



Safety Data Sheet according to (EC) No 1907/2006 as amended

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BONDERITE L-MR 71-2 known as Multan 71-2

SDS No. : 664428
V006.0

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

1.1. Product identifier

BONDERITE L-MR 71-2 known as Multan 71-2

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

Intended use:

Water Soluble Cooling Lubricants for Metal Working

1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA

Henkelstr. 67

40589 Düsseldorf

Germany

Phone: +49 211 797 0

SDSinfo.Adhesive@henkel.com

For Safety Data Sheet updates please visit our website <https://mysds.henkel.com/index.html#/appSelection> or www.henkel-adhesives.com.

1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Skin irritation

Category 2

H315 Causes skin irritation.

Serious eye damage

Category 1

H318 Causes serious eye damage.

Toxic to reproduction

Category 1B

H360FD May damage fertility. May damage the unborn child.

Chronic hazards to the aquatic environment

Category 2

H411 Toxic to aquatic life with long lasting effects.

2.2. Label elements

Label elements (CLP):

Hazard pictogram:**Contains**

Dicyclohexylamine

Ethanol, 2,2',2''-nitrilotris-, compd. with α -(carboxymethyl)- ω -[(9Z)-9-octadecen-1-yloxy]poly(oxy-1,2-ethanediyl) (1:1), 9EOEthanol, 2,2',2''-nitrilotris-, compd. with α -(carboxymethyl)- ω -(octyloxy)poly(oxy-1,2-ethanediyl) (1:1)

boric acid

Signal word:

Danger

Hazard statement:

H360FD May damage fertility. May damage the unborn child.
 H315 Causes skin irritation.
 H318 Causes serious eye damage.
 H411 Toxic to aquatic life with long lasting effects.

Supplemental information

Contains: 3-iodo-2-propynyl butylcarbamate May produce an allergic reaction.
 Restricted to professional users.

**Precautionary statement:
Prevention**

P201 Obtain special instructions before use.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Precautionary statement:
Response**

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

2.3. Other hazards

None if used properly.

Following substances are present in a concentration \geq the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration \geq the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

SECTION 3: Composition/information on ingredients**3.2. Mixtures**

Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS-No. EC Number REACH-Reg No.	Concentration	Classification	Specific Conc. Limits, M-factors and ATEs	Add. Information
Fatty alcohol, C12-14, EO/PO 68439-51-0	1- < 5 %	Aquatic Chronic 3, H412		
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1 270-279-3	1- < 5 %	Eye Irrit. 2, H319		
2-(2-butoxyethoxy)ethanol 112-34-5 203-961-6 01-2119475104-44	1- < 5 %	Eye Irrit. 2, H319		EU OEL
Dicyclohexylamine 101-83-7 202-980-7 01-2119493354-33	1- < 5 %	Acute Tox. 3, Oral, H301 Acute Tox. 3, Dermal, H311 Skin Corr. 1B, H314 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	M acute = 1 M chronic = 1	
Ethanol, 2,2',2''-nitrilotris-, compd. with α -(carboxymethyl)- ω -(9Z)-9-octadecen-1- yloxy]poly(oxy-1,2-ethanediyl) (1:1), 9EO 2468016-06-8	1- < 3 %	Eye Dam. 1, H318		
Ethanol, 2,2',2''-nitrilotris-, compd. with α -(carboxymethyl)- ω -(octyloxy)poly(oxy-1,2- ethanediyl) (1:1) 125431-62-1	1- < 3 %	Eye Dam. 1, H318		
3-iodo-2-propynyl butylcarbamate 55406-53-6 259-627-5 01-2120762115-60	0,1- < 1 %	Aquatic Chronic 1, H410 STOT RE 1, H372 Acute Tox. 3, Inhalation, H331 Skin Sens. 1, H317 Eye Dam. 1, H318 Aquatic Acute 1, H400 Acute Tox. 4, Oral, H302 STOT SE 3, H335	M acute = 10 M chronic = 1	
boric acid 10043-35-3 233-139-2 01-2119486683-25	0,1- < 1 %	Repr. 1B, H360FD		SVHC

For full text of the H - statements and other abbreviations see section 16 "Other information".
Substances without classification may have community workplace exposure limits available.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Move to fresh air, consult doctor if complaint persists.

