

Safety data sheet according to Regulation (EC) No 1907/2006, Annex II

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

1.1 Product identifier

SOLDEEN-1

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

Relevant identified uses of the substance or mixture:

Soft soldering flux

Uses advised against:

No information available at present.

1.3 Details of the supplier of the safety data sheet

CHEMET GmbH
 Postfach 1209
 56419 Wirges
 Deutschland
 Tel.: +49 (0) 2602 / 9265-0
 Fax: +49 (0) 2602 / 9265-25
 info@chemet.de
 www.chemet.de

Qualified person's e-mail address: info@chemical-check.de, k.schnurbusch@chemical-check.de Please DO NOT use for requesting Safety Data Sheets.

1.4 Emergency telephone number

Emergency information services / official advisory body:

Telephone number of the company in case of emergencies:

+49 (0) 2602 / 9265-0 (Mo. - Fr. 7.00h - 16.00h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) 1272/2008 (CLP)

Hazard class	Hazard category	Hazard statement
Acute Tox.	4	H302-Harmful if swallowed.
Skin Corr.	1B	H314-Causes severe skin burns and eye damage.
STOT SE	3	H335-May cause respiratory irritation.
Eye Dam.	1	H318-Causes serious eye damage.
Aquatic Acute	1	H400-Very toxic to aquatic life.
Aquatic Chronic	1	H410-Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labeling according to Regulation (EC) 1272/2008 (CLP)

**Danger**

H302-Harmful if swallowed. H314-Causes severe skin burns and eye damage. H335-May cause respiratory irritation. H410-Very toxic to aquatic life with long lasting effects.

P273-Avoid release to the environment. P280-Wear protective gloves / protective clothing and eye protection / face protection.

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. P310-Immediately call a POISON CENTER / doctor.

Ethanediol
Ammonium chloride
Zinc chloride

2.3 Other hazards

The mixture does not contain any vPvB substance (vPvB = very persistent, very bioaccumulative) or is not included under XIII of the regulation (EC) 1907/2006 (< 0,1 %).

The mixture does not contain any PBT substance (PBT = persistent, bioaccumulative, toxic) or is not included under XIII of the regulation (EC) 1907/2006 (< 0,1 %).

The mixture does not contain any substance with endocrine disrupting properties (< 0,1 %).

SECTION 3: Composition/information on ingredients

3.1 Substances

n.a.

3.2 Mixtures

Zinc chloride	
Registration number (REACH)	01-2119472431-44-XXXX
Index	030-003-00-2
EINECS, ELINCS, NLP, REACH-IT List-No.	231-592-0
CAS	7646-85-7
content %	25-<50
Classification according to Regulation (EC) 1272/2008 (CLP), M-factors	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)
Specific Concentration Limits and ATE	STOT SE 3, H335: >=5 %
Ammonium chloride	
Registration number (REACH)	01-2119487950-27-XXXX
Index	017-014-00-8
EINECS, ELINCS, NLP, REACH-IT List-No.	235-186-4
CAS	12125-02-9
content %	10-<20
Classification according to Regulation (EC) 1272/2008 (CLP), M-factors	Acute Tox. 4, H302 Eye Irrit. 2, H319
Ethanediol	
Substance for which an EU exposure limit value applies.	
Registration number (REACH)	01-2119456816-28-XXXX
Index	603-027-00-1

EINECS, ELINCS, NLP, REACH-IT List-No.	203-473-3
CAS	107-21-1
content %	10-<20
Classification according to Regulation (EC) 1272/2008 (CLP), M-factors	Acute Tox. 4, H302

Propan-2-ol	
Registration number (REACH)	01-2119457558-25-XXXX
Index	603-117-00-0
EINECS, ELINCS, NLP, REACH-IT List-No.	200-661-7
CAS	67-63-0
content %	1-<5
Classification according to Regulation (EC) 1272/2008 (CLP), M-factors	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336

Ammonia	Substance for which an EU exposure limit value applies.
Registration number (REACH)	01-2119982985-14-XXXX
Index	007-001-01-2
EINECS, ELINCS, NLP, REACH-IT List-No.	215-647-6
CAS	1336-21-6
content %	0,1-<1
Classification according to Regulation (EC) 1272/2008 (CLP), M-factors	Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 2, H411
Specific Concentration Limits and ATE	STOT SE 3, H335: >=5 %

For the text of the H-phrases and classification codes (GHS/CLP), see Section 16.

The substances named in this section are given with their actual, appropriate classification!

For substances that are listed in appendix VI, table 3.1 of the regulation (EC) no. 1272/2008 (CLP regulation) this means that all notes that may be given here for the named classification have been taken into account.

SECTION 4: First aid measures

4.1 Description of first aid measures

First-aiders should ensure they are protected!

Never pour anything into the mouth of an unconscious person!

Inhalation

Remove person from danger area.

Supply person with fresh air and consult doctor according to symptoms.

If the person is unconscious, place in a stable side position and consult a doctor.

Skin contact

Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin (flare), consult a doctor.

Cauterizations not treated lead to wounds difficult to heal.

Eye contact

Remove contact lenses.

Wash thoroughly for several minutes using copious water - call doctor immediately, have Data Sheet available.

Protect uninjured eye.

Follow-up examination by an ophthalmologist.

