SECTION 1: Product and Company Identification

Trade name:	**TRIDENT - Low Expansion Foam Extinguishing Agent according to EN 1568-3:2008**
Product utilisation: *(Identified use)*	As a 0.2% up to 1% additive to water (class A) or as a 3% additive to water (class B) used in fire-fighting, to reduce surface tension. It is suitable for use in fighting fires of class A (generally combustible substances), and as a 3% additive to water in fighting fires of class B (inflammable liquids; tested by MPA Dresden). Particular suitable for fighting fires of organic fluids such as petrol, kerosine, alkohols etc. The toxicity for water organisms is very low (see also SECTION 12).
Manufacturer/Supplier:	**CW Fire-Support GmbH** Sprudelallee 14, D- 63628 Bad Soden Salmünster Ph.: +49-(0)6056 209313 ; Fax: +49-(0)6056 209312 E-Mail: c.widmayr@cwfire-support.de Internet: www.cwfire-support.de
Person in charge:	Mr. Clemens Widmayr (speaks English and German) phone, fax and e-mail as aforementioned
Emergency telephone code:	+49 (0)151 23 503332

SECTION 2: Hazards Identification

2.1 *Classification and labelling according to Regulation (EC) No 1272/2008 (Directive 1272/2008/EC)*

None, due to tests carried out by the Hygiene-Institut des Ruhrgebiets (HIR: Hygiene Institute of the Ruhrgebiet) according to OECD guidelines No. 404 and 405.

2.2 Information pertaining to particular dangers to man and the environment:

Contact of the product with eyes may cause slight eye irritation, and contact with injured skin may cause slight skin irritation. Ingestion may cause irritation of the oral cavity, of the oesophagus and the stomach. The product contains glycerin at a content of < 10% and 2-Phenoxyethanol at a content of < 1%, both may be resorbed through skin. No further harmful effects are expected. At the application concentrations up to 3% of the concentrate no harmful effects are to be expected at all.

Not combustible.

SECTION 3: Composition / Information on Ingredients

3.1 Characterization: Aqueous concentrate of different surface-active agents, glycerin and a biocide.

3.2 Hazardous ingredients:

*Classification of the **pure** ingredients according to Directive 1272/2008/EC (GHS)*

Common or chemical name:

Caprylyl/capryl oligoglucoside C8 - C10 (percentage by weight: < 6%; CAS No.: 68515-73-1; EC No.: 500-220-1; REACH Registration No.: 01-2119488530-36)
Synonyms: (C8-C10)alkyl ether of corn sugar; D-Glucopyranose, oligomeric, decyl octyl glycosides

Eye Dam. 1 (Serious eye damage/eye irritation, Hazard Category 1): H318

Signal word: "Danger"

Wording of Hazard statements (H-Phrases):
H318: Causes serious eye damage.

Note: Due to tests of the manufacturer an aqueous solution with ≤ 10% of Caprylyl/capryl oligoglucoside C8 - C10 need not to be classified as Eye Irrit. 2 (Skin corrosion/irritation, Hazard Category 2).

2-Phenoxyethanol (percentage by weight: < 1%; CAS No.: 122-99-6; EC No.: 204-589-7; REACH Registration No.: 01-2119488943-21-0000)
Synonyms: Ethylene glycol monophenyl ether; Ethanol, 2-phenoxy-; Phenoxyethanol

Acute tox. (oral) 4 (Acute toxicity if ingested, Hazard Category 4): H302
Eye Irrit. 2 (Eye irritation, Hazard Category 2): H319

Signal word: "Warning"

Wording of Hazard statements (H-Phrases):
H302: Harmful if swallowed
H319: Causes serious eye irritation

1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18 and C18-unsatd. acyl) derivs., inner salts (percentage by weight: < 0.5%; CAS No.: 147170-44-3; EC No.: 604-575-4; REACH Registration No.: 01-2119489410-39 and 01-2119488533-30)
Synonym: 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl, N-C8-C18 (even numbered and C18 unsaturated) acyl derivs., hydroxides, inner salts; C8-18 & C18-unsatd. amido propyl betaine

Eye Dam. 1 (Serious eye damage/eye irritation, Hazard Category 1): H318)
Aquatic Chron. 3 (Hazardous to the aquatic environment, Aquatic Chronic, Hazard Category 3): H412

Signal word: "Danger"

Wording of Hazard statements (H-Phrases):
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-hydroxy-, C12-14-alkyl ethers, sodium salts
(percentage by weight: < 0.1%; CAS No.: 68891-38-3; EC No.: 500-234-8; REACH Registration No.: 01-2119488639-16)
Synonyms: Alcohols, (C12-C14), ethoxylated, sulfates, sodium salts; Polyethylene glycol mono-C12-14-alkyl ether sulfate sodium salt; Alcohols, (C12-14), ethoxylated, monoethers with sulfuric acid, sodium salts

Eye Dam. 1 (Serious eye damage/eye irritation, Hazard Category 1): H318
Skin Irrit. 2 (Skin irritation, Hazard Category 2): H315
Aquatic Chron. 3 (Hazardous to the aquatic environment, Chronic, Hazard Category 3): H412

Signal word: "Danger"

Wording of Hazard statements (H-Phrases):
H318: Causes serious eye damage.
H315: Causes skin irritation.
H412: Harmful to aquatic life with long lasting effects.