Skin contact:

IF ON SKIN: Wash with plenty of soap and water.

In case of adverse health effects seek medical advice.

Eye contact:

Immediately flush eyes with soft jet of water or eye rinse solution for at least 5 minutes. If pains remain (intensive smarting, sensitivity to light, visual disturbance) continue flushing and contact/seek doctor or hospital.

Ingestion:

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

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

SKIN: Redness, inflammation.

After eye contact: Corrosive, may cause permanent damage to eyes (impairment of vision).

4.3. Indication of any immediate medical attention and special treatment needed

See section: Description of first aid measures

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media:**

Water spray jet

Carbon dioxide, foam, powder

Extinguishing media which must not be used for safety reasons:

High pressure waterjet

5.2. Special hazards arising from the substance or mixture

Formation of toxic gases is possible during heating or in fires.

5.3. Advice for firefighters

Wear protective equipment.

Wear self-contained breathing apparatus.

Additional information:

Cool endangered containers with water spray jet.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Avoid contact with skin and eyes.

Danger of slipping on spilled product.

6.2. Environmental precautions

Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up

Dispose of contaminated material as waste according to Section 13.

Remove with liquid-absorbing material (sand, peat, sawdust).

6.4. Reference to other sections

See advice in section 8

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Avoid skin and eye contact.

Ensure that workrooms are adequately ventilated.

See advice in section 8

Hygiene measures:

Wash hands before work breaks and after finishing work.

Do not eat, drink or smoke while working.

Take off contaminated clothing and wash before reuse.

The workplace should be equipped with an emergency shower and eye-rinsing facility.

7.2. Conditions for safe storage, including any incompatibilities

Store in sealed original container.

Store frost-free.

Keep away from heat and direct sunlight.

Temperatures between + 5 °C and + 40 °C

7.3. Specific end use(s)

Water Soluble Cooling Lubricants for Metal Working

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Germany

Ingredient [Regulated substance]	ppm	mg/m ³	Value type	Short term exposure limit category / Remarks	Regulatory list
Dicyclohexylamine 101-83-7	0,7	5	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Dicyclohexylamine 101-83-7			Short Term Exposure Classification:	Category II: substances with a resorptive effect.	TRGS 900
Dicyclohexylamine 101-83-7			Skin designation:	Can be absorbed through the skin.	TRGS 900
2,2',2''-Nitrilotriethanol 102-71-6			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
2,2',2''-Nitrilotriethanol 102-71-6		1	Exposure limit(s):	1 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
2-(2-Butoxyethoxy)ethanol 112-34-5 [2-(2-BUTOXYETHOXY)ETHANOL]	10	67,5	Time Weighted Average (TWA):	Indicative	ECTLV
2-(2-Butoxyethoxy)ethanol 112-34-5 [2-(2-BUTOXYETHOXY)ETHANOL]	15	101,2	Short Term Exposure Limit (STEL):	Indicative	ECTLV
2-(2-Butoxyethoxy)ethanol 112-34-5	10	67	Exposure limit(s):	1.5 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
2-(2-Butoxyethoxy)ethanol 112-34-5			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Boric acid 10043-35-3			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Boric acid 10043-35-3		0,5	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
3-Iodo-2-propynyl butylcarbamate 55406-53-6	0,005	0,058	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
3-Iodo-2-propynyl butylcarbamate 55406-53-6			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
3-Iodo-2-propynyl butylcarbamate 55406-53-6			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for	TRGS 900

