Product Safety Department

· **1.4 Emergency telephone number:**

+44 1235 239670
Languages: English

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

Carc. 1B H350i May cause cancer by inhalation.



GHS05 corrosion

Met. Corr.1 H290 May be corrosive to metals.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

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

· **Hazard pictograms**



GHS05

GHS08

· **Signal word** Danger

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Hazard-determining components of labelling:

cobalt dichloride hexahydrate

Hazard statements

H290 May be corrosive to metals.

H350i May cause cancer by inhalation.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection.

P201 Obtain special instructions before use.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P390 Absorb spillage to prevent material damage.

P405 Store locked up.

Additional information:

Restricted to professional users.

2.3 Other hazards No further relevant information available.

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), according to the criteria given in Annex XIII of Regulation (EC) No. 1907/2006.

Determination of endocrine-disrupting properties

The product does not contain substances with endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.2 Mixtures
Description: aqueous solution

Dangerous components:

The percent content of the cobalt compound mentioned below refers to the amount of the pure cobalt therein.

CAS: 7647-01-0 EINECS: 231-595-7 Index No: 017-002-01-X Reg.nr.: 01-2119484862-27-XXXX	hydrochloric acid ⚠ Met. Corr. 1, H290; Skin Corr. 1B, H314; ⚠ STOT SE 3, H335 Specific concentration limits: Skin Corr. 1B; H314: C ≥ 25 % Skin Irrit. 2; H315: 10 % ≤ C < 25 % Eye Irrit. 2; H319: 10 % ≤ C < 25 % STOT SE 3; C ≥ 10 %	0.1-≤2.5%
CAS: 7791-13-1 EINECS: 231-589-4 Index No: 027-004-00-5	cobalt dichloride hexahydrate ⚠ Resp. Sens. 1, H334; Muta. 2, H341; Carc. 1B, H350i; Repr. 1B, H360F; ⚠ Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10); ⚠ Acute Tox. 4, H302; Skin Sens. 1, H317 Specific concentration limit: Carc. 1B; H350i: C ≥ 0.01 %	0.01-<0.025%

Additional information For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures
General information Instantly remove any clothing soiled by the product.

After inhalation

Supply fresh air.

Get medical advice/attention.

After skin contact

Instantly rinse with water.

Get medical advice/attention.

After eye contact Rinse opened eye for several minutes (at least 15 min) under running water. Then consult doctor.

After swallowing

Rinse out mouth and then drink 1-2 glasses of water.

Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed: irritating effects possible

4.3 Indication of any immediate medical attention and special treatment needed: No further relevant information available.

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SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
 - **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
 - **5.2 Special hazards arising from the substance or mixture**
The product is not combustible.
Formation of toxic gases is possible during heating or in case of fire.
Can be released in case of fire:
Hydrogen chloride (HCl)
 - **5.3 Advice for firefighters**
 - **Protective equipment:**
Wear self-contained breathing apparatus.
Wear full protective suit.
 - **Additional information**
Collect contaminated fire fighting water separately. It must not enter drains.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Ambient fire may liberate hazardous vapours.
-

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - **Advice for non-emergency personnel:**
Wear protective equipment. Keep unprotected persons away.
Avoid substance contact.
Ensure adequate ventilation
 - **Advice for emergency responders:** Protective equipment: see section 8
 - **6.2 Environmental precautions:**
Do not allow product to reach sewage system or water bodies.
Dilute with much water.
 - **6.3 Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Absorb with liquid-binding material (sand, diatomite, universal binders).
Dispose of contaminated material as waste according to item 13.
 - **6.4 Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.
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SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
- **Advice on safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Hygiene measures:**
Do not get in eyes, on skin, or on clothing.
Take off immediately all contaminated clothing.
Store protective clothing separately.
Wash hands during breaks and at the end of the work.
Do not eat, drink or smoke when using this product.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and containers:**
Store in cool location.
Keep only in original packaging.
- **Information about storage in one common storage facility:** Store away from metals.
- **Further information about storage conditions:**
Store in a locked cabinet or with access restricted to technical experts or their assistants.
Protect from heat and direct sunlight.
Protect from the effects of light.
Protect from humidity and keep away from water.
- **Recommended storage temperature:** 20°C +/- 5°C