3.4 Other ingredients:

Common or chemical name	*CAS No.*	*EINECS No.*	*Chemical nature*	*Percentage by weight*
Water	7732-18-5	231-791-2	No comment	> 80
Glycerin	56-81-5	200-289-5	Anti-freezing agent, natural material	< 10

Synonyms: Glycerol, 1,2,3-Propanetriol, 1,2,3-Trihydroxypropane

SECTION 4: First Aid Measures

General information: Most of all slight irritation of eyes is to be expected after contact. The following information is only relevant for the product upon delivery (concentrate). At the concentrations of application up to 3% no first-aid measures are expected to be necessary.

Inhalation of aerosols: If irritation occur immediately move the affected person into fresh air. If symptoms persist seek medical attention. (Not relevant for vapours, because almost only water evaporates.)

Skin: Wash skin with plenty of water and soap. Change contaminated clothing. If symptoms persist seek medical attention.

Eyes: Rinse with plenty of water for at least 15 minutes. If symptoms persist seek medical attention.

Ingestion: If the patient is conscious have him rinse his mouth with water, spit it out and then have him drink water. Do not induce vomiting. Seek medical attention.

Information for doctor: If injured skin is contaminated on a large scale apply polyehtylene glycol (e. g. Lutrol, PEG 400), leave it for some minutes and then wash with water. After

inhalation of aerosols, inhalation of water vapour or application of aerosols of glucocorticoid are indicated. Symptoms should be treated otherwise. There is no specific antidote.

SECTION 5: Fire Fighting Measures

General information:	The product is a fire-fighting agent. Use a fire-fighting agent that is suitable for the burning materials. The product is not combustible, only after evaporation of water the organic residue is combustible.
Extinguishing agents:	Adjust to burning materials. For the residue of the product after evaporation of water powder, foam and directed spray of water are suitable.
Not suitable extinguishing agents for safety reasons:	Dependent on burning materials.
Special exposure hazards:	Release of hydrocarbons and their products of combustion, carbon dioxide, carbon monoxide, nitrous oxides, and very small amounts of sulphur oxides. Most exposure hazards may arrive from other burning materials.
Special protective equipment for fire-fighters:	Use self-contained breathing apparatus.
Further notice:	Prevent fire-fighting water from entering surface water or groundwater. The product is tested as an additive to water used in fire-fighting.

SECTION 6: Accidental Release Measures

General information:	High risk of slipping due to leakage/spillage of product.
Personal precaution:	Use chemical resistent gloves (refer to SECTION 8.3) and safety goggles with side shield. If aerosols are generated use fine dust respirator (P2 or P3) or a ventilated breathing hood.
Environmental precaution:	Do not discharge the product into surface water, groundwater or soil, if possible.
Methods for cleaning up:	Withdraw large quantities. Take up the rest with liquid-adsorbent material (sand, clay, cat litter or other adsorbent material for water). Discharge contaminated material according to SECTION 13.

SECTION 7: Handling and Storage

Handling:	Avoid contact with skin and eyes, and avoid inhalation of aerosols..
Notes for prevention of fire and explosion:	Not applicable.
Storage:	Appropriate containers: low density polyethylene, stainless steel. Keep containers closed. If possible store between 10°C to 50°C, but not below -10°C and not above 70°C. German VCI-class of storage: 12 (not combustible fluid, TRGS 510).

SECTION 8: Exposure Controls / Personal Protection

8.1 Technical protection: Avoid generation of aerosols.

8.2 Ingredients with occupational exposure limit values:

2-Phenoxyethanol

- *CAS No.:*	122-99-6
- *Exposure limit value:*	110 mg/m^3 (20ppm) (vapour and inhalable aerosols)
- *Short term limit value:*	2, I (refer to explanations)
- *Origin:*	TRGS 900 (AGW)
- *BLV:*	None
- *Remarks:*	H, C
- *Year:*	2017

Glycerin

- *CAS No.:*	56-81-5
- *Exposure limit value:*	200 mg/m^3 (inhalable aerosol)
- *Short term limit value:*	2, I (refer to explanations)
- *BLV:*	None
- *Origin:*	TRGS 900 (AGW)
- *Remarks:*	C
- *Year:*	2017

Explanations:

- *AGW*	Exposure limit value (refer to TRGS 900, Germany)
- *BLV:*	Biological limit value
- *Short term limit values:*	Exceeding factor X: Exposure may exceed the exposure limit value by the factor X for not longer than 15 minutes. 4 measurements at intervals of 1 hour. Exceeding factor =X=: Exposure must never exceed the exposure limit value by more than the factor X (instantaneous value). (I): Category I: substances for which the exposure limit value is based on local effects or sensitizing substances. (II): Category II: substances effective by resorption.
- *Remarks::*	H : Substances effective by resorption through skin S = Sensitizing substance Y or C: There is no teratogenic risk if the exposure limit value and the BLV are maintained.