				substances with a sensitizing effect in respiratory passages.	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	0,005	0,058	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	aqua (freshwater)		0,1 mg/l				
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	aqua (intermittent releases)		10 mg/l				
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	aqua (marine water)		0,1 mg/l				
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	sewage treatment plant (STP)		0,184 mg/l				
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	sediment (freshwater)				1,411 mg/kg		
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	sediment (marine water)				1,411 mg/kg		
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	Soil				0,163 mg/kg		
Fatty acids, C16-18 and C18-unsatd., compds. with triethanolamine 68424-19-1	Predator						no potential for bioaccumulation
2-(2-butoxyethoxy)ethanol 112-34-5	aqua (freshwater)		1,1 mg/l				
2-(2-butoxyethoxy)ethanol 112-34-5	aqua (marine water)		0,11 mg/l				
2-(2-butoxyethoxy)ethanol 112-34-5	Freshwater - intermittent		11 mg/l				
2-(2-butoxyethoxy)ethanol 112-34-5	sediment (freshwater)				4,4 mg/kg		
2-(2-butoxyethoxy)ethanol 112-34-5	sediment (marine water)				0,44 mg/kg		
2-(2-butoxyethoxy)ethanol 112-34-5	oral				56 mg/kg		
2-(2-butoxyethoxy)ethanol 112-34-5	Soil				0,32 mg/kg		
Dicyclohexylamine 101-83-7	aqua (freshwater)		0,002 mg/l				
Dicyclohexylamine 101-83-7	aqua (marine water)		0 mg/l				
Dicyclohexylamine 101-83-7	aqua (intermittent releases)		0,01 mg/l				
Dicyclohexylamine 101-83-7	sediment (freshwater)				0,075 mg/kg		
Dicyclohexylamine 101-83-7	sediment (marine water)				0,007 mg/kg		
Dicyclohexylamine 101-83-7	Soil				0,014 mg/kg		
Dicyclohexylamine 101-83-7	sewage treatment plant (STP)		21 mg/l				
3-Iodo-2-propynyl butylcarbamate 55406-53-6	aqua (freshwater)		0,001 mg/l				
3-Iodo-2-propynyl butylcarbamate 55406-53-6	aqua (marine water)		0 mg/l				
3-Iodo-2-propynyl butylcarbamate 55406-53-6	sewage treatment plant (STP)		0,44 mg/l				
3-Iodo-2-propynyl butylcarbamate 55406-53-6	sediment (freshwater)				0,017 mg/kg		
3-Iodo-2-propynyl butylcarbamate 55406-53-6	sediment (marine water)				0,002 mg/kg		
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Soil				0,005 mg/kg		
boric acid 10043-35-3	aqua (freshwater)		2,9 mg/l				

boric acid 10043-35-3	aqua (marine water)		2,9 mg/l				
boric acid 10043-35-3	Freshwater - intermittent		13,7 mg/l				
boric acid 10043-35-3	sewage treatment plant (STP)		10 mg/l				
boric acid 10043-35-3	Soil				5,7 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
2-(2-butoxyethoxy)ethanol 112-34-5	Workers	inhalation	Acute/short term exposure - local effects		101,2 mg/m3	
2-(2-butoxyethoxy)ethanol 112-34-5	Workers	inhalation	Long term exposure - local effects		67,5 mg/m3	
2-(2-butoxyethoxy)ethanol 112-34-5	General population	oral	Long term exposure - systemic effects		6,25 mg/kg	
Dicyclohexylamine 101-83-7	Workers	dermal	Long term exposure - systemic effects		0,1 mg/kg	
Dicyclohexylamine 101-83-7	Workers	Inhalation	Long term exposure - systemic effects		0,353 mg/m3	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Workers	inhalation	Long term exposure - systemic effects		0,023 mg/m3	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Workers	inhalation	Acute/short term exposure - systemic effects		0,07 mg/m3	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Workers	inhalation	Long term exposure - local effects		1,16 mg/m3	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Workers	dermal	Long term exposure - systemic effects		2 mg/kg	
3-Iodo-2-propynyl butylcarbamate 55406-53-6	Workers	inhalation	Acute/short term exposure - local effects		1,16 mg/m3	
boric acid 10043-35-3	Workers	inhalation	Long term exposure - systemic effects		8,3 mg/m3	
boric acid 10043-35-3	Workers	dermal	Long term exposure - systemic effects		392 mg/kg	
boric acid 10043-35-3	General population	inhalation	Long term exposure - systemic effects		4,15 mg/m3	
boric acid 10043-35-3	General population	dermal	Long term exposure - systemic effects		196 mg/kg	
boric acid 10043-35-3	General population	oral	Long term exposure - systemic effects		0,98 mg/kg	
boric acid 10043-35-3	General population	oral	Acute/short term exposure - systemic effects		0,98 mg/kg	

Biological Exposure Indices:

None

8.2. Exposure controls:

Engineering controls:

Ensure good ventilation/suction at the workplace.