Ingestion

Rinse the mouth thoroughly with water.

Do not induce vomiting - give copious water to drink. Consult doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

If applicable delayed symptoms and effects can be found in section 11 and the absorption route in section 4.1.

In certain cases, the symptoms of poisoning may only appear after an extended period / after several hours.

The following may occur:

Corrosive burns on skin as well as mucous membrane possible.

Necrosis

Risk of serious damage to eyes.

Danger of blindness.

Ingestion:

Pain in the mouth and throat
Oesophageal perforation
Gastric perforation

4.3 Indication of any immediate medical attention and special treatment needed

n.c.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water jet spray / alcohol resistant foam / CO₂ / dry extinguisher.

Unsuitable extinguishing media

High volume water jet

5.2 Special hazards arising from the substance or mixture

In case of fire the following can develop:

Oxides of carbon
Oxides of nitrogen
Hydrogen chloride
Ammonia
Toxic gases

5.3 Advice for firefighters

For personal protective equipment see Section 8.

In case of fire and/or explosion do not breathe fumes.

Protective respirator with independent air supply.

According to size of fire

Full protection, if necessary.

Dispose of contaminated extinction water according to official regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

In case of spillage or accidental release, wear personal protective equipment as specified in section 8 to prevent contamination.

Ensure sufficient ventilation, remove sources of ignition.

Avoid dust formation with solid or powder products.

Leave the danger zone if possible, use existing emergency plans if necessary.

Keep unprotected persons away.

Ensure sufficient supply of air.

Avoid inhalation, and contact with eyes or skin.

If applicable, caution - risk of slipping.

6.1.2 For emergency responders

See section 8 for suitable protective equipment and material specifications.

6.2 Environmental precautions

If leakage occurs, dam up.

Resolve leaks if this possible without risk.

Prevent from entering drainage system.

Prevent surface and ground-water infiltration, as well as ground penetration.

If accidental entry into drainage system occurs, inform responsible authorities.

6.3 Methods and material for containment and cleaning up

Soak up with absorbent material (e.g. universal binding agent, sand, diatomaceous earth, sawdust) and dispose of according to Section 13.

Neutralising is possible (only from a specialist).

Flush residue using copious water.

6.4 Reference to other sections

For personal protective equipment see Section 8 and for disposal instructions see Section 13.

SECTION 7: Handling and storage

In addition to information given in this section, relevant information can also be found in section 8 and 6.1.

7.1 Precautions for safe handling

7.1.1 General recommendations

Ensure good ventilation.

Avoid contact with eyes or skin.

Handle and open container with care.

There should be an eyewash station and safety shower located near the area of use.

Eating, drinking, smoking, as well as food-storage, is prohibited in work-room.

Observe directions on label and instructions for use.

Use working methods according to operating instructions.

7.1.2 Notes on general hygiene measures at the workplace

General hygiene measures for the handling of chemicals are applicable.

Wash hands before breaks and at end of work.

Keep away from food, drink and animal feedingstuffs.

Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

7.2 Conditions for safe storage, including any incompatibilities

Keep out of access to unauthorised individuals.

Not to be stored in gangways or stair wells.

Store product closed and only in original packing.

Under all circumstances prevent penetration into the soil.

Do not use acid sensitive materials.

Do not store with alkalis.

Store at room temperature.

Observe special storage conditions.

7.3 Specific end use(s)

No information available at present.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Chemical Name	Zinc chloride	Content %:25- <50
WEL-TWA: 1 mg/m3 (fume)	WEL-STEL: 2 mg/m3 (fume)	---
Monitoring procedures:	---	
BMGV: ---	Other information: ---	
Chemical Name	Ammonium chloride	Content %:10- <20
WEL-TWA: 10 mg/m3 (fume)	WEL-STEL: 20 mg/m3 (fume)	---
Monitoring procedures:	---	
BMGV: ---	Other information: ---	
Chemical Name	Ethanediol	Content %:10- <20
WEL-TWA: 10 mg/m3 (particulate), 52 mg/m3 (vapour) (WEL), 20 ppm (52 mg/m3) (EU)	WEL-STEL: 104 mg/m3 (vapour) (WEL), 40 ppm (104 mg/m3) (EU)	---
Monitoring procedures:	<ul style="list-style-type: none"> - Draeger - Ethylene Glycol 10 (5) (81 01 351) - Compur - KITA-232 SA (502 342) - Compur - KITA-232 SB (550 267) - NIOSH 5500 (ETHYLENE GLYCOL) - 1993 - NIOSH 5523 (GLYCOLS) - 1996 - OSHA PV2024 (Ethylene glycol) - 1999 - EU project BC/CEN/ENTR/000/2002-16 card 11-2 (2004) - Draeger - Alcohol 100/a (CH 29 701) 	
BMGV: ---	Other information: Sk (particulate, vapour)	
Chemical Name	Propan-2-ol	Content %:1- <5
WEL-TWA: 400 ppm (999 mg/m3)	WEL-STEL: 500 ppm (1250 mg/m3)	---
Monitoring procedures:	<ul style="list-style-type: none"> - Draeger - Alcohol 25/a i-Propanol (81 01 631) - Compur - KITA-122 SA(C) (549 277) - Compur - KITA-150 U (550 382) - DFG (D) (Lösungsmittelgemische), DFG (E) (Solvent mixtures 6) - 2013, 2002 - EU project BC/CEN/ENTR/000/2002-16 card 66-3 (2004) - NIOSH 1400 (ALCOHOLS I) - 1994 - NIOSH 2549 (VOLATILE ORGANIC COMPOUNDS (SCREENING)) - 1996 - Draeger - Alcohol 100/a (CH 29 701) 	
BMGV: ---	Other information: ---	
Chemical Name	Ammonia	Content %:0,1- <1