8.3 Ingredients with DNEL:

8.3.1 Caprylyl/capryl oligoglucoside C8 - C10 (CAS No.: 68515-73-1)

Worker: long-term exposition - systematic effects, dermal: 595 g/kg
Worker: long-term exposition - systematic effects, inhalation: 420 mg/m^3
Consumer: long-term exposition - systematic effects, dermal: 357 g/kg
Consumer: long-term exposition - systematic effects, oral: 35.7 mg/kg
Consumer: long-term exposition - systematic effects, inhalation: 124 mg/m^3

8.3.2 2-Phenoxyethanol (CAS No.: 122-99-6)

Worker: long-term exposition - systematic effects, dermal: 34.7 mg/kg
Worker: long-term exposition - systematic effects, inhalation: 8.07 mg/m^3
Consumer: long-term exposition - systematic effects, dermal: 20.83 mg/kg
Consumer: long-term exposition - systematic effects, oral: 17.43 mg/kg
Consumer: long-term exposition - systematic effects, inhalation: 2.5 mg/m^3

8.3.3 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18 and C18-unsatd. acyl) derivs., inner salts (CAS No.: 147170-44-3)

Worker: long-term exposition - systematic effects, dermal: 12.5 mg/kg
Worker: long-term exposition - systematic effects, inhalation: 44 mg/m^3
Consumer: long-term exposition - systematic effects, dermal: 7.5 mg/kg
Consumer: long-term exposition - systematic effects, oral: 7.5 mg/kg

8.3.4 Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-hydroxy-, C12-14-alkyl ethers, sodium salts (CAS No.: 68891-38-3)

Worker: long-term exposition - systematic effects, dermal: 2,750 mg/kg
Worker: long-term exposition - local effects, dermal: 0.312 mg/cm^2
Worker: long-term exposition - systematic effects, inhalation: 175 mg/m^3
Consumer: long-term exposition - systematic effects, dermal: 1,650 mg/kg
Consumer: long-term exposition - local effects, dermal: 0.079 mg/cm^2
Consumer: long-term exposition - systematic effects, oral: 15 mg/kg
Consumer: long-term exposition - systematic effects, inhalation: 52 mg/m^3

8.4 Personal Protection:

The following protection measures apply to the product upon delivery (concentrate):

Respiratory protection:	If aerosols are generated use fine dust respirator (P2 or P3) or a ventilated breathing hood.
Hand protection:	If contact with hands cannot be avoided use protection gloves tested according to DIN EN 374. Seek advice from manufacturers of protection gloves. If gloves cannot be used for safety reasons (e. g. while working at rotating machines) use skin-protective barrier cream. Consult the company medical officer for the type of barrier cream to be used. Comment: In contrary to the European ordinance 1907/2006/EC (REACH), it is not sufficient to specify only the protective glove material. The break-through-times are dependent not only on the material but also on the manufacturing technique. It is therefore essential to consult the manufacturers of protective gloves. For the product (concentrate) the following materials should be appropriate: polychloroprene - CR (0.5 mm), nitrile/latex rubber - NBR (0.35 mm), butyl rubber - Butyl (0.5 mm), polyvinyl chloride - PVC (0.5 mm).
Eye protection:	Safety glasses with side shield.
Skin protection:	Use waterproof protective clothing and gumboots if contamination of clothing cannot be avoided, e g. when aerosols are generated.
General protective measures:	Avoid contact with eyes and skin. Change contaminated clothing immediately.

Industrial hygiene: Do not eat, drink, smoke or take snuff at work.

SECTION 9: Physical and Chemical Properties

9.1 Appearance

Physical state:	Liquid.
Colour:	Amber
Odour:	Faint chacteristic odour.

9.2 Relevant data for Safety and Health for the product (concentrate):

Melting point/ range:	< -10°C (MPA)
Boiling point / range:	> 100°C (deduced from properties of the ingredients)
Flash range:	No inflammability
Ignition temperature:	Not applicable
Autoignition temperature:	Not applicable
Explosive range:	Not applicable
Vapour pressure:	Almost like water
Substance weight:	1.01 - 1.05 g/ml (20°C; deduced from properties of the ingredients)
Bulk density:	Not applicable
Solubility in water:	Miscible
pH-Value:	7.3 (measured by MPA, will be lowered by carbon dioxide from air.)
Volatile components:	Water
Solubilty in other solvents:	Not determined
Partition coefficient n-octanol/water:	Not determined
Kinematic viscosity:	Not determined
Surface tension:	Not determined
Interfacial tension:	Not determined

SECTION 10: Stability and Reactivity

Thermal decomposition:	Not determined
Substances to be avoided:	Strong oxidizing agents (halogenes, nitriles, hydrogen peroxide, perchloric acid, aqua regia, etc.), strong acids.
Dangerous reactions:	No dangerous reactions are known.
Hazardous decomposition products:	After evaporation of water: carbon momoxide, carbon dioxide, different hydrocarbons and small amounts of sulfur compounds, mainly sulfur dioxide when burning.
Dangerous polymerisations:	None.

SECTION 11: Toxicological Information

11.1 Product	Tests according to OECD guidelines No. 404 and 405 carried out by the Hygiene-Institut des Ruhrgebiets (HIR: Hygiene-Institute of the Ruhrgebiet) showed no irritation of skin or eyes after contact. No further information on the toxicity of the product (concentrate) is available.

