Heraeus

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by Commission Regulation (EU) 2020/878

FLUX NC 5070, 5 G, 5 CC

Version	Revision Date:	Date of last issue: 02.02.2024
2.0	06.12.2024	Date of first issue: 02.02.2024

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

1.1 Product identifier

Trade name	:	FLUX NC 5070, 5 G, 5 CC
Product code	:	81163285
Unique Formula Identifier (UFI)	:	GQU0-K0F0-H00Y-J8VW

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

Use of the Substance/Mixture	:	Industrial use, Electrical industry and electronics ***≤ 5 L ***
Recommended restrictions on use	:	For industrial use only.

1.3 Details of the supplier of the safety data sheet

Company	:	Heraeus Electronics GmbH & Co. KG Heraeusstrasse 12-14 63450 Hanau
Telephone	:	+496181350
E-mail address of person responsible for the SDS	:	sds@heraeus.com (Heraeus Business Solutions GmbH: EHS Chemical Safety)

1.4 Emergency telephone number

Emergency telephone number	:	+49 6132-84463 International Emergency Number This telephone number is available 24 hours per day, 7 days per week.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Reproductive toxicity, Category 2	H361d: Suspected of damaging the unborn child.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.

Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :

H315	Causes skin irritation.
H318	Causes serious eye damage.
H361d	Suspected of damaging the unborn child.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P201	Obtain special instructions before use.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Hazardous components which must be listed on the label:

2-Ethylhexane-1,3-diol
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol
Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.
Malonic acid

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : organic

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
2-Ethylhexane-1,3-diol	94-96-2 202-377-9 603-087-00-9	Eye Dam. 1; H318	≥ 20 - < 30
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol	Not Assigned	Eye Dam. 1; H318 specific concentration limit Eye Dam. 1; H318 ≥ 30 % Eye Irrit. 2; H319 20 - < 30 %	≥ 10 - < 20
Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.	71786-60-2 276-014-8 01-2119957489-17-XXXX	Acute Tox. 4; H302 Skin Corr. 1C; H314 Eye Dam. 1; H318 Repr. 2; H361d Aquatic Acute 1; H400 Aquatic Chronic 1; H410 EUH071 M-Factor (Acute aquatic toxicity): 100 M-Factor (Chronic aquatic toxicity): 10 Acute toxicity esti-mate Acute oral toxicity: 1.300 mg/kg	≥ 3 - < 5
Malonic acid	141-82-2 205-503-0	Acute Tox. 4; H302 Eye Dam. 1; H318	≥ 3 - < 10

		Acute toxicity estimate Acute oral toxicity: 1.310 mg/kg	

The registration numbers listed here are valid if the company listed in Chapter 1 is located in the EU. For ingredients without a registration number there is no registration, because due to the annual amount no registration is required or the substance or its use according to Article 2 of the REACh Regulation (EC 1907/2006) is excluded from registration.

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : First aider needs to protect himself.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Get medical attention.

In case of skin contact : Take off all contaminated clothing immediately.
Wash off with:
Polyethylene glycol 400.
Get medical attention immediately.

In case of eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Keep eye wide open while rinsing.
Protect unharmed eye.
Call a physician immediately.

If swallowed : Immediately give large quantities of water to drink.
Do NOT induce vomiting.
Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Risks : Causes skin irritation.
Causes serious eye damage.
Suspected of damaging the unborn child.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Exposure to decomposition products may be a hazard to health.

Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : Use a water spray to cool fully closed containers.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Follow safe handling advice and personal protective equipment recommendations.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Do not allow contact with soil, surface or ground water.
Do not let product enter drains.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Provide sufficient air exchange and/or exhaust in work rooms. Wear personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area.
Hygiene measures	:	Keep away from food and drink. Wash hands before breaks and at the end of workday. Keep working clothes separately. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep tightly closed in a dry, cool and well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

7.3 Specific end use(s)

Specific use(s)	:	No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol	Not Assigned	TWA	10 ppm 67,5 mg/m3	2006/15/EC
	Further information: Indicative			
		STEL	15 ppm 101,2 mg/m3	2006/15/EC
	Further information: Indicative			
		TWA	10 ppm 67,5 mg/m3	HU OEL
	Further information: Substances which have a health hazard after			

	PROLONGED exposure. Corrected value = TWA x 40 / number of hours per week, Value disclosed in Directive 2006/15/EC			
		STEL	15 ppm 101,2 mg/m3	HU OEL
	Further information: Substances which have a health hazard after PROLONGED exposure. Corrected value = TWA x 40 / number of hours per week, Value disclosed in Directive 2006/15/EC			