WEL-TWA: NH ₃ 25 ppm (18 mg/m ³) (WEL), 20 ppm (14 mg/m ³) (EU)	WEL-STEL: NH ₃ 35 ppm (25 mg/m ³) (WEL), 50 ppm (36 mg/m ³) (EU)	---
Monitoring procedures:	<ul style="list-style-type: none"> - Draeger - Ammonia 0,25/a (81 01 711) - Draeger - Ammonia 0,5%/a (CH 31 901) - Draeger - Ammonia 2/a (67 33 231) - Draeger - Ammonia 5/a (CH 20 501) - Draeger - Ammonia 5/b (81 01 941) - Compur - KITA-105 SA (548 642) - Compur - KITA-105 SB (548 659) - Compur - KITA-105 SC (548 667) - Compur - KITA-105 SD (548 675) - Compur - KITA-105 SH (548 683) - Compur - KITA-105 SM (548 691) - NIOSH 6015 (Ammonia) - 1990 - NIOSH 6016 (AMMONIA by IC) - 2016 - OSHA ID-164 (Ammonia in Workplace Atmospheres) - 1988 - OSHA ID-188 (Ammonia in workplace atmospheres – solid sorbent) - 2002 	
BMGV: ---	Other information: ---	

Ammonium chloride						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	0,25	mg/l	
	Environment - marine		PNEC	0,025	mg/l	
	Environment - periodic release		PNEC	0,43	mg/kg	
	Environment - sediment, freshwater		PNEC	0,9	mg/kg	
	Environment - sediment, marine		PNEC	0,09	mg/kg	
	Environment - soil		PNEC	50,7	mg/kg	
	Environment - sewage treatment plant		PNEC	13,1	mg/l	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	43,97	mg/m ³	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	9,4	mg/m ³	
Consumer	Human - dermal	Long term	DNEL	55,2	mg/kg	
Consumer	Human - oral	Long term, systemic effects	DNEL	55,2	mg/kg	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	128,9	mg/kg	

Ethanediol						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	10	mg/l	
	Environment - marine		PNEC	1	mg/l	
	Environment - sediment, freshwater		PNEC	37	mg/kg dry weight	
	Environment - sediment, marine		PNEC	3,7	mg/kg dry weight	
	Environment - soil		PNEC	1,53	mg/kg dry weight	
	Environment - sewage treatment plant		PNEC	199,5	mg/l	
	Environment - water, sporadic (intermittent) release		PNEC	10	mg/l	
Consumer	Human - dermal	Long term, systemic effects	DNEL	53	mg/kg bw/d	

Consumer	Human - inhalation	Long term, local effects	DNEL	7	mg/kg bw/d	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	106	mg/kg bw/d	
Workers / employees	Human - inhalation	Long term, local effects	DNEL	35	mg/m3	

Propan-2-ol						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	140,9	mg/l	
	Environment - marine		PNEC	140,9	mg/l	
	Environment - sediment, freshwater		PNEC	552	mg/kg dw	
	Environment - sediment, marine		PNEC	552	mg/kg dw	
	Environment - soil		PNEC	28	mg/kg dw	
	Environment - sewage treatment plant		PNEC	2251	mg/l	
	Environment - water, sporadic (intermittent) release		PNEC	140,9	mg/l	
	Environment - oral (animal feed)		PNEC	160	mg/kg feed	
Consumer	Human - dermal	Long term, systemic effects	DNEL	319	mg/kg bw/day	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	89	mg/m3	
Consumer	Human - oral	Long term, systemic effects	DNEL	26	mg/kg bw/day	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	888	mg/kg bw/day	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	500	mg/m3	

Ammonia						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	0,0011	mg/l	
	Environment - marine		PNEC	0,0011	mg/l	
	Environment - periodic release		PNEC	0,0068	mg/l	
Consumer	Human - inhalation	Long term, local effects	DNEL	2,8	mg/m3	
Consumer	Human - dermal	Short term, local effects	DNEL	68	mg/kg body weight/day	
Consumer	Human - dermal	Short term, systemic effects	DNEL	68	mg/kg body weight/day	
Consumer	Human - inhalation	Short term, systemic effects	DNEL	23,8	mg/m3	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	23,8	mg/m3	
Consumer	Human - oral	Short term, systemic effects	DNEL	6,8	mg/kg body weight/day	
Consumer	Human - oral	Long term, systemic effects	DNEL	6,8	mg/kg body weight/day	
Workers / employees	Human - dermal	Short term, systemic effects	DNEL	6,8	mg/kg body weight/day	

Workers / employees	Human - dermal	Long term, systemic effects	DNEL	6,8	mg/kg body weight/day	
Workers / employees	Human - inhalation	Short term, systemic effects	DNEL	47,6	mg/m ³	
Workers / employees	Human - inhalation	Short term, local effects	DNEL	36	mg/m ³	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	47,6	mg/m ³	
Workers / employees	Human - inhalation	Long term, local effects	DNEL	14	mg/m ³	

(GB) WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period)

EH40. AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany).