11.1.1 Toxikokinetics, metabolism and distribution:

Inhalation of aerosols and absorption through the skin are the main routes of occupational exposure. Essentially, only the ingredient glycerin is resorbed via the skin. For glycerin an elimination rate of 2 g within 8 hours has been calculated (GESTIS). Less than 15% of orally administered glycerin is excreted unaltered. 85% is metabolized, mainly in the liver and the kidneys. The metabolites of glycerin serve to synthesize glucose, glycogen and fat. The exposure through skin of 2-Phenoxy-ethanol is usually marginal, but may contribute to the total exposure by contact with injured skin. The resorption of all other ingredients is insignificant. Slight irritation of eyes and of injured skin is the main hazard.

11.1.2 Toxicity:

If not otherwise mentioned the following toxicities of the product (concentrate) are estimated by the toxicities of the ingredients (refer to SECTION 11.2):

Acute toxicity:	After contact the product may cause slight irritation of eyes and slight irritation of injured skin. Ingestion may cause irritation of the oral cavity, of the oesophagus and the stomach. No toxic effects are to be expected if industrial hygiene standards are maintained.
Acute oral toxicity:	LD_{50}: (rat, oral): > 2,000 mg/kg (HIR according to guideline OECD 420) LD_{50}: (rat, oral): > 34,000 mg/kg (estimated due to the toxicities of the ingredients)
Acute inhalative toxicity:	Due to low vapour pressures of the ingredients (with the exception of water) only inhalation of aerosols is relevant (refer to SECTION 11.1.1).
Acute dermal toxicity:	LD_{50} (rat or rabbit, dermal): > 30,000 mg/kg (estimated due to the toxicities of the ingredients)
After inhalation:	Slight irritation of the respiratory tract may occur after inhaling aerosols.
After skin contact:	Not irritant (HIR according to guideline OECD 404). Slight irritation of injured skin is possible.
After eye contact:	Not irritant (HIR according to guideline OECD 404). Slight irritation is possible (also after contact with aerosols).
After ingestion:	Ingestion may result in irritation of the oral cavity, of the oesophagus and the stomach.
Sensitization:	No sensitizing effects are known.
Mutagenicity:	No mutagenic effects are known.
Cancer:	No carcinogenic effects are known. All ingredients are not mentioned as carcinogenic in the lists of ACGIH, NIOSH, IARC or TRGS 905.
Reproductive toxicity:	No toxic effects on reproduction are known.

Toxic effects after repeated exposure (subacute to chronic toxicity):

No symptoms after repeated occupational exposure (chronic or subchronic) are known.

Practical experience:	There are no reports of symptoms of poisoning after using the product.

11.2 Toxicological information on the pure ingredients:

Note: If not mentioned otherwise the following information originates from the Safety Data Sheets of the manufacturers.

11.2.1 Caprylyl/capryl oligoglucoside C8 - C10 (percentage by weight: < 6%)

Toxikokinetics, metabolism and distribution:

No information is available.

Acute toxicity:

LD_{50} (rat, oral):	> 5,000 mg/kg (OECD guideline 401)
LD_{50} (dermal):	> 5,000 mg/kg (OECD guideline 402)
After skin contact:	Not irritant (rabbit, according to guideline OECD 404).
After eye contact:	Risk of serious, irreversible eye damage (rabbit, according to guideline OECD 405). Not irritant for an aqueous solution containing ≤ 10% (statement of the manufacturer).
Specific organ toxicity:	According to available information there is no specific organ toxicity after single exposure.
Sensitization:	Not sensitizing (guinea pig, OECD guideline 406).
Mutagenicity:	Tests on microorganisms and on cultures of cells of mammals showed no mutagenic effects.
Cancer:	According to available information no carcinogenic effects are to be expected.
Reproductive toxicity:	Animal tests showed no reproductive toxicity.
Chronic toxicity:	Animal tests showed no toxic effects after repeated oral application.

11.2.2 2-Phenoxyethanol (percentage by weight: < 1%)

Toxikokinetics, metabolism and distribution:

2-Phenoxyethanol metabolises rapidly to phenoxy-acetic acid and is excreted via kidneys.

Acute toxicity:

LD_{50} (rat, oral):	1,260 mg/kg (GESTIS)
LD_{50} (rat, oral):	2,740 mg/kg (BASF-Test)
LD_{50} (rat, dermal):	5,510 mg/kg (GESTIS)
IRT (rat, inhalativ):	within 8 hours no mortality
After skin contact:	Not irritant (rabbit, according to OECD guideline 404).
After eye contact:	Irritating (rabbit, according to OECD guideline 405).
Specific organ toxicity:	No information available.
Sensitization:	Not sensitizing (guinea pig, maximation test, OECD guideline 406).
Mutagenicity:	No mutagenic effects with bacteria. Tests on cells of mammals and on mammals showed no mutagenic effects.
Cancer:	There is no information on carcinogenic effects.

Reproductive toxicity:	Animal tests showed no effects on fertility. Animal studies gave no indication of terotogenic effects at doses that were not toxic to the parental animals.
Chronic toxicity:	There is no information available.

11.2.3 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18 and C18-unsatd. acyl) derivs., inner salts (percentage by weight: < 0.5%)

Toxikokinetics, metabolism and distribution:

No information is available.

