SAFETY DATA SHEET

LCF 600 PLUS

According to Annex II of Reg. EC 1907/2006, as amended by Reg. EU 878/2020

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

1.1. Product identifier

Commercial name: **LCF 600 PLUS**

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

Relevant identified uses: Low compressibility brake fluid for racing vehicles.

Uses advised against: Uses other than those identified as relevant.

1.3. Details of the supplier of the safety data sheet

Company:	**Brembo N.V.**
Address:	Via Brembo, 25 Curno (BG) 24035 ITALY
Telephone number:	+39 035 605 1111
E-mail address for a competent person responsible for the Safety Data Sheet:	SDS@brembo.it

1.4. Emergency telephone number

Company emergency number:	BREMBO N.V. +39 035 605 1111 from 8.30 to 17.30 (CET - Italian and English)

If the person should lose consciousness, call the single emergency number **112**.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture meets the criteria for classification in accordance with Regulation (EC) No 1272/2008 and its amendments.

Hazard pictogram(s)	*Hazard class(es) and category(ies)*	*Hazard statement(s)*
 GHS 08	Repr. 2	H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child.

2.2. Label elements

Label in accordance with Regulation (EC) No 1272/2008 and its amendments:

Hazard pictogram(s):

Signal word(s): **WARNING**

Hazard statement(s): **H361fd** Suspected of damaging fertility. Suspected of damaging the unborn child.

Precautionary statement(s):	**P202**	Do not handle until all safety precautions have been read and understood.
	P280	Wear protective gloves / protective clothing / eye protection / face protection.
	P308 + P313	IF exposed or concerned: Get medical advice / attention.
	P405	Store locked up.
	P501	Dispose of contents/container in accordance with local / regional / national / international regulation.

Contains: Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate, 2-(2-methoxyethoxy)ethanol.

2.3. Other hazards

The mixture does not contain substances at a concentration equal to or greater than 0,1% by weight, known to be:

- PBT and/or vPvB according to Annex XIII of REACH ;
- included in the Candidate list for having endocrine disrupting properties (art. 59(1));
- identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation EU 2100/2017 or Commission Regulation EU 605/2018.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not relevant.

3.2. Mixtures

Substance	*Concentration % w/w (Conc. = X)*	*Classification according to Reg. EC 1272/2008 (CLP) and its amendments*
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	30 ≤ X ≤ 90	**Repr. 2, H361fd**
EC Number: 250-418-4		
CAS Number: 30989-05-0		
REACH Registration Number: 01-2119462824-33-XXXX		
2-[2-(2-butoxyethoxy)ethoxy]ethanol; TEGBE; Triethylene glycol monobutyl ether; Butoxytriethylene glycol;	1 ≤ X ≤ 9,9	**Eye Dam. 1; H318** *Specific Concentration limits:* *Eye Dam. 1; H318: C ⩾ 30 %* *Eye Irrit. 2; H319: 20 % ⩽ C < 30 %*
INDEX Number: 603-183-00-0		
EC Number: 205-592-6		
CAS Number: 143-22-6		
REACH Registration Number: 01-2119475107-38-XXXX		
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	0 < X ≤ 5	**Eye Dam. 1; H318** *Specific Concentration limits:* *Eye Dam. 1; H318: C ⩾ 30 %* *Eye Irrit. 2; H319: 20 % ⩽ C < 30 %*
EC Number: 500-012-0		
CAS Number: 9004-77-7		
REACH Registration Number: 01-2119475115-41-XXXX		
2-(2-methoxyethoxy)ethanol; Diethylene glycol monomethyl ether	0 < X < 3	**Repr. 1B, H360D** *Specific Concentration limits:* *Repr. 1B; H360D: C ⩾ 3%*
INDEX Number: 603-107-00-6		
EC Number: 203-906-6		
CAS Number: 111-77-3		
REACH Registration Number: 01-2119475100-52-XXXX		

The full text of the hazard statements is available in section 16.