Respiratory protection:

In case of aerosol formation, we recommend wearing of appropriate respiratory protection equipment with ABEK P2 filter (EN 14387).

This recommendation should be matched to local conditions.

Hand protection:

Chemical-resistant protective gloves (EN 374). Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374): Polychloroprene (CR; ≥ 1 mm thickness) or natural rubber (NR; ≥ 1 mm thickness) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Polychloroprene (CR; ≥ 1 mm thickness) or natural rubber (NR; ≥ 1 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:

Protective eye equipment should conform to EN166.

Goggles which can be tightly sealed.

Skin protection:

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Suitable protective clothing

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions.

Personal protective equipment should conform to the relevant EN standard.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	liquid
Delivery form	liquid
Colour	reddish, Amber to yellowish
Odor	amine-like
Melting point	Not applicable, Product is a liquid
Solidification temperature	$< 5^{\circ}\text{C}$ ($< 41^{\circ}\text{F}$)
Initial boiling point	100°C (212°F)
Flammability	The product is not flammable.
Explosive limits	Not applicable, The product is not flammable.
Flash point	$> 100^{\circ}\text{C}$ ($> 212^{\circ}\text{F}$)
Auto-ignition temperature	Not applicable, The product is not flammable.
Decomposition temperature	Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use
pH	9,8 PH-value, potentiometer
(20°C (68°F); Conc.: 100 % product)	
Viscosity (kinematic)	107 - 137 mm ² /s ;. Viscosity and density by Stabinger
(20°C (68°F);)	Viscosimeter
Solubility (qualitative)	emulsifiable
(20°C (68°F); Solvent: Water)	
Partition coefficient: n-octanol/water	Not applicable
	Mixture
Vapour pressure	$< 0,1$ mbar
(20°C (68°F))	
Density	0,964 - 0,970 g/cm ³ Viscosity and density by Stabinger
(20°C (68°F))	Viscosimeter
Relative vapour density:	< 1
(20°C)	
Particle characteristics	Not applicable
	Product is a liquid

9.2. Other information

Other information not applicable for this product

SECTION 10: Stability and reactivity

10.1. Reactivity

Reaction with strong acids.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

See section reactivity

10.4. Conditions to avoid

No decomposition if used according to specifications.

10.5. Incompatible materials

See section reactivity.

10.6. Hazardous decomposition products

None if used for intended purpose.

In case of fire toxic gases can be released.

SECTION 11: Toxicological information

General toxicological information:

The product contains dicyclohexylamine. Dicyclohexylamine showed no activity in gene-mutation tests in vitro.

Dicyclohexylamine induced clastogenic effects in an in vitro chromosome aberration test. Appropriate in vivo tests for a final evaluation are currently not available.

Dicyclohexylamine is in accordance with VSI list of substances for lubricants (DIN 51385).

Dicyclohexylamine is listed by the German Employer's Liability Insurance Association as an allowed substance for lubricants (Fachausschuss-Informationsblatt Nr. 031).

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

Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	LD50	> 2.000 mg/kg	rat	EU Method B.1 (Acute Toxicity (Oral))
FC C16-18/C18-unsatd., comps. with TEA 68424-19-1	LD50	> 2.000 mg/kg	rat	OECD Guideline 423 (Acute Oral toxicity)
2-(2- butoxyethoxy)ethanol 112-34-5	LD50	> 2.000 mg/kg	rat	EU Method B.1 (Acute Toxicity (Oral))
Dicyclohexylamine 101-83-7	LD50	200 mg/kg	rat	not specified
3-iodo-2-propynyl butylcarbamate 55406-53-6	LD50	1.470 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
boric acid 10043-35-3	LD50	3.450 mg/kg	rat	not specified

Acute dermal toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	LD50	> 2.000 mg/kg		not specified
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	LD50	> 2.000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
2-(2- butoxyethoxy)ethanol 112-34-5	LD50	2.764 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
Dicyclohexylamine 101-83-7	LD50	200 - 316 mg/kg	rabbit	not specified
3-iodo-2-propynyl butylcarbamate 55406-53-6	LD50	> 2.000 mg/kg	rabbit	EPA OPP 81-2 (Acute Dermal Toxicity)
boric acid 10043-35-3	LD50	> 2.000 mg/kg	rabbit	not specified