Acute toxicity:

LD_{50} (rat, oral):	> 5,000 mg/kg
LD_{50} (rat, dermal):	> 2,000 mg/kg (OECD guideline TG 402)
After skin contact:	Slightly irritant (rabbit, according to OECD guideline 404).
After eye contact:	Risk of serious, irreversible eye damage (rabbit, according to OECD guideline 405).
Specific organ toxicity:	According to available information there is no specific organ toxicity after single exposure.
Sensitization:	Not sensitizing (guinea pig, maximation test, OECD guideline 406).
Mutagenicity:	Tests on microorganisms and on cultures of cells of mammals showed no mutagenic effects. Ames-test: negative (Salmonella typhimurium, OECD guideline 471). Gene mutation: negative (lymphocytes of mice L5178Y, OECD guideline 476). Micronucleus-test: negative (bone marrow cells of mice, OECD guideline 474).
Cancer:	According to available information no carcinogenic effects are to be expected.
Reproductive toxicity:	Teratogenity: NOEL (female rat, 15 days of exposure): 1,000 mg/kg (OECD guideline 414). Developmental toxicity: NOEL (female rat, 15 days of exposure): 300 mg/kg. There is no information on toxic effects of reproduction and development.
Chronic toxicity:	After repeated oral exposure (90 days) no chronic toxic effects were observed in animal experiments. NOEL: 300 mg/kg (OECD guideline 408)

11.2.4 Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-hydroxy-, C12-14-alkyl ethers, sodium salts (percentage by weight: < 0.1%)

Toxikokinetics, metabolism and distribution:

No information is available.

Acute toxicity:

LD_{50} (rat, oral):	> 2,000 - 5,000 mg/kg (OECD guideline 401)
LD_{50} (rat, dermal):	> 2,000 mg/kg (OECD guideline TG 402)
After skin contact:	Irritant (rabbit, according to OECD guideline 404).

After eye contact:	Strongly irritant for aqueous solutions ≥ 10%. Irritant for aqueous solutions ≥ 5% to < 10%. Not irritant for aqueous solutions < 5%. (rabbit, according to OECD guideline 405).
Specific organ toxicity:	According to available information there is no specific organ toxicity after single exposure.
Sensitization:	Not sensitizing (guinea pig, maximation test, OECD guideline 406).
Mutagenicity:	In-vitro- und in-vivo tests showed no mutagenic effects.
Cancer:	According to available information no carcinogenic effects are to be expected.
Reproductive toxicity:	Teratogenicity: NOAEL: > 1000 mg/kg (OECD guideline 414).
Chronic toxicity:	After repeated oral exposure (90 days) no chronic toxic effects were observed in animal experiments. NOAEL: 225 mg/kg (OECD guideline 408)

11.2.5 Glycerin (percentage by weight: < 10%)

Toxikokinetics, metabolism and distribution:

Refer to SECTION 11.1.1

Acute toxicity:

LD_{50} (rat, oral):	12,600 mg/kg (IUCLID, GESTIS)
LD_{50} (rabbit, dermal):	18,700 mg/kg (IUCLID)
LD_{50} (rabbit, dermal):	>10,000 mg/kg (GESTIS)
After inhalation:	Slight irritation of the respiratory tract may occur after inhaling aerosols.
After skin contact:	Not irritant (rabbit). Intense and long-time contact may result in dry skin. Slight irritation of injured skin, e. g. after sunburn, is possible. Glycerin is resorbed through skin.
After eye contact:	Irritating (rabbit, according to guideline OECD 405).
After ingestion:	The ingredient glycerin is rapidly resorbed in the gastrointestinal tract. Ingestion of very high doses of the product (> 700 mg/kg body weight) may result in nausea and diarrhea. After a delay, headache, vertigo, kidney pains and enhanced urine production may occur. Ingestion may also result in irritation of the oral cavity, of the oesophagus and the stomach.
Specific organ toxicity:	According to available information there is no specific organ toxicity after single exposure.
Sensitization:	There is no information on sensitizing effects. Patch-tests on humans with glycerin were negative (IUCLID).
Mutagenicity:	There is no information on sensitizing effects. Ames-test in vitro with glycerin was negative (IUCLID).
Cancer:	According to available information no carcinogenic effects are to be expected.
Reproductive toxicity:	In animal studies with rodents (rats, mice, rabbits, method similiar to OECD guideline 414) no toxic effects to the mother nor to the descendants were found with the highest dose tested (NOEL: 1180 mg/kg body weight x days). In a study of 2 generations of mice (method

	slightly different from the OECD guideline) no reproductive effects were found (NOAEL: 2000 mg/kg body weight x days).
Chronic toxicity:	Repeated intake of large amounts may result in damage of kidneys.

SECTION 12: Ecological Information

12.1 Product upon delivery (concentrate):

The ecotoxic effects and ecotoxic data of the product were determined by the Hygiene-Institut des Ruhrgebiets (report A-292355-17-Bi of 14 Dec. 2017).

Ecotoxic effects: The product is weakly water polluting (WGK 1) according to the German AwSV, annex 1, chapter 5). Readily biodegradable according to Directive 1272/2008/EC, chapter 4.1.2.9.5. If the product is diluted with water or other waste water at a ratio of 1:400, respectively, no adverse effects to sewage plants are to be expected. On the bases of the information of the ingredients no noteworthy bioaccumulation is to be expected.