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· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· 8.1 Control parameters

· **Components with limit values that require monitoring at the workplace:**

CAS: 7647-01-0 hydrochloric acid

WEL (Great Britain)	Short-term value: 8 mg/m ³ , 5 ppm Long-term value: 2 mg/m ³ , 1 ppm (gas and aerosol mists)
IOELV (European Union)	Short-term value: 15 mg/m ³ , 10 ppm Long-term value: 8 mg/m ³ , 5 ppm

· **Regulatory information**

WEL (Great Britain): EH40/2020
IOELV (European Union): (EU) 2019/1831

· **DNELs**

Derived No Effect Level (DNEL)

CAS: 7647-01-0 hydrochloric acid

Inhalative	DNEL	15 mg/m ³ (Worker / acute / local effects) 8 mg/m ³ (Worker / long-term / local effects)
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· **Recommended monitoring procedures:**

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

· **PNECs**

Predicted No Effect Concentration (PNEC)

CAS: 7647-01-0 hydrochloric acid

PNEC	0.036 mg/l (Sewage treatment plant) 0.036 mg/l (Marine water) 0.045 mg/l (Aquatic intermittent release) 0.036 mg/l (Fresh water)
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· **Additional information:** The lists that were valid during the compilation were used as basis.

· 8.2 Exposure controls

· **Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. See item 7.

· **Individual protection measures, such as personal protective equipment**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.

· **Eye/face protection**

Safety glasses

Use safety glasses that have been tested and approved in accordance with government standards such as EN 166.

· **Hand protection**

Protective gloves.

Preventive skin protection by use of skin-protecting agents is recommended.

After use of gloves apply skin-cleaning agents and skin cosmetics.

· **Material of gloves**

nitrile rubber, NBR

Recommended thickness of the material: ≥ 0,11, mm

· **Penetration time of glove material**

Value for the permeation: Level = 1 (< 10 min)

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Other skin protection (body protection):** Protective work clothing.

· **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.

· **Recommended filter device for short term use:** Combination filter E-P1

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 · **Environmental exposure controls** Do not allow product to reach sewage system or water bodies.

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties	
· Physical state	Fluid
· Form:	Solution
· Colour:	Yellow
· Odour:	Odourless
· Odour threshold:	Not applicable.
· Melting point/Freezing point:	Not determined.
· Boiling point or initial boiling point and boiling range	100°C (CAS: 7732-18-5 water)
· Flammability	The product is not combustible.
· Explosive properties:	Product is not explosive.
· Lower and upper explosion limit	
Lower:	Not applicable.
Upper:	Not applicable.
· Flash point:	Not applicable.
· Auto-ignition temperature:	Not applicable.
· Decomposition temperature:	Not determined.
· pH	Strongly acidic
· Kinematic viscosity	Not determined.
· Solubility	
· Water:	Fully miscible
· Partition coefficient n-octanol/water (log value)	Not applicable (mixture).
· Vapour pressure:	Not determined.
· Density and/or relative density	
· Density at 20°C:	~1.01 g/cm ³
· Relative density:	Not determined.
· Relative gas density	Not determined.
· Particle characteristics	Not applicable (liquid).

· 9.2 Other information

· Information with regard to physical hazard classes	.
· Corrosive to metals	May be corrosive to metals.
· Metals that are corroded by the substance or mixture	Information on incompatible materials can be found in Sections 7 and 10.
· Other safety characteristics	
· Oxidising properties:	none
· Additional information	
· Solids content:	< 0.25 %
· Solvent content:	
· Organic solvents:	0 %
· Water:	> 95 %

SECTION 10: Stability and reactivity

- **10.1 Reactivity** see section 10.3
- **10.2 Chemical stability** Stable at ambient temperature (room temperature).
- **10.3 Possibility of hazardous reactions**
Corrosive action on metals
Reacts with metals forming hydrogen (Danger of explosion in case of large amounts!)
Reacts with alkali (lyes)
- **10.4 Conditions to avoid** Strong heating (decomposition)
- **10.5 Incompatible materials:**
metals
alkali metals
aluminium
steel