Acute inhalative toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
3-iodo-2-propynyl butylcarbamate 55406-53-6	LC50	0,68 mg/l	dust/mist	4 h	rat	equivalent or similar to OECD Guideline 403 (Acute Inhalation Toxicity)

Skin corrosion/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	slightly irritating	4 h	rabbit	EU Method B.4 (Acute Toxicity: Dermal Irritation / Corrosion)
Fatty alcohol, C12-14, EO/PO 68439-51-0	moderately irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2-(2- butoxyethoxy)ethanol 112-34-5	not irritating		rabbit	Draize Test
3-iodo-2-propynyl butylcarbamate 55406-53-6	slightly irritating	4 h	rabbit	EPA OPP 81-5 (Acute Dermal Irritation)
boric acid 10043-35-3	not irritating		rabbit	not specified

Serious eye damage/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	slightly irritating	24 h	rabbit	EU Method B.5 (Acute Toxicity: Eye Irritation / Corrosion)
Fatty alcohol, C12-14, EO/PO 68439-51-0	slightly irritating	24 h	rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
2-(2- butoxyethoxy)ethanol 112-34-5	moderately irritating		rabbit	not specified
3-iodo-2-propynyl butylcarbamate 55406-53-6	Category 1 (irreversible effects on the eye)		rabbit	EPA OPP 81-4 (Acute Eye Irritation)
boric acid 10043-35-3	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	not sensitising	Guinea pig maximisation test	guinea pig	EU Method B.6 (Skin Sensitisation)
Fatty alcohol, C12-14, EO/PO 68439-51-0	not sensitising	Guinea pig maximisation test	guinea pig	Magnusson and Kligman Method
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	not sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2-(2- butoxyethoxy)ethanol 112-34-5	not sensitising	Guinea pig maximisation test	guinea pig	Magnusson and Kligman Method
3-iodo-2-propynyl butylcarbamate 55406-53-6	sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
boric acid 10043-35-3	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
2-(2-butoxyethoxy)ethanol 112-34-5	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
3-iodo-2-propynyl butylcarbamate 55406-53-6	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		EPA OPP 84-2 (Mutagenicity Testing)
3-iodo-2-propynyl butylcarbamate 55406-53-6	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
boric acid 10043-35-3	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
boric acid 10043-35-3	negative	sister chromatid exchange assay in mammalian cells	with and without		not specified
boric acid 10043-35-3	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	negative	oral: gavage		mouse	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
boric acid 10043-35-3	negative	oral: gavage		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Carcinogenicity

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
3-iodo-2-propynyl butylcarbamate 55406-53-6	not carcinogenic	oral: unspecified	104 w daily	rat	male/female	equivalent or similar OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Reproductive toxicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOAEL P 300 ppm NOAEL F1 > 750 ppm NOAEL F2 > 750 ppm	two-generation study	oral: gavage	rat	equivalent or similar to OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)
boric acid 10043-35-3	NOAEL P 100 mg/kg NOAEL F1 100 mg/kg NOAEL F2 100 mg/kg	three-generation study	oral: feed	rat	not specified

STOT-single exposure:

No data available.

STOT-repeated exposure::

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
2-(2-butoxyethoxy)ethanol 112-34-5	NOAEL < 50 mg/kg	oral: gavage	90 days 5 days/week	rat	not specified
2-(2-butoxyethoxy)ethanol 112-34-5	NOAEL 2 - 6 ppm	inhalation	90 days	rat	not specified
2-(2-butoxyethoxy)ethanol 112-34-5	NOAEL > 2.000 mg/kg	dermal	13 weeks 6 hours/day, 5 days/week	rat	not specified
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOAEL 0,00116 mg/l	inhalation: dust	90 d 6 h/d, 5 d/w	rat	equivalent or similar to OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day)
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOAEL 20 mg/kg	oral: feed	104 w daily	rat	equivalent or similar to OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOAEL 200 mg/kg	dermal	91 d 6 h/d, 5 d/w	rat	OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)
boric acid 10043-35-3	NOAEL 100 mg/kg	oral: feed	2 y daily	rat	not specified

Aspiration hazard:

No data available.