The mixture does not contain any other substances classified as hazardous pursuant to Reg. EC 1272/2008 (CLP) and its amendments or, if present, they are so in such a quantity that they do not have to be declared pursuant to Annex II of Reg. EC 1907/2006 (REACH), as amended by Regulation EU 878/2020.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of exposure, refer to the following first aid measures:

Route of exposure via inhalation:	Ventilate the room. If a person feels sick, immediately remove the patient from the contaminated environment and keep him at rest in a well-ventilated environment. If recovery is not rapid, seek medical attention.
Route of exposure via skin:	Remove contaminated clothing. Wash the areas of the body that have come into contact with the product with water, and possibly soap. Skin cleanser can be used. DO NOT use solvents or thinners. In skin irritation occurs, get medical advice/attention.
Route of exposure via eyes:	Remove contact lenses. Wash immediately and abundantly with running water, with eyelids open, for at least 20 minutes; In case of eye irritation, consult a doctor. Do not use eye drops or ointments of any kind before the visit or advice of the ophthalmologist.
Route of exposure via ingestion:	Exposure by ingestion is unlikely in normal conditions of use. However, if it should this happen, consult a doctor. In the event that the subject loses consciousness or shows symptoms of discomfort following ingestion, do not administer anything unless directed by the doctor. If medical attention is delayed, give adults 90-120 ml hard liquor such as 40% v/v spirits. Give children proportionately less at a rate of 2 ml/kg body weight.

In all cases of doubt, or when symptoms persist, seek medical attention.

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

No acute and/or delayed effects are known.

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

In case of symptoms and illness due to exposure to the product, contact a doctor. Bring this safety data sheet and/or the label.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Alcohol-resistant foam, dry chemical powder, carbon dioxide, water mist.

Unsuitable extinguishing media: Waterjets

5.2. Special hazards arising from the substance or mixture

Fire will result in dense smoke. Exposure to combustion products may harm the health. Closed containers, which are exposed to fire, should be cooled with water. Do not allow fire-extinguishing water to enter the sewage system and nearby surface waters. In case of combustion, avoid breathing the fumes as harmful gases could be released (CO_x).

5.3. Advice for firefighters

Use respiratory protection. Safety helmet and full protective clothing. Water spray can be used to protect people engaged in firefighting. It is also advisable to use self-contained breathing apparatus, especially if you work in closed and poorly ventilated places and in any case if you use halogenated extinguishers (fluobrene, solkane 123, naf, etc.). It is possible to cool the containers with jets of water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Move away from the area surrounding the spill or release. Not smoking. Wear a mask, gloves, and protective clothing according to section 8.

For emergency responders: Wear a mask, gloves, and protective clothing. Eliminate all open flames and possible sources of ignition. Not smoking. Provide adequate ventilation. Evacuate the danger area and, if necessary, consult an expert.

6.2. Environmental precautions

Keep away from drains, water, and soil. Advise authorities if spilled material has entered water courses or sewer or has contaminated soil or vegetation.

6.3. Methods and material for containment and cleaning up

Containment: Limit liquid spillage and collect using granular absorbent or similar materials (sand, earth, vermiculite, diatomaceous earth or spill control material). Collect and place in a labelled sealable container for subsequent safe disposal.

Clean-up: Flush contaminated area with plenty of water. Wherever it is possible, cleaning should be performed with normal cleaning agents. Avoid use of solvents. Put leaking containers in a labelled drum or overdrum.
Do not pour the water used to clean the contaminated material and the site where the product spill occurred directly into the sewer. Follow the local regulations in force.

6.4. Reference to other sections

Refer to sections 8 and 13 for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid any method of handling that generates mists or aerosols. Avoid direct contact with the product. Do not eat, drink or smoke when handling this product. See section 8 for information on personal protection.

7.2. Conditions for safe storage, including any incompatibilities

Keep it in the original container tightly closed. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in open or unlabeled containers. Keep the containers in a vertical and safe position avoiding the possibility of falls or collisions. Store in well-ventilated place, avoid moisture, and keep far away from sources of heat and direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate: Suitable materials for containers are Aluminum, Stainless steel 1.4439, High density polyethylene (HDPE). Prevent ingress of water to maintain quality.