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Hydrogenated Rosin	Workers	Inhalation	Long-term systemic effects	117 mg/m3
	Workers	Skin contact	Long-term systemic effects	17 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	35 mg/m3
	Consumers	Skin contact	Long-term systemic effects	10 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	10 mg/kg bw/day
2-Ethylhexane-1,3-diol	Workers	Skin contact	Long-term systemic effects	76,3 mg/kg bw/day
	Workers	Skin contact	Acute systemic effects	228,9 mg/kg bw/day
	Consumers	Skin contact	Long-term systemic effects	38,2 mg/kg bw/day
	Consumers	Skin contact	Acute systemic effects	114,5 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	0,17 mg/kg bw/day
	Consumers	Ingestion	Acute systemic effects	0,51 mg/kg bw/day
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol	Workers	Inhalation	Long-term systemic effects	195 mg/m3
	Workers	Skin contact	Long-term systemic effects	50 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	117 mg/m3
	Consumers	Skin contact	Long-term systemic effects	25 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	2,5 mg/kg bw/day
Octadecanoic acid, 12-hydroxy-, reaction	Workers	Inhalation	Acute systemic effects	3 mg/m3

products with decano-ic acid and ethylene-diamine				
	Workers	Inhalation	Long-term local ef-fects	3 mg/m3
	Workers	Inhalation	Acute local effects	3 mg/m3
	Workers	Skin contact	Long-term local ef-fects	3,75 mg/cm2
	Workers	Skin contact	Acute local effects	11,2 mg/cm2
	Consumers	Skin contact	Long-term local ef-fects	3,75 mg/cm2
	Consumers	Skin contact	Acute local effects	11,2 mg/cm2
	Consumers	Ingestion	Long-term systemic effects	0,56 mg/kg bw/day
Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.	Workers	Inhalation	Long-term systemic effects	0,59 mg/m3
	Workers	Skin contact	Long-term systemic effects	0,17 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0,09 mg/m3
	Consumers	Skin contact	Long-term systemic effects	0,06 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	0,06 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Hydrogenated Rosin	Fresh water	0,0016 mg/l
	Marine water	0,00016 mg/l
	Intermittent use/release	0,016 mg/l
	Sewage treatment plant	1000 mg/l
	Fresh water sediment	0,007 mg/kg
	Marine sediment	0,0007 mg/kg
	Soil	0,00045 mg/kg
2-Ethylhexane-1,3-diol	Fresh water	0,1 mg/l
	Marine water	0,01 mg/l
	Sewage treatment plant	3 mg/l
	Fresh water sediment	1,6 mg/kg dry weight (d.w.)
	Marine sediment	0,16 mg/kg dry weight (d.w.)
	Soil	0,17 mg/kg dry weight (d.w.)
	Oral (Secondary Poisoning)	3,3 mg/kg food
	Intermittent use/release	1 mg/l
Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol	Fresh water	1,5 mg/l

	Marine water	0,15 mg/l
	Intermittent use/release	5 mg/l
	Sewage treatment plant	200 mg/l
	Fresh water sediment	5,77 mg/kg
	Marine water	0,13 mg/kg
	Soil	0,45 mg/kg
	Oral (Secondary Poisoning)	111 mg/kg food
Octadecanoic acid, 12-hydroxy-, reaction products with decanoic acid and ethylenediamine	Fresh water	740 µg/l
	Marine water	74 µg/l
	Soil	3714,9 mg/kg
Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.	Fresh water	0,119 µg/l
	Freshwater - intermittent	0,041 µg/l
	Marine water	0,012 µg/l
	Sewage treatment plant	2,2 mg/l
	Fresh water sediment	1,692 mg/kg dry weight (d.w.)
	Marine sediment	0,169 mg/kg dry weight (d.w.)
	Soil	5 mg/kg dry weight (d.w.)
	Oral (Secondary Poisoning)	2 mg/kg food
Sebacic acid	Fresh water	0,018 mg/l
	Marine water	0,0018 mg/l
	Intermittent use/release	0,18 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	0,547 mg/kg
	Marine sediment	0,0547 mg/kg
	Soil	0,0986 mg/kg dry weight (d.w.)

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Safety glasses with side-shields

Hand protection

Remarks : Before removing gloves clean them with soap and water. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and has to be tested before use.

Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
Filter type	:	Recommended Filter type: Filter type ABEK-P

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	paste
Colour	:	colourless
Odour	:	solvent-like
Odour Threshold	:	No data available
Melting point/ range	:	No data available
Boiling point/boiling range	:	244 °C (1.013 hPa)
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	113 °C(1.013 hPa)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
pH	:	substance/mixture is non-soluble (in water)
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 40 mm2/s (23 °C) > 20,5 mm2/s (40 °C)
Solubility(ies)		
Water solubility	:	(20 °C, 1,013 hPa)

		insoluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	≤ 1.100 hPa (50 °C)
Relative density	:	No data available
Density	:	1,025 g/cm3 (23 °C, 1.013 hPa)
Relative vapour density	:	No data available
Particle characteristics		
Particle size	:	Not applicable

9.2 Other information

Explosives	:	Not applicable
Oxidizing properties	:	Not applicable
Self-ignition	:	Not applicable
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

No data available
No hazardous decomposition products are known.

SECTION 11: Toxicological information

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

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 2.000 mg/kg Method: Calculation method

Components:

2-Ethylhexane-1,3-diol:

Acute oral toxicity	:	LD50 (Rat): 4.636 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 3,8 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 8.000 mg/kg

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Acute oral toxicity	:	LD50 (Rat): 5.170 mg/kg Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rabbit): 3.540 mg/kg Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Acute oral toxicity	:	LD50 (Rat, female): 1.300 mg/kg
Acute inhalation toxicity	:	Assessment: Corrosive to the respiratory tract.

Malonic acid:

Acute oral toxicity	:	LD50 (Rat): 1.310 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 8,9 mg/l Exposure time: 1 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 10.000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

2-Ethylhexane-1,3-diol:

Species	:	Rabbit
Result	:	No skin irritation

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Species	:	Rabbit
Result	:	No skin irritation
Remarks	:	Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Corrosive after 1 to 4 hours of exposure

Malonic acid:

Species	:	Rabbit
Result	:	No skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

2-Ethylhexane-1,3-diol:

Species	:	Rabbit
Result	:	Irreversible effects on the eye

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye
Remarks	:	Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye

Malonic acid:

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Remarks	:	Based on data from similar materials

Respiratory or skin sensitisation

Skin sensitisation

Not classified due to lack of data.

Respiratory sensitisation

Not classified due to lack of data.

Components:

2-Ethylhexane-1,3-diol:

Test Type	:	Draize Test
Exposure routes	:	Skin contact
Species	:	Humans
Result	:	negative

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Test Type	:	Maximisation Test
Exposure routes	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	negative
Remarks	:	Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Test Type	:	Maximisation Test
Exposure routes	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	negative
Remarks	:	Based on data from similar materials

Malonic acid:

Test Type	:	Local lymph node assay (LLNA)
Exposure routes	:	Skin contact
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	negative
Remarks	:	Based on data from similar materials

Germ cell mutagenicity

Not classified due to lack of data.

Components:

2-Ethylhexane-1,3-diol:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Test Type: Chromosome aberration test in vitro
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Result: negative

Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Intraperitoneal
Result: negative

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Malonic acid:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Carcinogenicity

Not classified due to lack of data.

Reproductive toxicity

Suspected of damaging the unborn child.

Components:

2-Ethylhexane-1,3-diol:

Effects on foetal development	:	Test Type: Embryo-foetal development Species: Rat Application Route: Skin contact Result: negative Test Type: Embryo-foetal development Species: Rat Application Route: Ingestion Result: negative

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Effects on fertility	:	Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on foetal development	:	Test Type: Embryo-foetal development Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Effects on foetal development	:	Test Type: Embryo-foetal development Species: Rat Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive
Reproductive toxicity - Assessment	:	Some evidence of adverse effects on development, based on animal experiments.

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.

Components:

2-Ethylhexane-1,3-diol:

Assessment : No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity

Components:

2-Ethylhexane-1,3-diol:

Species	:	Rat
NOAEL	:	100 mg/kg
Application Route	:	Ingestion
Exposure time	:	28 Days

Species	:	Rat
NOAEL	:	1.884 mg/kg
Application Route	:	Skin contact
Exposure time	:	13 Weeks

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Species	:	Rat
NOAEL	:	400 mg/kg
LOAEL	:	1.300 mg/kg
Application Route	:	Ingestion
Exposure time	:	91 Days
Remarks	:	Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Species	:	Rat
NOAEL	:	30 mg/kg
LOAEL	:	125 mg/kg
Application Route	:	Ingestion
Exposure time	:	90 Days
Method	:	OECD Test Guideline 408

Aspiration toxicity

Not classified due to lack of data.

11.2 Information on other hazards

Endocrine disrupting properties

Not classified due to lack of data.