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 · **10.6 Hazardous decomposition products:** see section 5

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 that are relevant for classification:**
CAS: 7647-01-0 hydrochloric acid

Inhalative	LC50	3124 ppm / 1h (rat) (RTECS,V, pure)
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CAS: 7791-13-1 cobalt dichloride hexahydrate

Oral	LD50	766 mg/kg (rat) (RTECS)
Dermal	LD50	>2000 mg/kg (rat) (RTECS CAS 1308-06-1 tricobalt tetraoxide)

 · **Skin corrosion/irritation** Based on available data, the classification criteria are not met.

 · **Serious eye damage/irritation** Based on available data, the classification criteria are not met.

 · **Information on components:**
CAS: 7647-01-0 hydrochloric acid

Irritation of skin	OECD 404	(rabbit: burns)
Irritation of eyes	OECD 405	(rabbit: burns)

 · **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

 · **Information on components:**
CAS: 7647-01-0 hydrochloric acid

Sensitisation	OECD 406	(negative) (EPA OPP 81-6: Guinea pig maximisation test)
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 · **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

 · **Carcinogenicity** May cause cancer by inhalation.

 · **Reproductive toxicity** Based on available data, the classification criteria are not met.

 · **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.

 · **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.

 · **Aspiration hazard** Based on available data, the classification criteria are not met.

 · **Information on likely routes of exposure**

Exposure to hydrochloric acid is possible during occupational handling due to contact with the skin and inhalation of vapors. The main intake pathway is considered to be via the respiratory tract.

Gastrointestinal tract: Specific kinetic studies are not available. They are considered not necessary because gastric juice already contains a high concentration of hydrochloric acid which is physiologically conditioned. Following ingestion, local effects are therefore of priority. [GESTIS]

 · **Additional toxicological information:**
CAS: 7647-01-0 hydrochloric acid

(source: GESTIS)
Main toxic effects
Acute: Irritation and corrosion to the eyes, airways and skin, danger of severe damage to the eyes and lungs, following ingestion, concentration-dependent damage to the gastrointestinal tract
Chronic: Airway diseases, damage to the teeth, gastrointestinal disorders

Further Information:

The acute action of hydrochloric acid is based on the locally damaging effects on contacted tissues which are primarily dependent on the concentration. Following repeated contact with the skin, even diluted hydrochloric acid can cause skin damage (reddening, drying, fissures, dermatitis). The critical effect following repeated inhalative exposure is irritation to the respiratory tract.

 · **11.2 Information on other hazards**

 · **Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.

 · **Other information**

Other dangerous properties can not be excluded.

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According to the information available to us, the chemical, physical and toxicological properties of the substances mentioned in Chapter 3 have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

CAS: 7647-01-0 hydrochloric acid

EC50	20.5 mg/l/96h (bluegill) (OECD 203) (Merck)
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CAS: 7791-13-1 cobalt dichloride hexahydrate

EC50	1.1–1.6 mg/l/48h (Daphnia magna)
EC50	0.5 mg/l/96h (Chlorella vulgaris)
IC50	0.33 mg/l/96 h (carp)

Other information:

Toxic for fish:

HCl > 25 mg/l

12.2 Persistence and degradability

Other information:

Mixture of inorganic compounds.

Methods for the determination of biodegradability are not applicable to inorganic substances.

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

This mixture does not contain any substances that are assessed to be persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), according to the criteria given in Annex XIII of Regulation (EC) No. 1907/2006.

12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Forms corrosive mixtures with water even if diluted.

Harmful effect due to pH shift.

Avoid transfer into the environment.

Water hazard:

Do not allow product to reach ground water, water bodies or sewage system.

Danger to drinking water if even small quantities leak into soil.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Hand over to disposers of hazardous waste.

European waste catalogue

16 05 07*	discarded inorganic chemicals consisting of or containing hazardous substances
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Uncleaned packagings:

Recommendation:

Disposal must be made according to official regulations.

Recommended cleaning agent:

Water, if necessary with cleaning agent.