2-(2-(2-butoxyethoxy)ethoxy)ethanol: Storage area should be cool and dry. Keep away from direct sunlight. Store in a bunded area. For containers use mild steel or stainless steel. Do not store in plastics or natural, butyl, polychloroprene or nitrile rubbers.

Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-: Storage area should be cool and dry. Keep away from direct sunlight. Store in a bunded area. For containers use mild steel or stainless steel. Do not store in plastics or natural, butyl, polychloroprene or nitrile rubbers.

2-(2-methoxyethoxy)ethanol: Storage area should be cool and dry. Keep away from direct sunlight. Keep in a well-ventilated place. Store in a bunded area. For containers use mild steel or stainless steel. Do not store in plastics or natural, butyl, polychloroprene or nitrile rubbers.

7.3. Specific end use(s)

The product is intended for vehicles. It is a brake fluid. Users are referred to the specification SAE J1707 "Service maintenance of brake fluids".

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OEL – Occupational Exposure Limits:

Substance	*CAS Number*	*Country*	*TLV-TWA (8h)*		*TLV-STEL (15 min)*	
			ppm	*mg/m³*	*ppm*	*mg/m³*
2-(2-methoxyethoxy)ethanol	111-77-3	*Austria*	10	50,1		
		Belgium	10	50,1		
		Denmark	10 (Skin)	50 (Skin)	20 (Skin)	100 (Skin)
		European Union	**10**	**50,1**		
		Finland	10	50		
		France	10 (Skin)	50,1 (Skin)		
		Germany (AGS)	10 (Inhalable fraction and vapour; Skin)	50 (Inhalable fraction and vapour; Skin)		
		Hungary		50,1		
		Ireland	10	15,1		
		Italy	10 (Skin)	50,1 (Skin)		
		Latvia	10	50,1		
		Norway	10 (Skin)	50 (Skin)		
		Poland		50		
		Romania	10	50,1		
		Spain	10 (Skin)	50,1 (Skin)		
		Sweden	10	50		
		The Netherlands		45 (Skin)		
		Turkey	10	50,1		
		United Kingdom	10	50,1		

DNEL and PNEC:

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate (CAS 30989-05-0)		
Workers		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	14,8 mg/m³
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	4,2 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	No hazard identified
General population		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	2,6 mg/m³

	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	1,5 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Oral	Systemic effects - Long term exposure	1,5 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	No hazard identified
Environment		
Target		***PNEC – Predicted No Effect Concentration***
Freshwater		No hazard identified
Marine water		No hazard identified
Sediment (freshwater)		No hazard identified
Sediment (marine water)		No hazard identified
STP (Sewage Treatment Plant)		No hazard identified
Air		No hazard identified
Soil		No hazard identified
Secondary poisoning		No potential for bioaccumulation
2-(2-(2-butoxyethoxy)ethoxy)ethanol (CAS 143-22-6)		
Workers		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	High hazard (no threshold derived)
General population		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Oral	Systemic effects - Long term exposure	12,5 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	High hazard (no threshold derived)

Environment	
Target	***PNEC – Predicted No Effect Concentration***
Freshwater	2 mg/L
Marine water	0,2 mg/L
Sediment (freshwater)	7,7 mg/kg sediment dw
Sediment (marine water)	0,77 mg/kg sediment dw
STP (Sewage Treatment Plant)	200 mg/L
Air	No hazard identified
Soil	0,47 mg/kg soil dw
Secondary poisoning	111 mg/kg food

Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy- (CAS 9004-77-7)		
Workers		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	High hazard (no threshold derived)
General population		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	No hazard identified
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Oral	Systemic effects - Long term exposure	16 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	Medium hazard (no threshold derived)
Environment		
Target		***PNEC – Predicted No Effect Concentration***
Freshwater		4,5 mg/L
Marine water		0,31 mg/L
Sediment (freshwater)		6,6 mg/kg sediment dw
Sediment (marine water)		0,66 mg/kg sediment dw
STP (Sewage Treatment Plant)		500 mg/L
Air		No hazard identified
Soil		1,32 mg/kg soil dw
Secondary poisoning		111 mg/kg food