SECTION 12: Ecological information

12.1 Toxicity

Components:

2-Ethylhexane-1,3-diol:

Toxicity to fish	:	LC50 (Ictalurus punctatus (channel catfish)): 624 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Desmodesmus subspicatus (green algae)): 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	NOEC : 1.000 mg/l Exposure time: 5 h

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Toxicity to fish	:	LC50 (Leuciscus idus (Golden orfe)): 2.200 - 4.600 mg/l Exposure time: 96 h Method: DIN 38412 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 2.210 mg/l Exposure time: 48 h Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	EC50 (Desmodesmus subspicatus (green algae)): > 612,6 mg/l Exposure time: 72 h Remarks: Based on data from similar materials NOEC (Desmodesmus subspicatus (green algae)): 62,5 mg/l Exposure time: 72 h Remarks: Based on data from similar materials
Toxicity to microorganisms	:	IC50 : > 5.000 mg/l Exposure time: 16 h Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): 199 µg/l Exposure time: 96 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 575 µg/l Exposure time: 48 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EL50 (Raphidocelis subcapitata (freshwater green alga)): 4,06 µg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 201 EL10 (Raphidocelis subcapitata (freshwater green alga)): 1 µg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	:	100
Toxicity to microorganisms	:	EC10 (activated sludge): 22 mg/l Exposure time: 3 h Method: OECD Test Guideline 209
Toxicity to fish (Chronic toxicity)	:	EC10: 14,3 µg/l Exposure time: 34 d Species: Danio rerio (zebra fish) Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10: 8,2 µg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test substance: Water Accommodated Fraction Method: OECD Test Guideline 211
M-Factor (Chronic aquatic toxicity)	:	10

Malonic acid:

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 150 mg/l Exposure time: 24 h LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h

Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 275 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

EC10 (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 : > 300 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

12.2 Persistence and degradability

Components:

2-Ethylhexane-1,3-diol:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 93 %
Exposure time: 28 d
Method: OECD Test Guideline 301E

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 85 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Malonic acid:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 70 %
Exposure time: 28 d
Remarks: Based on data from similar materials

12.3 Bioaccumulative potential

Components:

2-Ethylhexane-1,3-diol:

Partition coefficient: n-octanol/water : log Pow: 3,63

Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol:

Partition coefficient: n-octanol/water : log Pow: 0,51
Remarks: Based on data from similar materials

Ethanol, 2,2'-iminobis-, N-C12-18-alkyl derivs.:

Partition coefficient: n-octanol/water : log Pow: < 4
Remarks: Expert judgement

Malonic acid:

Partition coefficient: n-octanol/water : log Pow: -0,81

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	If recycling is not practicable, dispose of in compliance with local regulations.
Contaminated packaging	:	Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number or ID number

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.2 UN proper shipping name

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.3 Transport hazard class(es)

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA	:	Not regulated as a dangerous good

14.4 Packing group

ADN	:	Not regulated as a dangerous good
ADR	:	Not regulated as a dangerous good
RID	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA (Cargo)	:	Not regulated as a dangerous good

IATA (Passenger) : Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Remarks : When carried in single packaging or inner packaging of 5kg/ 5L or less, this material is not subject to the transport regulations
the single packaging or inner packaging must not be UN-approved but must be a good quality packaging and suitable for the medium.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 3 Number on list 55: Reaction mass of 2-(2-(2-butoxyethoxy)ethoxy)ethanol and 3,6,9,12-tetraoxahexadecan-1-ol Number on list 75: If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	Not applicable
Regulation (EC) on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable
Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving	E1	ENVIRONMENTAL HAZARDS

dangerous substances.

Storage class (TRGS 510) : 10: Combustible liquids

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.
Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
2000 XXV. Law on chemical safety
44/2000. (XII 27) Ministry of health dangerous substances and preparations dangerous for certain procedures and arrangements for activities

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.
H361d	:	Suspected of damaging the unborn child.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
EUH071	:	Corrosive to the respiratory tract.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage
Repr.	:	Reproductive toxicity
Skin Corr.	:	Skin corrosion
2006/15/EC	:	Europe. Indicative occupational exposure limit values
HU OEL	:	Hungary. Occupational Exposure Limits - Annex 1: Permissible concentration values
2006/15/EC / TWA	:	Limit Value - eight hours
2006/15/EC / STEL	:	Short term exposure limit
HU OEL / TWA	:	Mean concentration
HU OEL / STEL	:	Permissible peak concentration (15 minutes)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA -

European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:		**Classification procedure:**
Skin Irrit. 2	H315	Calculation method
Eye Dam. 1	H318	Calculation method
Repr. 2	H361d	Calculation method
Aquatic Acute 1	H400	Calculation method
Aquatic Chronic 1	H410	Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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