11.2 Information on other hazards

not applicable

SECTION 12: Ecological information

General ecological information:

Do not empty into drains / surface water / ground water.

12.1. Toxicity

Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	LC50	> 1 - 10 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	LL50	> 1.800 mg/l	96 h	Scophthalmus maximus	OECD Guideline 203 (Fish, Acute Toxicity Test)
2-(2-butoxyethoxy)ethanol 112-34-5	LC50	1.300 mg/l	96 h	Lepomis macrochirus	OECD Guideline 203 (Fish, Acute Toxicity Test)
Dicyclohexylamine 101-83-7	LC50	62 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	EU Method C.1 (Acute Toxicity for Fish)
3-iodo-2-propynyl butylcarbamate 55406-53-6	LC50	0,067 mg/l	96 h	Oncorhynchus mykiss	OECD Guideline 203 (Fish, Acute Toxicity Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOEC	0,0084 mg/l	35 d	Pimephales promelas	OECD Guideline 210 (fish early lite stage toxicity test)
boric acid 10043-35-3	LC50	455 mg/l	96 h	Pimephales promelas	other guideline:
boric acid 10043-35-3	NOEC	36,6 mg/l	34 d	Danio rerio (reported as Brachydanio rerio)	OECD Guideline 210 (fish early lite stage toxicity test)

Toxicity (Daphnia):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	EC50	> 10 - 100 mg/l	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	EL50	> 1.000 mg/l	48 h	Acartia tonsa	other guideline:
2-(2-butoxyethoxy)ethanol 112-34-5	EC50	3.300 mg/l	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Dicyclohexylamine 101-83-7	EC50	8 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	EC50	0,65 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
boric acid 10043-35-3	EC50	520 mg/l	48 h	Ceriodaphnia dubia	other guideline:

Chronic toxicity to aquatic invertebrates

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Dicyclohexylamine 101-83-7	NOEC	0,016 mg/l	21 d	Daphnia magna	OECD Guideline 202 (Daphnia sp. Chronic Immobilisation Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOEC	0,05 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
boric acid 10043-35-3	NOEC	61,6 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	EC10	> 0,1 - 1 mg/l	72 h	not specified	ISO 8692 (Water Quality)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	NOELR	> 1.000 mg/l	72 h	Skeletonema costatum	ISO 10253:2006 (Marine algal growth inhibition test)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	EL50	> 1.000 mg/l	72 h	Skeletonema costatum	ISO 10253:2006 (Marine algal growth inhibition test)
2-(2-butoxyethoxy)ethanol 112-34-5	NOEC	> 100 mg/l	96 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-(2-butoxyethoxy)ethanol 112-34-5	EC50	> 100 mg/l	96 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Dicyclohexylamine 101-83-7	EC50	> 1 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
Dicyclohexylamine 101-83-7	NOEC	0,016 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	EC50	0,053 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	NOEC	0,0046 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
boric acid 10043-35-3	EC50	299,6 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
boric acid 10043-35-3	EC10	200,12 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)

Toxicity to microorganisms

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	EC0	> 100 mg/l	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
2-(2-butoxyethoxy)ethanol 112-34-5	EC10	> 1.995 mg/l	30 min	activated sludge, industrial	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Dicyclohexylamine 101-83-7	EC 50	712 mg/l	3 h	activated sludge	ISO 8192 (Test for Inhibition of Oxygen Consumption by Activated Sludge)
boric acid 10043-35-3	EC0	20 mg/l	16 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm- Test)

12.2. Persistence and degradability

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
Fatty alcohol, C12-14, EO/PO 68439-51-0	readily biodegradable	aerobic	> 60 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	readily biodegradable	aerobic	81 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
2-(2-butoxyethoxy)ethanol 112-34-5	inherently biodegradable	aerobic	100 %	9 d	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
2-(2-butoxyethoxy)ethanol 112-34-5	readily biodegradable	aerobic	> 60 %	28 d	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))
Dicyclohexylamine 101-83-7	readily biodegradable	aerobic	96 %	20 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
3-iodo-2-propynyl butylcarbamate 55406-53-6	not readily biodegradable.	aerobic	25 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)