Ecotoxic data:

Fish toxicity:	Brachydanio rerio:	LC_0:	1,000 mg/l / 96 h (24°C, OECD guideline 203)
	Brachydanio rerio:	LC_{50}:	1,600 mg/l / 96 h[1)] (24°C, OECD guideline 203)
	Brachydanio rerio:	LC_{100}:	2,000 mg/l / 96 h (24°C, OECD guideline 203)
		NOEC:	> 1 mg/l (OECD guideline 204)
Daphnia toxicity:	Daphnia magna Straus:	EC_0:	200mg/l / 48h (20°C, OECD guideline 402)
	Daphnia magna Straus:	EC_{50}:	1,400 mg/l / 48h[1)] (20°C, OECD guideline 402)
	Daphnia magna Straus:	EC_{100}:	5,000 mg/l / 48h (20°C, OECD guideline 402)
Bacterial toxicity:		NOEC:	3 ml/l (TTC-test)
Luminous bacterial toxicity:	Vibrio fischeri:	EC_{50}:	580 mg/l / 30 min (15°C, DIN-ISO 11348-2, 2009)
	Vibrio fischeri:	NOEC:	GL-value: 16 (DIN-ISO 11348-2, 2009)
Algae toxicity:	Desmodesmus subspic.:	IC_{10}:	170 mg/l / 72 h (23°C, OECD guideline 201)
	Desmodesmus subspic.:	IC_{50}:	800 mg/l / 72 h (23°C, OECD guideline 201)
Earthling toxicity:		LD_{50}:	> 10,000 mg/kg (DIN-ISO 11268-1)

[1)]: graphically determined.

Further information:

Biodegradability:	95,6% after 25 d to 28 d
COD:	233,000 mg O_2 / L (Hygiene-Institut des Ruhrgebiets = HIR)
BOD_5:	116,000 mg O_2 / L, 49,8% degradation (HIR)
BOD_{10}:	168,000 mg O_2 / L, 72,1% degradation (HIR)
BOD_{15}:	188,667 mg O_2 / L, 81,0% degradation (HIR)
BOD_{20}:	206,667 mg O_2 / L, 88,7% degradation (HIR)
BOD_{end}:	222,667 mg O_2 / L, 95,6% degradation (HIR)
PBT- und vPvB:	The product contains no ingredients which meet the criteria of PTB (persistent, toxic, bioaccumulative), and vPvB (very persistent, very bioaccumulative) according to Directive 1907/2006/EC, annex XIV.
Ozone:	No ingredients of the product are mentioned in Directive 1005/2009/EC to induce degradation of ozone.

*12.2 Information on the **pure** ingredients:*

Note: If not mentioned otherwise the following information originates from the Safety Data Sheets of the manufacturers.

12.2.1 Caprylyl/capryl oligoglucoside C8 - C10 (percentage by weight: < 6%)

Ecotoxic effects: Readily biodegradable according to criteria of OECD. No noteworthy bioaccumulation is to be expected. The substance does not evaporate from water surfaces to the atmosphere. Adsorption onto solid particles is possible.

Ecotoxic data:

Fish toxicity:	Brachydanio rerio	LC_{50}:	> 100 mg/l / 96 h (OECD 203; ISO 7346)
		NOEC:	> 1 mg/l (OECD guideline 204)
Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 100 mg/l / 48h (directive 92/69/EEC)
		NOEC:	> 1 mg/l (OECD guideline 202, Part 2)
Bacterial toxicity:	Pseudomonas putida:	EC_0:	> 100 mg/l / 6 h (Bringmann-Kuehn-Test)
Algae toxicity:	Desmodesmus subspic.:	EC_{50}:	> 10 - < 100 mg/l / 72 h (OECD gl. 201)

PNEC-Values:

Sweet water:	0.176 mg/l
Seawater:	0.0176 mg/l
Sporadic release:	0.26 mg/l
Sewage plant:	560 mg/l
Sediment sweet water:	1.516 mg/kg
Sediment seawater:	0.152 mg/kg
Soil:	0.654 mg/kg
Oral Intake (secondary poisoning):	111.11 mg/kg

Further information:

WGK (Water Pollution Category,Germany): 1 (slightly water polluting), (AwSV, annex 1, chapter 4)

12.2.2 2-Phenoxyethanol (percentage by weight: < 1%)

Ecotoxic effects: Readily biodegradable according to criteria of OECD. No noteworthy bioaccumulation is to be expected. The substance is slowly hydrolysed by water. The substance does not evaporate from water surfaces to the atmosphere. The substance does not adsorb onto solid particles.

Ecotoxic data:

Fish toxicity:		LC_{50}:	440 mg/l / 96 h (GESTIS)
	Pimephales promelas:	LC_{50}:	> 100 mg/l / 96 h (flow through)
	Pimephales promelas:	NOEC:	> 1 mg/l /34 d (OECD draft, flow through)
Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 100 mg/l / 48 h (directive 79/831/EC)
	Daphnia magna:	NOEC:	> 1 mg/l / 21 d (OECD guideline 211, semistatic)
Bacterial toxicity:	Pseudomonas putida:	EC_{10}:	> 100 mg/l / 17 h (DIN 38412 Part 8)
Algae toxicity:	Desmodesmus subspic.:	EC_{50}:	> 100 mg/l / 72 h (DIN 38412 Part 9)

PNEC-Values:

Sweet water:	0.943 mg/l
Seawater:	0.0943 mg/l
Sporadic release:	3.44 mg/l
Sewage plant:	24.8 mg/l
Sediment sweet water:	7.2366 mg/kg
Sediment seawater:	0.152 mg/kg
Soil:	1.26 mg/kg

Further information:

Biodegradation: > 70% / 15 d DOC-decrease (aerobic, activated sludge, new version of OECD guideline 301A)

WGK (Water Pollution Category,Germany): 2 (water polluting) (BAnz. AT, idendification no.: 1650)

12.2.3 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18 and C18-unsatd. acyl) derivs., inner salts (percentage by weight: < 0.5%)

Ecotoxic effects: Readily biodegradable according to 648/2004/EU for detergents. No noteworthy bioaccumulation is to be expected. Easily eliminable from water.