(8) = Inhalable fraction (Directive 2017/164/EU, Directive 2004/37/CE). (9) = Respirable fraction (Directive 2017/164/EU, Directive 2004/37/CE). (11) = Inhalable fraction (Directive 2004/37/CE). (12) = Inhalable fraction. Respirable fraction in those Member States that implement, on the date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0,002 mg Cd/g creatinine in urine (Directive 2004/37/CE). | WEL-STEEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period).

(8) = Inhalable fraction (2017/164/EU, 2017/2398/EU). (9) = Respirable fraction (2017/164/EU, 2017/2398/EU). (10) = Short-term exposure limit value in relation to a reference period of 1 minute (2017/164/EU). | BMGV = Biological monitoring guidance value EH40. BGW = "Biologischer Grenzwert" (biological limit value, Germany) | Other information: Sen = Capable of causing occupational asthma. Sk = Can be absorbed through skin. Carc = Capable of causing cancer and/or heritable genetic damage.

** = The exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.

(13) = The substance can cause sensitisation of the skin and of the respiratory tract (Directive 2004/37/CE), (14) = The substance can cause sensitisation of the skin (Directive 2004/37/CE).

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure good ventilation. This can be achieved by local suction or general air extraction.

If this is insufficient to maintain the concentration under the WEL or AGW values, suitable breathing protection should be worn.

Applies only if maximum permissible exposure values are listed here.

Suitable assessment methods for reviewing the effectiveness of protection measures adopted include metrological and non-metrological investigative techniques.

These are specified by e.g. EN 14042.

EN 14042 "Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents".

8.2.2 Individual protection measures, such as personal protective equipment

General hygiene measures for the handling of chemicals are applicable.

Wash hands before breaks and at end of work.

Keep away from food, drink and animal feedingstuffs.

Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

Eye/face protection:

Tight fitting protective goggles with side protection (EN 166).

If applicable

Face protection (EN 166).

Skin protection - Hand protection:

Use acid resistant protective gloves (EN ISO 374).

If applicable

Protective gloves made of butyl (EN ISO 374).

Protective Neoprene® / polychloroprene gloves (EN ISO 374).

Protective nitrile gloves (EN ISO 374).

Minimum layer thickness in mm:

0,5

Permeation time (penetration time) in minutes:

> 240

The breakthrough times determined in accordance with EN 16523-1 were not obtained under practical conditions.

The recommended maximum wearing time is 50% of breakthrough time.

Protective hand cream recommended.

Skin protection - Other:

Acid-resistant protection clothing (EN 13034)

Respiratory protection:

If OES or MEL is exceeded.

Filter A (EN 14387), code colour brown

Filter B (EN 14387), code colour grey

Filter E (EN 14387), code colour yellow

Observe wearing time limitations for respiratory protection equipment.

Thermal hazards:

Not applicable

Additional information on hand protection - No tests have been performed.

In the case of mixtures, the selection has been made according to the knowledge available and the information about the contents.

Selection of materials derived from glove manufacturer's indications.

Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account.

Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer.

In the case of mixtures, the resistance of glove materials cannot be predicted and must therefore be tested before use.

The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

8.2.3 Environmental exposure controls

No information available at present.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	Clear, Brown
Odour:	Characteristic, Penetrating
Melting point/freezing point:	There is no information available on this parameter.
Boiling point or initial boiling point and boiling range:	There is no information available on this parameter.
Flammability:	Flammable
Lower explosion limit:	There is no information available on this parameter.
Upper explosion limit:	There is no information available on this parameter.
Flash point:	>60 °C
Auto-ignition temperature:	There is no information available on this parameter.
Decomposition temperature:	There is no information available on this parameter.
pH:	~3
Kinematic viscosity:	There is no information available on this parameter.
Solubility:	Mixable
Partition coefficient n-octanol/water (log value):	Does not apply to mixtures.
Vapour pressure:	There is no information available on this parameter.
Density and/or relative density:	1,4 g/cm ³ (20°C)
Relative vapour density:	There is no information available on this parameter.
Particle characteristics:	Does not apply to liquids.

9.2 Other information

Explosives:	There is no information available on this parameter.
Oxidising liquids:	No

SECTION 10: Stability and reactivity

10.1 Reactivity

The product has not been tested.

10.2 Chemical stability

Stable with proper storage and handling.

10.3 Possibility of hazardous reactions

Avoid contact with certain metals e.g. aluminium (development of hydrogen gas possible).

Avoid contact with strong alkalis (exothermic reaction possible).

10.4 Conditions to avoid

None known

10.5 Incompatible materials

Avoid contact with strong alkalis.

Avoid contact with certain metals e.g. aluminium.

10.6 Hazardous decomposition products

No decomposition when used as directed.

SECTION 11: Toxicological information

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

Possibly more information on health effects, see Section 2.1 (classification).