12.3. Bioaccumulative potential

Hazardous substances CAS-No.	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
3-iodo-2-propynyl butylcarbamate 55406-53-6	3,3 - 4,5			Carassius sp.	not specified
boric acid 10043-35-3	< 0,1	90 d	12 °C	Oncorhynchus tshawytscha	not specified

12.4. Mobility in soil

Hazardous substances CAS-No.	LogPow	Temperature	Method
2-(2-butoxyethoxy)ethanol 112-34-5	1	20 °C	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
Dicyclohexylamine 101-83-7	2,72	25 °C	EU Method A.8 (Partition Coefficient)
3-iodo-2-propynyl butylcarbamate 55406-53-6	2,81		not specified
boric acid 10043-35-3	-1,09	22 °C	EU Method A.8 (Partition Coefficient)

12.5. Results of PBT and vPvB assessment

Hazardous substances CAS-No.	PBT / vPvB
Fatty alcohol, C12-14, EO/PO 68439-51-0	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
FC C16-18/C18-unsatd., compds. with TEA 68424-19-1	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
2-(2-butoxyethoxy)ethanol 112-34-5	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Dicyclohexylamine 101-83-7	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
3-iodo-2-propynyl butylcarbamate 55406-53-6	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
boric acid 10043-35-3	According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.

12.6. Endocrine disrupting properties

not applicable

12.7. Other adverse effects

If acidic or alkaline products are discharged into wastewater installations care must be taken that the discharged wastewater has a pH in the range pH 6 - 10, as pH variations could cause disorders in wastewater channels and biological sewage treatment plants. The local discharge regulations take precedence.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:

In consultation with the responsible local authority, must be subjected to special treatment.

Waste code

120109

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

SECTION 14: Transport information

14.1. UN number or ID number

ADR	3082
RID	3082
ADN	3082
IMDG	3082
IATA	3082

14.2. UN proper shipping name

ADR	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dicyclohexyl amine,3-iodo-2-propinylbutyl carbamate)
RID	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dicyclohexyl amine,3-iodo-2-propinylbutyl carbamate)
ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dicyclohexyl amine,3-iodo-2-propinylbutyl carbamate)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Dicyclohexyl amine,3-iodo-2-propinylbutyl carbamate)
IATA	Environmentally hazardous substance, liquid, n.o.s. (Dicyclohexyl amine,3-iodo-2-propinylbutyl carbamate)

14.3. Transport hazard class(es)

ADR	9
RID	9
ADN	9
IMDG	9
IATA	9

14.4. Packing group

ADR	III
RID	III
ADN	III
IMDG	III
IATA	III

14.5. Environmental hazards

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	Marine pollutant
IATA	not applicable

14.6. Special precautions for user

ADR	not applicable
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	Tunnelcode:
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

The transport classifications in this section apply generally to packed and bulk goods alike. For containers with a net volume of no more than 5 L for liquid substances or a net mass of no more than 5 kg for solid substances per individual or inner package, the exemptions SP 375 (ADR), A197 (IATA), 2.10.2.7 (IMDG) may be applied, which can result in a deviation from the transport classification for packed goods.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

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

Ozone Depleting Substance (ODS) (Regulation (EC) No 1005/2009):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable
VOC content (2010/75/EU)	0 %

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

National regulations/information (Germany):

WGK:	WGK 2: significantly water endangering (Ordinance on facilities for handling substances that are hazardous to water (AwSV)) Classification according to AwSV, Annex 1 (5.2)
Storage class according to TRGS 510:	10
General remarks (DE):	This product is in scope of the German regulation "ChemikalienVerbotsVerordnung"

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H301 Toxic if swallowed.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
H360FD May damage fertility. May damage the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

ED:	Substance identified as having endocrine disrupting properties
EU OEL:	Substance with a Union workplace exposure limit
EU EXPLD 1:	Substance listed in Annex I, Reg (EC) No. 2019/1148
EU EXPLD 2	Substance listed in Annex II, Reg (EC) No. 2019/1148
SVHC:	Substance of very high concern (REACH Candidate List)
PBT:	Substance fulfilling persistent, bioaccumulative and toxic criteria
PBT/vPvB:	Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria
vPvB:	Substance fulfilling very persistent and very bioaccumulative criteria

Further information:

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