2-(2-methoxyethoxy)ethanol (CAS 111-77-3)		
Workers		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	50,1 mg/m³
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	2,22 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	No hazard identified
General population		
Route of exposure	***Type of effect***	***DNEL – Derived No Effect Level***
Inhalation	Systemic effects - Long term exposure	30,1 mg/m³
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Dermal	Systemic effects - Long term exposure	1,33 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
	Local effects - Long term exposure	No hazard identified
	Local effects - Acute/short term exposure	No hazard identified
Oral	Systemic effects - Long term exposure	7,5 mg/kg bw/day
	Systemic effects - Acute/short term exposure	No hazard identified
Eyes	Local effects	No hazard identified
Environment		
Target		***PNEC – Predicted No Effect Concentration***
Freshwater		12 mg/L
Marine water		1,2 mg/L
Sediment (freshwater)		44,4 mg/kg sediment dw
Sediment (marine water)		0,44 mg/kg sediment dw
STP (Sewage Treatment Plant)		10000 mg/L
Air		No hazard identified
Soil		2,1 mg/kg soil dw
Secondary poisoning		0,09 g/kg food

8.2. Exposure controls

Do not eat, drink or smoke when handling this product.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT

Observe the usual safety measures when handling chemicals. Personal protective equipment must bear the CE marking which certifies their compliance with current regulations on safety, health, and protection.

Personal Protective Equipment:

Eye/face protection: It is a good practice to wear airtight protective goggles (see standard EN 166).

Skin protection:

- *Hand protection* — It is recommended to protect the hands with chemical-resistant gloves (see standard EN374-1/EN374-2/EN374-3). For the final choice of the work glove material should be considered: compatibility, degradation, failure time and permeability. Gloves must be replaced immediately in case of damage or signs of wear.
- *Other* — During the handling of the product, it is a good practice to wear category professional chemical resistant long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344).

Respiratory protection: It is a good practice to use a type P (FFP) filtering face mask, whose class (1, 2, or 3) and actual need must be defined based on the outcome of the chemical risk assessment (see standard EN 149).

Thermal hazards: The material is combustible. It burns, but does not ignite readily. Containers may explode when heated. In case of fire, avoid breathing combustion products (CO_x).

ENVIRONMENTAL EXPOSURE CONTROLS:

Use according to good working practices, avoiding dispersal of the product in the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical and chemical properties	*Value*	*Determination method / Note*
Physical state	Liquid	
Colour	Amber	
Odour	Mild	
Melting point/freezing point	< -50°C	
Boiling point or initial boiling point and boiling range	> 260°C	
Flammability	> 280°C	
Lower and upper explosion limit	Not possible due to the nature of the product.	
Flash point	> 120°C	
Auto-ignition temperature	Not possible due to the nature of the product.	
Decomposition temperature	300°C	
pH	7 – 10,5	
Kinematic viscosity	5 – 10 centistokes (20°C)	
Solubility	Completely soluble in water	
Partition coefficient n-octanol/water (log value)	1,5	The product is a mixture.
Vapour pressure	1 mbar	
Density and/or relative density	1,02 – 1,07 g/cm^3	
Relative vapour density	Not possible due to the nature of the product.	
Particle characteristics	Not applicable	The product is liquid.

9.2. Other information

INFORMATION WITH REGARD TO PHYSICAL HAZARD CLASSES

Evaporation rate (*n*-butyl acetate = 100) : 0,01.

OTHER SAFETY CHARACTERISTICS

Information not available.

SECTION 10: Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

2-(2-(2-butoxyethoxy)ethoxy)ethanol:	It may form peroxides on prolonged exposure to air and light.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-:	It may form peroxides on prolonged exposure to air and light.
2-(2-methoxyethoxy)ethanol:	It may form peroxides on prolonged exposure to air and light.

10.4. Conditions to avoid

Avoid high temperature and prolonged exposure to air/oxygen and light.

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate:	High temperature.
2-(2-(2-butoxyethoxy)ethoxy)ethanol:	High temperatures and sources of ignition. Prolonged exposure to air/oxygen and light.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-:	Prolonged exposure to air/oxygen and light.
2-(2-methoxyethoxy)ethanol:	High temperatures and sources of ignition. Prolonged exposure to air/oxygen and light.