SOLDEEN-1						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	ATE	1927	mg/kg			calculated value
Acute toxicity, by dermal route:						n.d.a.
Acute toxicity, by inhalation:						n.d.a.
Skin corrosion/irritation:						n.d.a.
Serious eye damage/irritation:						n.d.a.
Respiratory or skin sensitisation:						n.d.a.
Germ cell mutagenicity:						n.d.a.
Carcinogenicity:						n.d.a.
Reproductive toxicity:						n.d.a.
Specific target organ toxicity - single exposure (STOT-SE):						n.d.a.
Specific target organ toxicity - repeated exposure (STOT-RE):						n.d.a.
Aspiration hazard:						n.d.a.
Symptoms:						n.d.a.

Zinc chloride						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	1100	mg/kg	Rat	OECD 401 (Acute Oral Toxicity)	
Skin corrosion/irritation:						Skin Corr. 1B
Serious eye damage/irritation:						Eye Dam. 1
Respiratory or skin sensitisation:						Not sensitising
Symptoms:						asthmatic symptoms, breathing difficulties, burning of the membranes of the nose and throat, clouded vision, skin afflictions, pain in the mouth and throat

Ammonium chloride						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	1410	mg/kg	Rat		
Skin corrosion/irritation:				Rabbit	(Draize-Test)	Not irritant
Serious eye damage/irritation:				Rabbit	OECD 405 (Acute Eye Irritation/Corrosion)	Eye Irrit. 2
Respiratory or skin sensitisation:				Guinea pig		Not sensitising
Germ cell mutagenicity:					OECD 471 (Bacterial Reverse Mutation Test)	Negative
Carcinogenicity:						Negative
Reproductive toxicity:						Negative

Symptoms:						respiratory distress, drowsiness, drop in blood pressure, diarrhoea, coughing, headaches, cramps, circulatory collapse, gastrointestinal disturbances, mucous membrane irritation, dizziness, nausea and vomiting., mental confusion
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Ethanediol						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	>2000	mg/kg	Rat	IUCLID Chem. Data Sheet (ESIS)	Does not conform with EU classification.
Acute toxicity, by oral route:	LD50	1600	mg/kg	Human being		
Acute toxicity, by dermal route:	LD50	9530	mg/kg	Rabbit		
Acute toxicity, by inhalation:	LC50	>2,5	mg/l/6h	Rat		Analogous conclusion, Aerosol
Symptoms:						ataxia, breathing difficulties, unconsciousness, cramps, fatigue

Propan-2-ol						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	4570-5840	mg/kg	Rat	OECD 401 (Acute Oral Toxicity)	
Acute toxicity, by dermal route:	LD50	12800-13900	mg/kg	Rabbit	OECD 402 (Acute Dermal Toxicity)	
Acute toxicity, by inhalation:	LC50	> 25	mg/l/6h	Rat	OECD 403 (Acute Inhalation Toxicity)	Vapours
Acute toxicity, by inhalation:	LC50	46600	mg/l/4h	Rat		Aerosol
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Not irritant
Serious eye damage/irritation:				Rabbit	OECD 405 (Acute Eye Irritation/Corrosion)	Eye Irrit. 2
Respiratory or skin sensitisation:				Guinea pig	OECD 406 (Skin Sensitisation)	No (skin contact)
Germ cell mutagenicity:				Salmonella typhimurium	OECD 471 (Bacterial Reverse Mutation Test)	Negative
Germ cell mutagenicity:				Mouse	OECD 474 (Mammalian Erythrocyte Micronucleus Test)	Negative

Germ cell mutagenicity:					OECD 476 (In Vitro Mammalian Cell Gene Mutation Test)	Negative
Germ cell mutagenicity:				Salmonella typhimurium	(Ames-Test)	Negative
Carcinogenicity:						Negative
Specific target organ toxicity - single exposure (STOT-SE):						STOT SE 3, H336
Specific target organ toxicity - repeated exposure (STOT-RE):						Target organ(s): liver
Aspiration hazard:						No
Symptoms:						breathing difficulties, unconsciousness, vomiting, headaches, fatigue, dizziness, nausea, eyes, reddened, watering eyes
Specific target organ toxicity - repeated exposure (STOT-RE), oral:	NOAEL	900	mg/kg	Rat	OECD 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)	
Specific target organ toxicity - repeated exposure (STOT-RE), inhalat.:	NOAEL	5000	ppm	Rat		Vapours (OECD 451)

Ammonia						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	350	mg/kg	Rat		
Acute toxicity, by oral route:	LDLo	550	mg/kg	Cat		
Acute toxicity, by oral route:	LDLo	43	mg/kg	Human being		
Acute toxicity, by inhalation:	LCLo	5000	ppm	Human being		
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Corrosive
Serious eye damage/irritation:				Rabbit		Risk of serious damage to eyes.
Respiratory or skin sensitisation:				Guinea pig		Not sensitizing
Germ cell mutagenicity:					OECD 471 (Bacterial Reverse Mutation Test)	Negative
Carcinogenicity:				Rat	OECD 453 (Combined Chronic Toxicity/Carcinogenicity Studies)	Negative
Reproductive toxicity:	NOAEL	408	mg/kg	Rat	OECD 422 (Combined Repeated Dose Tox. Study with the Reproduction/Development. Tox. Screening Test)	

Symptoms:						asthmatic symptoms, respiratory distress, unconsciousness, burning of the membranes of the nose and throat, vomiting, cornea opacity, coughing, cramps, circulatory collapse, shock, nausea
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11.2. Information on other hazards

SOLDEEN-1						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Endocrine disrupting properties:						Does not apply to mixtures.
Other information:						No other relevant information available on adverse effects on health.