Ecotoxic data:

Fish toxicity:	Pimephales promelas:	LC_{50}:	> 1 - 10 mg/l (similiar to OECD gl. 203)
	Archosargus probatocephalus:	LC_{50}:	1.11 mg/l / 96 h (OECD guideline 203)
	Onchorhynchus mykiss:	NOEC:	0.135 mg/l / 100 d (OECD guideline 210)
Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 1 - 10 mg/l (OECD guidl. 201, Part 1)
	Daphnia magna:	EC_{50}:	6.5 mg/l / 48 h (OECD guideline 202)
	Daphnia magna:	NOEC:	0.32 mg/l / 21 d (OECD guideline 211)
	Daphnia magna:	LOEC:	0.56 mg/l / 21 d (OECD guideline 211)
Bacterial toxicity:	Pseudomonas putida:	EC_0:	> 100 mg/l (OECD guideline 209)
Algae toxicity:	Desmodesmus subspicatus:	EC_{50}:	> 1 - 10 mg/l (OECD guideline 201)
	Desmodesmus subspic.:	EC_{50}:	1.5 mg/l / 72 h (DIN 48412, Part 9)

PNEC-Values:

Sweet water:	0.0135 mg/l mg/l
Seawater:	0.00135 mg/l
Sewage plant:	3,000 mg/l
Sediment sweet water:	1 mg/kg
Sediment seawater:	0.1 mg/kg
Soil:	0.8 mg/kg

Further information:

Biodegradation: 92% / 28 d (aerobic, activated sludge, OECD guideline 301B)
80 - 90% / 60 d (anaerobic, activated sludge, OECD guideline 311)
CSB: 1,000,000 mg/l (DIN 48409 Part 41)
M-Faktor: Aquatic toxicity: 1
WGK (Water Pollution Category,Germany): 1 (slightly water polluting), (AwSV, annex 1, chapter 4)

12.2.4 Poly(oxy-1,2-ethanediyl), alpha-sulfo-omega-hydroxy-, C12-14-alkyl ethers, sodium salts (percentage by weight: < 0.1%)

Ecotoxic effects: Readily biodegradable according to 648/2004/EU for detergents. Bioaccumulation is not to be expected.

Ecotoxic data:

Fish toxicity:	Brachydanio rerio:	LC_{50}:	> 1 - 10 mg/l (OECD guideline 203)
	Onchorhynchus mykiss:	NOEC:	0.14 mg/l / 28 d (OECD guideline 204)
Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 1 - 10 mg/l / 48 h (OECD guidel. 202)
	Daphnia magna:	NOEC:	0.27 mg/l / 21 d (OECD guideline 211)
Bacterial toxicity:	Pseudomonas putida:	EC_{10}:	> 10,000 mg/l (cell proliferation inhibition test)
Algae toxicity:	Desmodesmus subspic.:	EC_{50}:	> 10 - 100 mg/l / 72 h (OECD gl. 201)

PNEC-Values:

Sweet water:	0.24 mg/l mg/l
Seawater:	0.024 mg/l
Sewage plant:	10,000 mg/l
Sediment sweet water:	0.9168 mg/kg
Sediment seawater:	0.0917 mg/kg
Soil:	7.5 mg/kg

Further information:

Biodegradation: > 70% / 28 d (aerobic, activated sludge, OECD guideline 301A)
Mobility in soil: Koc: 191 (calculated)

WGK (Water Pollution Category,Germany): 1 (slightly water polluting), (AwSV, annex 1, chapter 4)

12.2.5 Glycerin (percentage by weight: < 10%)

Ecotoxic effects: Readily biodegradable. No bioaccumulation is to be expected.

Ecotoxic data:

Fish toxicity:	Carassius auratus:	LC_{50}:	> 5,000 mg/l / 24 h (Merck)
	Leuciscus idus	LC_{50}:	> 10,000 mg/l / 24 h (Brenntag)
Daphnia toxicity:	Daphnia magna:	EC_{50}:	> 10,000 mg/l / 24 h (Merck)
Bacterial toxicity:	Pseudomonas putida:	EC_5:	> 10,000 mg/l / 16 h (Merck)
Protozoa toxicity:	Entosiphon sulcatum:	EC_5:	3,200 mg/l / 72 h (Merck)
Algae toxicity:	Scenedesmus quadricauda:	IC_5:	> 10,000 mg/l / 7 d (Merck)

Further information:

Biodegradation:	> 63% / 14 d (OECD guideline 301C) Decrease: DOC >70%, BOD >60% (old MSDS Merck)
Distribution log P(o/w):	-1.76 (calculated, Merck)
BOD:	870 mg/g / 5 d (Merck)
BOD_5:	71% of TOD / 5 d (Merck)
COD:	870 mg/g / 5 d, 95% of TOD (Merck)
TOD:	1.217 g/g (Merck)

WGK (Water Pollution Category,Germany): 1 (slightly water polluting), (BAnz. AT, idendification no.: 116)

Do not allow the product to enter water supplies, waste water or soil (refer to SECTION 12.1 and 13.1).

