

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

Printing date 14.11.2023

Version number 4 (replaces version 3)

Revision: 14.11.2023

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

· **1.1 Product identifier**

· **Product name:** Vario Monochlor F RGT

· **Catalog number:** 00531819, 531810, 4531810, 00531811

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

· **Application of the substance / the preparation:** Reagent for water analysis

· **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**



GHS05 corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

· **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

GHS07

· **Signal word** Danger

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Hazard-determining components of labelling:

 lithium hydroxide monohydrate
 sodium nitroprusside dihydrate

Hazard statements

 H302 Harmful if swallowed.
 H314 Causes severe skin burns and eye damage.

Precautionary statements

 P260 Do not breathe dust.
 P280 Wear protective gloves/protective clothing/eye 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.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308+P310 IF exposed or concerned: Immediately call a POISON CENTER/doctor.

2.3 Other hazards Acid burns have to treated immediately, as it may otherwise cause badly curing wounds.

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: Mixture of organic and inorganic compounds

Dangerous components:

CAS: 1310-66-3 EINECS: 215-183-4 Reg.nr.: 01-2119560576-31-XXXX	lithium hydroxide monohydrate ⚠ Skin Corr. 1A, H314; Eye Dam. 1, H318; ⚠ Acute Tox. 4, H302	20–30%
CAS: 90-01-7 EINECS: 201-960-5	salicyl alcohol ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	10–<20%
CAS: 13755-38-9 EINECS: 238-373-9	sodium nitroprusside dihydrate ⚠ Acute Tox. 3, H301	≤2.5%

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.
 Call a doctor immediately.

After skin contact

 Instantly rinse with water.
 Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

After eye contact

 Rinse opened eye for several minutes (at least 15 min) under running water.
 Call a doctor immediately.

After swallowing

 Rinse out mouth and then drink 1-2 glasses of water.
 Do not induce vomiting; instantly call for medical help.

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

 burns
 after inhalation:
 Possible damages: damage of respiratory tract
 mucosal irritations, cough, shortness of breath
 after swallowing:
 strong caustic effect.
 sickness
 vomiting
 diarrhoea

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after absorption of large amounts:

headache

dizziness

CNS disorders

drop in blood pressure

cramps

ataxia (impaired locomotor coordination)

disorder of electrolyte balance

- **Danger**

Danger of system failure.

Danger of pulmonary oedema.

- **4.3 Indication of any immediate medical attention and special treatment needed:**

If swallowed or in case of vomiting, danger of entering the lungs

Subsequent observation for pneumonia and pulmonary oedema

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**

- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.

- **For safety reasons unsuitable extinguishing agents**

Water

--> Aqueous solution reacts strongly alkaline.

If possible use dry extinguishing agents.

- **5.2 Special hazards arising from the substance or mixture**

mixture with combustible ingredients

Formation of toxic gases is possible during heating or in case of fire.

Can be released in case of fire:

nitrous gases

Nitrogen oxides (NO_x)

cyanide compounds, sodium monoxide

LiO_x

- **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

Use breathing protection against the effects of fumes/dust/aerosol.

- **Advice for emergency responders:** Protective equipment: see section 8

- **6.2 Environmental precautions:** Do not allow product to reach sewage system or water bodies.

- **6.3 Methods and material for containment and cleaning up:**

Ensure adequate ventilation.

Collect mechanically.

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:**
Prevent formation of dust.
Provide suction extractors if dust is formed.
- **Hygiene measures:**
Do not inhale dust / smoke / mist.
Do not get in eyes, on skin, or on clothing.
Take off immediately all contaminated clothing.
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.
Store only in the original container.
- **Information about storage in one common storage facility:**
Do not store together with acids.
Store away from oxidising agents.
- **Further information about storage conditions:**
Store in cool, dry conditions in well sealed containers.
Protect from heat and direct sunlight.
Protect from the effects of light.
Protect from humidity and keep away from water.
This product is hygroscopic.
- **Recommended storage temperature:** 20°C +/- 5°C
- **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:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **DNELs**
Derived No Effect Level (DNEL)