SECTION 12: Ecological information

Possibly more information on environmental effects, see Section 2.1 (classification).

SOLDEEN-1							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:							n.d.a.
12.1. Toxicity to daphnia:							n.d.a.
12.1. Toxicity to algae:							n.d.a.
12.2. Persistence and degradability:							n.d.a.
12.3. Bioaccumulative potential:							n.d.a.
12.4. Mobility in soil:							n.d.a.
12.5. Results of PBT and vPvB assessment							n.d.a.
12.6. Endocrine disrupting properties:							Does not apply to mixtures.
12.7. Other adverse effects:							No information available on other adverse effects on the environment.

Zinc chloride							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC50	96h	38	mg/l	Brachydanio rerio	IUCLID Chem. Data Sheet (ESIS)	
12.1. Toxicity to fish:	LC50	96h	3,36	mg/l	Brachydanio rerio		Analogous conclusion
12.1. Toxicity to daphnia:	EC50	48h	1,24	mg/l	Daphnia magna		Analogous conclusion
12.1. Toxicity to algae:	IC50	96h	0,05	mg/l	Pseudokirchneria subcapitata		Analogous conclusion

12.5. Results of PBT and vPvB assessment						n.a.
Water solubility:			~4320	g/l		20°C

Ammonium chloride							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC50	96h	725	mg/l	Lepomis macrochirus		
12.1. Toxicity to fish:	LC50	96h	209	mg/l	Cyprinus caprio		References
12.1. Toxicity to daphnia:	EC50	48h	>100	mg/l	Daphnia magna		References
12.5. Results of PBT and vPvB assessment							n.a.
Other information:	AOX		0	%			

Ethanediol							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.2. Persistence and degradability:		14d	83-96	%		OECD 301 C (Ready Biodegradability - Modified MITI Test (I))	
12.3. Bioaccumulative potential:	Log Pow		-1,36				Bioaccumulation is unlikely (LogPow < 1).
12.1. Toxicity to fish:	LC50	96h	>10000	mg/l	Pimephales promelas	IUCLID Chem. Data Sheet (ESIS)	
12.1. Toxicity to daphnia:	EC50	48h	>100	mg/l	Daphnia magna	OECD 202 (Daphnia sp. Acute Immobilisation Test)	
Other information:	BOD5		0,78	g/g			IUCLID
Other information:	COD		1,19	g/g			IUCLID
Other information:	ThOD		1,29	g/g			IUCLID
Other information:	BOD5		60	%			

Propan-2-ol							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.3. Bioaccumulative potential:	BCF		3,2				Low
12.1. Toxicity to fish:	LC50	96h	>100	mg/l	Leuciscus idus		
12.1. Toxicity to fish:	LC50	96h	1400	mg/l	Lepomis macrochirus		
12.1. Toxicity to daphnia:	EC50	48h	2285	mg/l	Daphnia magna		
12.1. Toxicity to daphnia:	EC50	16d	141	mg/l	Daphnia magna		
12.1. Toxicity to algae:	EC50	72h	>100	mg/l	Desmodesmus subspicatus		
12.2. Persistence and degradability:		21d	95	%		OECD 301 E (Ready Biodegradability - Modified OECD Screening Test)	Readily biodegradable
12.2. Persistence and degradability:			99,9	%		OECD 303 A (Simulation Test - Aerobic Sewage Treatment - Activated Sludge Units)	Readily biodegradable

12.3. Bioaccumulative potential:	Log Pow		0,05			OECD 107 (Partition Coefficient (n-octanol/water) - Shake Flask Method)	Slight
12.4. Mobility in soil:	Koc		1,1				Expert judgement
12.5. Results of PBT and vPvB assessment							No PBT substance, No vPvB substance
Toxicity to bacteria:	EC50		>1000	mg/l	activated sludge		
Toxicity to bacteria:	EC10	16h	1050	mg/l	Pseudomonas putida		
Other information:	ThOD		2,4	g/g			
Other information:	BOD5		53	%			
Other information:	COD		96	%			References
Other information:	COD		2,4	g/g			
Other information:	BOD		1171	mg/g			