10.5. Incompatible materials

Strong acids, strong basis, strong oxidising agents, and strong reducing agents.

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate:	Strong oxidising agents. Strong acids. Strong bases
2-(2-(2-butoxyethoxy)ethoxy)ethanol:	Oxidising agents.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-:	Oxidising agents.
2-(2-methoxyethoxy)ethanol:	Oxidising agents.

10.6. Hazardous decomposition products

Due to thermal decomposition or in case of fire, irritating and / or toxic fumes can be released (CO_x).

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate:	Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.
2-(2-(2-butoxyethoxy)ethoxy)ethanol:	Carbon oxides on combustion (CO, CO_2)
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-:	Carbon oxides on combustion (CO, CO_2)
2-(2-methoxyethoxy)ethanol:	Carbon oxides on combustion (CO, CO_2)

SECTION 11: Toxicological information

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

ACUTE TOXICITY:

The mixture does not meet the classification criteria for this hazard class.

ATE Mix oral	= ∞ No components classified for Acute Tox., oral.
ATE Mix inhalation	= ∞ No components classified for Acute Tox., inhalation.
ATE Mix dermal	= ∞ No components classified for Acute Tox., dermal.

Please note: "No components" may refer to the absence of substances classified for acute toxicity or classified ones with a concentration below the applicable cut-off limits.

Acute toxicity				
Route of exposure	***Substance***	***Species***	***Method / Source***	***Result(s)***
Oral	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rat	OECD 401	LD50 > 2000 mg/kg bw
Oral	2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rat	Study report	LD50 ≈ 5170 mg/kg bw
Oral	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rat	OECD 401	LD50 > 2000 mg/kg bw
Oral	2-(2-methoxyethoxy)ethanol	Mouse	OECD 401	LD50 (*fasted animals, male*) = 7128 mg/kg bw LD50 (*fed animals, male*) = 8188 mg/kg bw
Inhalation	2-(2-methoxyethoxy)ethanol	Rat	OECD 403	LC0 > 1,2 mg/L air No signs of toxicity were observed.
Dermal	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rat	OECD 402 / EU Method B.3	LD50 > 2000 mg/kg bw
Dermal	2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rabbit	Publication	LD50 = 3540 mg/kg bw
Dermal	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rabbit	Read-across	LD50 = 3540 mg/kg bw
Dermal	2-(2-methoxyethoxy)ethanol	Rabbit	OECD 402	LD50 = 9404 mg/kg bw

SKIN CORROSION/IRRITATION:

The mixture does not meet the classification criteria for this hazard class.

Skin corrosion/irritation			
Substance	***Species***	***Method / Source***	***Result(s)***
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rabbit	OECD 404 / EU Method B.4	Not irritating
2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rabbit	Study report	Not irritating
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rabbit	OECD 404	Not irritating
2-(2-methoxyethoxy)ethanol	Rabbit	OECD 404	Not irritating

SERIOUS EYE DAMAGE/IRRITATION:

The mixture does not meet the classification criteria for this hazard class.

Serious eye damage/irritation			
Substance	***Species***	***Method / Source***	***Result(s)***
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rabbit	OECD 405 / EU Method B.5	Not irritating to eyes.
2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rabbit	OECD 405	Irreversible effects on the eye.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rabbit	OECD 405	Irritating
2-(2-methoxyethoxy)ethanol	Rabbit	OECD 405	Not irritating

RESPIRATORY OR SKIN SENSITISATION:

The mixture does not meet the classification criteria for this hazard class.

Respiratory or skin sensitisation				
Route of sensitisation	***Substance***	***Species***	***Method / Source***	***Result(s)***
Dermal	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Guinea pig	OECD 406	Not sensitizing to the skin
Dermal	2-(2-(2-butoxyethoxy)ethoxy)ethanol	Guinea pig	Read-across	No indication of skin sensitisation
Dermal	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Guinea pig	Read-across	Not sensitising

Dermal	2-(2-methoxyethoxy)ethanol	Guinea pig	OECD 406 / EU Method B.6	Not sensitising

GERM CELL MUTAGENICITY: The mixture does not meet the classification criteria for this hazard class.