SECTION 13: Disposal Considerations

13.1 Product: Previous to recovery the product should be preteated to remove water. For disposal the product has not to be supervised. Small amounts (< 1 l) diluted by water or other waste water at a ratio of 1:400, respectively, may be discarded into the sewage system.

Waste code: 16 10 04
Waste name: Aqueous concentrates with the exception of those included under waste code 16 10 03*

13.2 Wastes contaminated by the product (adsorbent materials, protective clothing):

Waste code: 15 02 03
Waste name: Adsorbent and filter materials, wipes and protective clothing with the exception of those included under waste code 15 02 02*

13.3 Packing materials (completely emptied):

a) Packing materials made of plastics:
Waste code: 15 01 02
Waste name: Packing material*s* made of plastics

b) Packing materials made of metal:
Waste code: 15 01 04
Waste name: Packing material*s* made of metal

Waste-codes in accordance with the European Waste Register Ordinance.

SECTION 14: Transport Information

The product is not classified under international transport regulations in any way.

SECTION 15: Regulatory Information

15.1 For the product there is no safety report available, but for all ingredients there are safety reports available according to 1907/2006/EC (REACH).

15.2 Substances of very high concern (SVHC):

This product does not contain substances of very high concern according to directive 1907/2006/EC, article 57.

All other relevant regulations are mentioned elsewhere in this Safety Data Sheet.

15.3 National Regulations, Germany:

15.3.1 StörfallV: Not applicable

15.3.2	*TA-Luft:*	Clause 5.2.5: Organic substances apart from particulate matter: max. mass concentration: 50 mg/m^3 or max. mass flow: 0.50 kg/h (calculated as total carbon)
15.3.3	*VCI Storage Class:*	12 (not combustible fluids, TRGS 510)
15.4.4	*AwSV:*	WGK 1 (Slightly water polluting, German Water Pollution Category 1)
15.3.5	*Volatile components:*	Water (VOC: 0%)
15.4	*Further regulations and restrictions:*	Occupational restrictions: Take note of Directive 94/33/EC on the protection of young people at work.

SECTION 16: Other Information

Abbreviations:

ACGIH: American Conference of Governmental Industrial Hygienists
AwSV: Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen vom 18 April 2017 (ordinance about facilities for handling with substances hazardous to water of 18 April 2017)
BAnz. AT: Liste der wassergefährdenden Stoffe, veröffentlicht im Bundesanzeiger AT vom 10.08.2017 (list of water polluting substances, published in Bundesanzeiger AT of 8 Aug. 2017
BOD: Biochemical oxygen demand
ChemIDplus: Database of the United States National Library of Medicine
COD: Chemical oxygen demand
DNEL Derived No-Effect Level
DIN; DIN/ISO: German standard
DOC: Dissolved organic carbon
EN: European standard
EINECS: European Inventory of Existing Commercial Substances
GESTIS: Data base of Berufsgenossenschaftliches Institut für Arbeitsschutz, Germany
IARC: International Agency for Research on Cancer (World Health Organisation)
IRT: Inhalation risk test
IUCLID: International Uniform ChemicaL Information Database
LOEC: Lowest Observed Effect Concentration
MAK: Maximale Arbeitsplatzkonzentration (maximum concentration in the workplace, out of date)
Merck, Brenntag etc.: Actuel MSDS of Merck, Darmstadt, Germany, Brenntag, Germany, etc.
MITI: Ministry of International Trade and Industry, Japan
MSDS: Material Safety Data Sheet
NIOSH: National Institute for Occupational Safety and Health (USA)
NOAEL: No Observed Adverse Effect Level
NOEC: No Observed Effect Concentration
NOEL: No Observed Effect Level
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Adminstration (USA)
PNEC: Predicted No-Effect Concentration
RTECS: Register of Toxic Effects of Chemical Substances
TG: Test-Guideline
TOC: Total organic carbon
TOD: Theoretical oxygen demand
TRGS: Technische Regel für Gefahrstoffe (Technical rules for hazardous substances, Germany)
TRK: Technische Richtkonzentration (technical concentration in the workplace to comply with [for cancerogenic substances], out of date)
TTC: 2,3,5-Triphenyl, tetrazoliumchloride
VCI: Verband der Chemischen Industrie e.V. (Chemical Industry Association, Germany)
VwVwS: Ordinance on water polluting substances, Germany
VOC: Volatile organic carbons

WGK: Wassergefährdungsklasse (Water Pollution Category, Germany)

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered in good faith in the belief that it is accurate. This material safety data sheet shall not be deemed to constitute or imply any warranty of any kind. In the event of an adverse incident associated with this material, this safety data sheet is not intended as a substitute for consultation with appropriately trained personnel (refer to SECTION 1). Nor is this safety data sheet intended to be a substitute for any product literature which may accompany the finished product.