SECTION 14: Transport information

14.1 UN number or ID number

ADR, IMDG, IATA

UN1789

14.2 UN proper shipping name

ADR

1789 HYDROCHLORIC ACID mixture

IMDG, IATA

HYDROCHLORIC ACID mixture

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· 14.3 Transport hazard class(es)	
· ADR	
	
· Class	8 (C1) Corrosive substances.
· Label	8
· IMDG, IATA	
	
· Class	8 Corrosive substances.
· Label	8
· 14.4 Packing group	
· ADR, IMDG, IATA	III
· 14.5 Environmental hazards:	
	Not applicable.
· 14.6 Special precautions for user	
· Warning:	Warning: Corrosive substances.
· Kemler Number:	80
· EMS Number:	F-A,S-B
· Segregation groups	(SGG1) Acids
· Stowage Category	E
· 14.7 Maritime transport in bulk according to IMO instruments	
	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· Transport category	3
· Tunnel restriction code	E
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

* SECTION 15: Regulatory information

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

· **Poisons Act UK**

· **Regulated explosives precursors**

The concentration of the substance is less than the stated mass percentage and should still be considered as reportable substance:

CAS: 7647-01-0	hydrochloric acid	10%
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· **Regulated poisons**

None of the ingredients is listed.

· **Reportable explosives precursors**

None of the ingredients is listed.

· **Reportable poisons**

None of the ingredients is listed.

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· Regulation (EU) 2019/1148 on the marketing and use of explosives precursors not regulated	
· Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals (PIC)	
None of the ingredients is listed.	
· Regulation (EC) No 1334/2000 setting up a Community regime for the control of exports of dual-use items and technology:	
None of the ingredients is listed.	
· Regulation (EC) No 273/2004 on drug precursors	
CAS: 7647-01-0 hydrochloric acid	3
· Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors	
CAS: 7647-01-0 hydrochloric acid	3
· Regulation (EC) No 1005/2009 on substances that deplete the ozone layer:	
None of the ingredients is listed.	
· 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.	
· Substances of very high concern (SVHC) according to REACH, Article 57	
CAS 7791-13-1 Cobalt dichloride hexahydrate <0.1 %	
This product does not contain any substances of very high concern above the legal concentration limit of $\geq 0.1\%$ (w / w).	
· Substances of very high concern (SVHC) according to UK REACH	
This product does not contain any substances of very high concern above the legal concentration limit of $\geq 0.1\%$ (w / w).	
· Directive 2012/18/EU (SEVESO III):	
· Named dangerous substances - ANNEX I None of the ingredients is listed.	
· REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3	
· Information about limitation of use:	
Employment restrictions concerning young persons must be observed (94/33/EC).	
Employment restrictions concerning pregnant and lactating women must be observed (92/85/EEC).	
· 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.	

SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Training hints** Provide adequate information, instruction and training for operators.

· **Relevant phrases**

- H290 May be corrosive to metals.
- H302 Harmful if swallowed.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H350i May cause cancer by inhalation.
- H360F May damage fertility.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

· **Abbreviations and acronyms:**

- OECD: Organisation for Economic Co-operation and Development
- STOT: specific target organ toxicity
- SE: single exposure
- RE: repeated exposure
- EC50: half maximal effective concentration
- IC50: half maximal inhibitory concentration
- NOEL or NOEC: No Observed Effect Level or Concentration
- ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
- RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- IMDG: International Maritime Code for Dangerous Goods

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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 (UK REACH)
PNEC: Predicted No-Effect Concentration (UK 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
Met. Corr. 1: Corrosive to metals – Category 1
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
Muta. 2: Germ cell mutagenicity – Category 2
Carc. 1B: Carcinogenicity – Category 1B
Repr. 1B: Reproductive toxicity – Category 1B
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

Sources

Data arise from safety data sheets, reference works and literature.

RTECS (Registry of Toxic Effects of Chemical Substances)

ECHA: European Chemicals Agency <http://echa.europa.eu>

GESTIS- Stoffdatenbank (Substance Database, Germany)

* Data compared to the previous version altered.

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