CAS: 1310-66-3 lithium hydroxide monohydrate

Oral	DNEL	12.4 mg/kg (Consumer / acute / systemic effects) 4.13 mg/kg /bw/d (Consumer / long-term / systemic effects)
Dermal	DNEL	100 mg/kg /bw/d (Worker / acute / systemic effects) 41.35 mg/kg /bw/d (Worker / long-term /systemic effects) 50 mg/kg /bw/d (Consumer / acute / systemic effects) 41.35 mg/kg /bw/d (Consumer / long-term / systemic effects)
Inhalative	DNEL	30 mg/m ³ (Worker / acute / systemic effects) 10 mg/m ³ (Worker / long-term /systemic effects) 18.63 mg/m ³ (Consumer / acute / systemic effects) 6.21 mg/m ³ (Consumer / long-term / systemic effects)

- **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: 1310-66-3 lithium hydroxide monohydrate

PNEC	79.2 mg/l (Sewage treatment plant) 0.23 mg/l (Marine water) 2.3 mg/l (Fresh water)
PNEC	28.22 mg/kg (Soil) 15.3 mg/kg (Marine sediment)

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153 mg/kg (Fresh water sediment)

- **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**
Tightly sealed safety glasses.
Use safety glasses that have been tested and approved in accordance with government standards such as EN 166.
- **Hand protection**
Protective gloves.
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 through 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:** Filter P3
- **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** Solid.
- **Form:** Powder
- **Colour:** Light beige
- **Odour:** Odourless
- **Odour threshold:** Not applicable.
- **Melting point/Freezing point:** Not determined.
- **Boiling point or initial boiling point and boiling range** Not determined.
- **Flammability** mixture with combustible ingredients
- **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 (solid).
- **Decomposition temperature:** Not determined.
- **pH (26.6 g/l) at 20°C** 12.2
- **Kinematic viscosity** Not applicable (solid).
- **Solubility**
- **Water:** Soluble
- **Partition coefficient n-octanol/water (log value)** Not applicable (mixture).
- **Vapour pressure:** Not applicable.
- **Density and/or relative density**
- **Density:** Not determined.
- **Relative density:** Not determined.
- **Relative gas density** Not applicable (solid).
- **Particle characteristics** Not determined.

· 9.2 Other information

- **Information with regard to physical hazard classes**
- **Corrosive to metals** Void

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· Other safety characteristics	
· Oxidising properties:	none
· Additional information	
· Solids content:	100 %

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**
 - Aqueous solution reacts alkaline.
 - Aqueous solution reacts with metals.
 - Contact with acids releases toxic gases
 - Reacts with light alloys in the presence of moisture to form hydrogen
 - Corrodes aluminium
 - Reacts with acids releasing Hydrogen cyanide (prussic acid).
 - Reacts with oxidizing agents
- **10.4 Conditions to avoid**
 - To avoid thermal decomposition do not overheat.
 - Exposure to moisture.
- **10.5 Incompatible materials:**
 - organic substances
 - aluminium
 - zinc
- **10.6 Hazardous decomposition products:**
 - hydrogen cyanide (prussic acid HCN)
 - In case of fire: see section 5.

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

- **Acute toxicity**
Classification according to calculation procedure:
Harmful if swallowed.

· Acute toxicity estimate (ATE_(MX)) - Calculation method:		
Oral	CLP ATE _(MX)	1881 mg/kg (.)

· LD/LC50 values that are relevant for classification:		
CAS: 1310-66-3 lithium hydroxide monohydrate		
Oral	LD50	578 mg/kg (rat) (Registrant, ECHA) Acute toxicity data are available for oral route of exposure: LD50 (rat, oral): female: 210 mg/kg bw; male: 280 mg/kg bw, both for lithium hydroxide anhydrous. As these values are most likely linked to local tissue damage due to the corrosiveness of the substance and are not only a result of "primary" systemic toxicity the LD50 oral of lithium chloride and lithium carbonate were taken into account after conversion. A LD50 value of 330 mg/kg bw(anhydrous) resp. 578 mg/kg bw (monohydrate) were found to reflect properly the systemic toxicity of the corrosive substance lithium hydroxide.
Dermal	LD50.	>2000 mg/kg (rat) (Registrant, ECHA)
Inhalative	LC50	>6.15 mg/l /4h (rat) (Registrant, ECHA)
CAS: 13755-38-9 sodium nitroprusside dihydrate		
Oral	LD50	99 mg/kg (rat) (RTECS, anhydrous substance)