Ammonia							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to daphnia:	NOEC/NOEL	21d	0,42	mg/l	Daphnia magna		
12.1. Toxicity to fish:	LC50	96h	0,16-1,1	mg/l	Oncorhynchus mykiss	OECD 203 (Fish, Acute Toxicity Test)	
12.1. Toxicity to daphnia:	EC50	48h	24-25,4	mg/l	Daphnia magna	OECD 202 (Daphnia sp. Acute Immobilisation Test)	
12.1. Toxicity to algae:	NOEC/NOEL	72h	>1000	mg/l	Skeletonema costatum	ISO 10253	
12.1. Toxicity to fish:	NOEC/NOEL	30d	<0,048	mg/l	Ictalurus punctatus	OECD 215 (Fish, Juvenile Growth Test)	
12.1. Toxicity to fish:	LC50	96h	8,2	mg/l	Pimephales promelas		
12.1. Toxicity to fish:	LC50	96h	0,53	mg/l	Oncorhynchus mykiss		Anhydrous substance
12.1. Toxicity to daphnia:	EC50	48h	0,66	mg/l	Daphnia pulex		
12.1. Toxicity to daphnia:	EC50	48h	1,16	mg/l	Daphnia pulicaria		Anhydrous substance
12.1. Toxicity to algae:	EC50	72h	>1000		Skeletonema costatum	ISO 10253	
12.2. Persistence and degradability:							Readily biodegradable
12.3. Bioaccumulative potential:	Log Pow		-1,14			Regulation (EC) 440/2008 A.8 (PARTITION COEFFICIENT)	Not to be expected
12.5. Results of PBT and vPvB assessment							No PBT substance, No vPvB substance
Toxicity to bacteria:	EC50	5min	1,16	mg/l	Photobacterium phosphoreum		Anhydrous substance
Water solubility:							Soluble

SECTION 13: Disposal considerations

13.1 Waste treatment methods

For the substance / mixture / residual amounts

EC disposal code no.:

The waste codes are recommendations based on the scheduled use of this product.
 Owing to the user's specific conditions for use and disposal, other waste codes may be allocated under certain circumstances. (2014/955/EU)

11 05 04 spent flux

Recommendation:

Sewage disposal shall be discouraged.

Pay attention to local and national official regulations.

E.g. dispose at suitable refuse site.

E.g. suitable incineration plant.

For contaminated packing material

Pay attention to local and national official regulations.

Empty container completely.

Uncontaminated packaging can be recycled.

Dispose of packaging that cannot be cleaned in the same manner as the substance.

SECTION 14: Transport information

General statements

14.1. UN number or ID number: 1760

Transport by road/by rail (ADR/RID)

14.2. UN proper shipping name:

UN 1760 CORROSIVE LIQUID, N.O.S. (ZINC CHLORIDE,AMMONIA SOLUTION)

14.3. Transport hazard class(es):

8

14.4. Packing group:

III

Classification code:

C9

LQ:

5 L

14.5. Environmental hazards:

environmentally hazardous

Tunnel restriction code:

E

Transport by sea (IMDG-code)

14.2. UN proper shipping name:

CORROSIVE LIQUID, N.O.S. (ZINC CHLORIDE,AMMONIA SOLUTION)

14.3. Transport hazard class(es):

8

14.4. Packing group:

III

EmS:

F-A, S-B

Marine Pollutant:

Yes

14.5. Environmental hazards:

environmentally hazardous

Transport by air (IATA)

14.2. UN proper shipping name:

Corrosive liquid, n.o.s. (ZINC CHLORIDE,AMMONIA SOLUTION)

14.3. Transport hazard class(es):

8

14.4. Packing group:

III

14.5. Environmental hazards:

Not applicable

14.6. Special precautions for user

Persons employed in transporting dangerous goods must be trained.

All persons involved in transporting must observe safety regulations.

Precautions must be taken to prevent damage.

14.7. Maritime transport in bulk according to IMO instruments

Freighted as packaged goods rather than in bulk, therefore not applicable.

Minimum amount regulations have not been taken into account.

Danger code and packing code on request.

Comply with special provisions.



SECTION 15: Regulatory information

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

Observe restrictions:

Comply with national regulations/laws governing the protection of young people at work (national implementation of the Directive 94/33/EC)!

Comply with national regulations/laws governing maternity protection (national implementation of the Directive 92/85/EEC)!

Comply with trade association/occupational health regulations.

Directive 2012/18/EU ("Seveso III"), Annex I, Part 1 - The following categories apply to this product (others may also need to be considered according to storage, handling etc.):

Hazard categories	Notes to Annex I	Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of - Lower-tier requirements	Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of - Upper-tier requirements
E1		100	200

The Notes to Annex 1 of Directive 2012/18/EU, in particular those named in the tables here and notes 1-6, must be taken into account when assigning categories and qualifying quantities.

Directive 2010/75/EU (VOC): < 2 %

15.2 Chemical safety assessment

A chemical safety assessment is not provided for mixtures.

SECTION 16: Other information

Revised sections: 1-16
 Employee training in handling dangerous goods is required.
 These details refer to the product as it is delivered.
 Employee instruction/training in handling hazardous materials is required.

Classification and processes used to derive the classification of the mixture in accordance with the ordinance (EG) 1272/2008 (CLP):

Classification in accordance with regulation (EC) No. 1272/2008 (CLP)	Evaluation method used
Acute Tox. 4, H302	Classification according to calculation procedure.
Skin Corr. 1B, H314	Classification according to calculation procedure.
STOT SE 3, H335	Classification according to calculation procedure.
Eye Dam. 1, H318	Classification according to calculation procedure.
Aquatic Acute 1, H400	Classification according to calculation procedure.
Aquatic Chronic 1, H410	Classification according to calculation procedure.

The following phrases represent the posted Hazard Class and Risk Category Code (GHS/CLP) of the product and the constituents (specified in Section 2 and 3).

H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.
 H319 Causes serious eye irritation.
 H336 May cause drowsiness or dizziness.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.
 H411 Toxic to aquatic life with long lasting effects.