- **Skin corrosion/irritation** Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**
Causes serious eye damage.
Risk of blindness!
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

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- **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 (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.
- **Additional toxicological information:**
 The following applies to cyanogen compounds/nitriles in general: Extreme caution! Hydrogen cyanide release possible - Blockage of cell respiration. Cardiovascular disorders, shortness of breath, unconsciousness.
 The following applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.
 The following applies to lithium compounds in general:
 after absorption: CNS disorders, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance
 Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **11.2 Information on other hazards**
- **Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.
- **Other information**
 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: 1310-66-3 lithium hydroxide monohydrate

EC50	33.5 mg/l/48h (Daphnia magna) without pH-adjustment
NOEC	17.35 mg/l /34d (zebrafish) 4 mg/l /21d (Daphnia magna) 10 mg/l /72h (Pseudokirchneriella subcapitata)
EC50	153.44 mg/l/72h (Pseudokirchneriella subcapitata)
LC50	109 mg/l/96h (zebrafish)

CAS: 13755-38-9 sodium nitroprusside dihydrate

EC50	1 mg/l/24h (Daphnia magna)
LC50	0.05 mg/l (fish)

· Other information:

The following applies for lithium compounds in general:
 fish toxic from 100 mg/l, Daphnia toxic from 16 mg/l, plants toxic from 0,2 mg/l
 Toxic for fish:

the following applies to dissolved iron compounds in general:
 toxic as from 0.9 mg/l at pH 6.5 - 7.5
 lethal as from 1.0 mg/l at pH 5.5 - 6.7

- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential**
 Pow = n-octanol/wasser partition coefficient
 log Pow < 1 = Does not accumulate in organisms.

CAS: 90-01-7 salicyl alcohol

log Pow	0.73 (experimental) (Merck)
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- **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**
 Harmful effect due to pH shift.
 Forms corrosive mixtures with water even if diluted.
 Avoid transfer into the environment.

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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 06*	laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals
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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 UN2680

14.2 UN proper shipping name

ADR 2680 LITHIUM HYDROXIDE mixture
IMDG, IATA LITHIUM HYDROXIDE mixture

14.3 Transport hazard class(es)
ADR


Class 8 (C6) Corrosive substances.
Label 8

IMDG, IATA


Class 8 Corrosive substances.
Label 8

14.4 Packing group

ADR, IMDG, IATA II

14.5 Environmental hazards:

Not applicable.

14.6 Special precautions for user

Warning: Corrosive substances.

Kemler Number:

80

EMS Number:

F-A,S-B

Segregation groups

(SGG18) Alkalis

Stowage Category

A

Segregation Code

SG35 Stow "separated from" SGG1-acids

14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

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· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	1 kg
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g
· Transport category	2
· Tunnel restriction code	E
· IMDG	
· Limited quantities (LQ)	1 kg
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g

* SECTION 15: Regulatory information

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

· Poisons Act UK

· Regulated explosives precursors

None of the ingredients is listed.

· 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.

· 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

None of the ingredients is listed.

· Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

None of the ingredients is listed.

· 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

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.

· Information about limitation of use: Employment restrictions concerning young persons must be observed (94/33/EC).

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 · **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.

This Safety Data Sheet is in compliance with Regulation (EC) No 1907/2006, Article 31 as amended by Regulation (EU) 2020/878.

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

 · **Relevant phrases**

H301 Toxic if swallowed.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

 · **Abbreviations and acronyms:**

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

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

Acute Tox. 3: Acute toxicity – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

 · **Sources**

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

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

RTECS (Registry of Toxic Effects of Chemical Substances)

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