Acute Tox. — Acute toxicity - oral
 Skin Corr. — Skin corrosion
 STOT SE — Specific target organ toxicity - single exposure - respiratory tract irritation
 Eye Dam. — Serious eye damage
 Aquatic Acute — Hazardous to the aquatic environment - acute
 Aquatic Chronic — Hazardous to the aquatic environment - chronic
 Eye Irrit. — Eye irritation
 Flam. Liq. — Flammable liquid
 STOT SE — Specific target organ toxicity - single exposure - narcotic effects

Key literature references and sources for data:

Regulation (EC) No 1907/2006 (REACH) and Regulation (EC) No 1272/2008 (CLP) as amended.
 Guidelines for the preparation of safety data sheets as amended (ECHA).
 Guidelines on labelling and packaging according to the Regulation (EG) Nr. 1272/2008 (CLP) as amended (ECHA).
 Safety data sheets for the constituent substances.
 ECHA Homepage - Information about chemicals.
 GESTIS Substance Database (Germany).

German Environment Agency "Rigoletto" information site on substances that are hazardous to water (Germany).

EU Occupation Exposure Limits Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164, (EU) 2019/1831, each as amended.

National Lists of Occupational Exposure Limits for each country as amended.

Regulations on the transport of hazardous goods by road, rail, sea and air (ADR, RID, IMDG, IATA) as amended.

Any abbreviations and acronyms used in this document:

acc., acc. to according, according to

ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= European Agreement concerning the International Carriage of Dangerous Goods by Road)

AOX Adsorbable organic halogen compounds

approx. approximately

Art., Art. no. Article number

ASTM ASTM International (American Society for Testing and Materials)

ATE Acute Toxicity Estimate

BAM Bundesanstalt für Materialforschung und -prüfung (Federal Institute for Materials Research and Testing, Germany)

BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (= Federal Institute for Occupational Health and Safety, Germany)

BCF Bioconcentration factor

BSEF The International Bromine Council

bw body weight

CAS Chemical Abstracts Service

CLP Classification, Labelling and Packaging (REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures)

CMR carcinogenic, mutagenic, reproductive toxic

DMEL Derived Minimum Effect Level

DNEL Derived No Effect Level

DOC Dissolved organic carbon

dw dry weight

e.g. for example (abbreviation of Latin 'exempli gratia'), for instance

EbCx, EyCx, EbLx (x = 10, 50) Effect Concentration/Level of x % on reduction of the biomass (algae, plants)

EC European Community

ECHA European Chemicals Agency

ECx, ELx (x = 0, 3, 5, 10, 20, 50, 80, 100) Effect Concentration/Level for x % effect

EEC European Economic Community

EINECS European Inventory of Existing Commercial Chemical Substances

ELINCS European List of Notified Chemical Substances

EN European Norms

EPA United States Environmental Protection Agency (United States of America)

ErCx, EμCx, ErLx (x = 10, 50) Effect Concentration/Level of x % on inhibition of the growth rate (algae, plants)

etc. et cetera

EU European Union

EVAL Ethylene-vinyl alcohol copolymer

Fax. Fax number

gen. general

GHS Globally Harmonized System of Classification and Labelling of Chemicals

GWP Global warming potential

Koc Adsorption coefficient of organic carbon in the soil

Kow octanol-water partition coefficient

IARC International Agency for Research on Cancer

IATA International Air Transport Association

IBC (Code) International Bulk Chemical (Code)

IMDG-code International Maritime Code for Dangerous Goods

incl. including, inclusive

IUCLID International Uniform Chemical Information Database

IUPAC International Union for Pure Applied Chemistry

LC50 Lethal Concentration to 50 % of a test population

LD50 Lethal Dose to 50% of a test population (Median Lethal Dose)

Log Koc Logarithm of adsorption coefficient of organic carbon in the soil

Log Kow, Log Pow Logarithm of octanol-water partition coefficient

LQ Limited Quantities

MARPOL International Convention for the Prevention of Marine Pollution from Ships

n.a. not applicable

n.av. not available

n.c. not checked

n.d.a. no data available
NIOSH National Institute for Occupational Safety and Health (USA)
NLP No-longer-Polymer
NOEC, NOEL No Observed Effect Concentration/Level
OECD Organisation for Economic Co-operation and Development
org. organic
OSHA Occupational Safety and Health Administration (USA)
PBT persistent, bioaccumulative and toxic
PE Polyethylene
PNEC Predicted No Effect Concentration
ppm parts per million
PVC Polyvinylchloride
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (REGULATION (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals)
REACH-IT List-No. 9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT.
RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regulation concerning the International Carriage of Dangerous Goods by Rail)
SVHC Substances of Very High Concern
Tel. Telephone
TOC Total organic carbon
UN RTDG United Nations Recommendations on the Transport of Dangerous Goods
VOC Volatile organic compounds
vPvB very persistent and very bioaccumulative
wwt wet weight

The statements made here should describe the product with regard to the necessary safety precautions - they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge.
No responsibility.

These statements were made by:

Chemical Check GmbH, Chemical Check Platz 1-7, D-32839 Steinheim, Tel.: +49 5233 94 17 0, Fax: +49 5233 94 17 90

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