Germ cell mutagenicity				
Substance	***In vitro / In vivo***	***Species***	***Method / Source***	***Result(s)***
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	*In vitro*	S. typhimurium TA 1535, TA 1537, TA 98, TA 100 and E. coli WP2	OECD 471	Not mutagenic
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	*In vitro*	Chinese hamster Ovary (CHO)	OECD 476	Not mutagenic
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	*In vitro*	Human lymphocytes	OECD 473	Non-clastogenic to human lymphocytes
2-(2-(2-butoxyethoxy)ethoxy)ethanol	*In vitro*	S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 and E. coli WP2 uvr A	OECD 471 / EU Method B.13/14	Not mutagenic
2-(2-(2-butoxyethoxy)ethoxy)ethanol	*In vitro*	Human blood lymphocytes	OECD 473	Not mutagenic
2-(2-(2-butoxyethoxy)ethoxy)ethanol	*In vitro*	Chinese hamster lung fibroblasts (V79)	OECD 476	Not mutagenic
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	*In vitro*	S. typhimurium TA 1535, TA 1537, TA 98 and TA 100	Read-across	Not mutagenic
2-(2-methoxyethoxy)ethanol	*In vitro*	S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 and E. coli WP2 uvr A	OECD 471 / EU Method B.13/14	Not mutagenic.

CARCINOGENICITY: The mixture does not meet the classification criteria for this hazard class.

REPRODUCTIVE TOXICITY: Suspected of damaging fertility. Suspected of damaging the unborn child.

Reproductive toxicity				
Endpoint	***Substance***	***Species***	***Method / Source***	***Result(s)***
Toxicity to reproduction	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rat	OECD 443	NOAEL(P0) = 300 mg/kg bw/day NOAEL(P1) = 300 mg/kg bw/day NOAEL(F1) = 300 mg/kg bw/day NOAEL(F2) = 300 mg/kg bw/day LOEC(Overall) = 1000 mg/kg bw/day
Toxicity to reproduction	2-(2-(2-butoxyethoxy)ethoxy)ethanol	-	Weight of evidence	NOAEC(P0) > 1000 mg/kg bw/day NOAEC(P1) = 1000 mg/kg bw/day NOAEC(F1) = 1000 mg/kg bw/day
Toxicity to reproduction	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Mouse	Read-across	NOAEL(P0) = 720 mg/kg bw/day NOAEL(F1) = 720 mg/kg bw/day NOAEL(F2) = 720 mg/kg bw/day
Toxicity to reproduction	2-(2-methoxyethoxy)ethanol	Mouse	Read-across	Not a reproductive toxicant.
Developmental toxicity / teratogenicity	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rabbit	OECD 414	NOAEL(maternal animals) = 250 mg/kg bw/day LOAEL(maternal animals) = 500 mg/kg bw/day NOAEL(fetuses) = 250 mg/kg bw/day LOAEL(fetuses) = 500 mg/kg bw/day
Developmental toxicity / teratogenicity	2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rat	Publication	NOEL(maternal) > 1000 mg /kg (higher dose level tested) - no adverse effect observed NOEL(fetuses animals) > 1000 mg /kg (higher dose level tested) - no adverse effect observed
Developmental toxicity / teratogenicity	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rat	Read-across	NOEL(maternal) > 1000 mg /kg (higher dose level tested) - no adverse effect observed NOEL(fetuses animals) > 1000 mg /kg (higher dose level tested) - no adverse effect observed

Developmental toxicity / teratogenicity	2-(2-methoxyethoxy)ethanol	Rabbit	OECD 414	NOAEL(maternal animals) = 250 mg/kg bw/day NOAEL(fetuses) = 50 mg/kg bw/day

SINGLE TARGET ORGAN TOXICITY (STOT) — SINGLE The mixture does not meet the classification criteria for this hazard class.
EXPOSURE:

SINGLE TARGET ORGAN TOXICITY (STOT) — REPEATED The mixture does not meet the classification criteria for this hazard class.
EXPOSURE:

STOT – Repeated exposure				
Route of exposure	***Substance***	***Species***	***Method / Source***	***Result***
Oral	Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	Rat	OECD 408	NOAEL = 1000 mg/kg bw/day
Oral	2-(2-(2-butoxyethoxy)ethoxy)ethanol	-	Read-across	NOAEL = 500 mg/kg bw/day
Oral	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	-	Read-across	NOAEL = 500 mg/kg bw/day
Oral	2-(2-methoxyethoxy)ethanol	Rat	OECD 407	NOAEL = 900 mg/kg bw/day LOAEL = 1800 mg/kg bw/day
Inhalation	2-(2-methoxyethoxy)ethanol	Rat	OECD 413	NOAEC > 1060 mg/m³ air
Dermal	2-(2-(2-butoxyethoxy)ethoxy)ethanol	Rabbit	OECD 410	NOAEL > 1000 mg/kg bw/day
Dermal	Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Rabbit	Read-across	NOEL > 4000 mg/kg bw/day (high dose level tested)
Dermal	2-(2-methoxyethoxy)ethanol	Guinea pig	OECD 411	NOAEL = 40 mg/kg bw/day

ASPIRATION HAZARD: The mixture does not meet the classification criteria for this hazard class.

11.2. Information on other hazards

ENDOCRINE DISRUPTING PROPERTIES

The mixture does not contain substances at a concentration equal to or greater than 0,1% by weight, known to be:

- included in the Candidate list for having endocrine disrupting properties (art. 59(1));
- identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation EU 2100/2017 or Commission Regulation EU 605/2018.

LONG-TERM EFFECTS – REPRODUCTIVE TOXICITY

This product contains suspected teratogenic substances, which may produce anomalies and/or developmental defects to the human offspring. Adverse effects include: death, growth retardation, congenital disorders, delayed mental development, and functional disorders.

OTHER INFORMATION

Event	***Species***	***Method / Source***	***Result***
Severe poisoning after accidental pediatric ingestion of glycol ethers	Infant	Publication of several glycol ethers	A young child (22 months old) accidentally consumed a very large dose of brake fluid, which is predominantly composed of triethylene glycol alkyl ethers (where the alkyl is either methyl, ethyl, or butyl). The dose was estimated to be in excess of 20 g/kg. The exposure triggered severe metabolic acidosis and other clinical symptoms briefly requiring intensive care, including hemodialysis, but the patient fully recovered within 3 days with no complications.

Although the product is not classified as hazardous for acute toxicity, if significant amounts are absorbed, there is a risk of renal damage which could lead to kidney failure or even death. Other symptoms of over-exposure include central nervous system effects, abdominal discomfort, metabolic acidosis, and headache or nausea.

SECTION 12: Ecological information

12.1. Toxicity

The product is not toxic to aquatic organisms.

Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate (CAS 30989-05-0)			
Endpoint	***Species***	***Method / Source***	***Result***
Short-term toxicity to fish	*Oncorhynchus mykiss*	EU Method C.1 / OECD 203	LC50 > 222,2 mg/L
Short-term toxicity to aquatic invertebrates	*Daphnia magna*	OECD 202	EC50 > 211,2mg/L
Toxicity to aquatic algae and cyanobacteria	*Pseudokirchneriella subcapitata*	EU Method C.3 / OECD 201	ErC50 > 224,4 mg/L EbC50 > 224,4 mg/L NOEC = 224,4 mg/L
Toxicity to microorganisms	*Activated sludge*	OECD 209 / ISO 8192 / EU Method C.11	EC50 > 1000 mg/L
2-(2-(2-butoxyethoxy)ethoxy)ethanol (CAS 143-22-6)			
Endpoint	***Species***	***Method / Source***	***Result***
Short-term toxicity to fish	*Leuciscus idus*	DIN 38 412	LC50= 2200 - 4600 mg/L NOEC = 1000 mg/L
Short-term toxicity to aquatic invertebrates	*Daphnia magna*	EU Method C.2	EC50 > 500 mg/L
Long-term toxicity to aquatic invertebrates	*Daphnia magna*	OECD 211	NOEC > 100 mg/L
Toxicity to aquatic algae and cyanobacteria	*Raphidocelis subcapitata*	OECD 201	NOEC(growth rate) = 100 mg/L EC50(growth rate inhibition) = 840 mg/L
Toxicity to microorganisms	*Industrial activated sludge*	OECD 209	EC10 > 1995 mg/L
Toxicity to microorganisms	*Activated sludge*	Publication	IC50 > 5000 mg/L
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy- (CAS 9004-77-7)			
Endpoint	***Species***	***Method / Source***	***Result***
Short-term toxicity to fish	*Scophthalmus maximus*	OECD 203	LC50 > 1800 mg/L NOEC = 1000 mg/L
Short-term toxicity to aquatic invertebrates	*Daphnia magna*	OECD 202	LC50 > 3200 mg/L NOEC = 1800 mg/L
Short-term toxicity to aquatic invertebrates	*Crangon crangon*	Study report	LC50 > 1000 mg/L
Toxicity to aquatic algae and cyanobacteria	*Skeletonema costatum*	ISO 10253	EC(50) = 391 mg/L
Toxicity to microorganisms	*Activated sludge*	Read-across	EC10 > 1995 mg/L
2-(2-methoxyethoxy)ethanol (CAS 111-77-3)			
Endpoint	***Species***	***Method / Source***	***Result***
Short-term toxicity to fish	*Pimephales promelas*	Methods for acute toxicity tests with fish, macroinvertebrates and amphibians; US-EPA	LC50 = 5741 mg/L
Short-term toxicity to aquatic invertebrates	*Daphnia magna*	Methods for acute toxicity tests with fish, macroinvertebrates and amphibians", Ecological Research Series, EPA-660/3-75-009	EC50 = 1192 mg/L
Toxicity to aquatic algae and cyanobacteria	*Raphidocelis subcapitata*	OECD 201	EC50 > 1000 mg/L
Toxicity to microorganisms	*Domestic activated sludge*	OECD 209	EC50 > 1000 mg/L

12.2. Persistence and degradability

Product is inherently biodegradable and is expected to be readily biodegradable based on ingredients.

	Degradability		***Partition coefficient n-octanol/water***	
	Method / Source	***Result(s)***	***Method / Source***	***Result(s)***
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	OECD 301A / ISO 7827 / 92/69/EEC	Readily biodegradable	The test substance is hydrolytically unstable therefore an experimental determination cannot be applied. The log Pow values of the	

			hydrolysis products (Triethylenglycol and Diethylenglycol) have been calculated based on fragment method using KOWWIN (v1.68) module of software EPI Suite. Log Pow of Triethylenglycol: -1.75 at 25°C Log Pow of Diethylenglycol: -1.47 at 25°C	
2-(2-(2-butoxyethoxy)ethoxy)ethanol	OECD 301D	Readily biodegradable BOD28 = 85%	OECD 107	LogPow = 0,51
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Read-across	Readily biodegradable	EU Method A.8	LogPow = 0,436
2-(2-methoxyethoxy)ethanol	OECD 301B / EPA OPPTS 835.3110	Readily biodegradable	OECD 117	Log Pow = -0,47

12.3. Bioaccumulative potential

Not expected to bioaccumulate.

	Bioconcentration factor
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	The substance has a low potential for bioaccumulation based on LogKow ≤ 3 and it is readily biodegradable. Furthermore, the substance hydrolyzes, showing ready biodegradation and high water solubility.
2-(2-(2-butoxyethoxy)ethoxy)ethanol	The substance has a low potential for bioaccumulation based on LogKow ≤ 3.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	The substance has a low potential for bioaccumulation based on LogKow ≤ 3.
2-(2-methoxyethoxy)ethanol	The substance has a low potential for bioaccumulation based on LogKow ≤ 3.

12.4. Mobility in soil

Product is soluble in water and will be mobile in soil until degraded. Volatilisation from water to air not expected.

	Soil adsorption coefficient
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	LogKoc = -4,37 (QSAR) Koc at 20 °C: 0,008
2-(2-(2-butoxyethoxy)ethoxy)ethanol	Not necessary - The substance has a low LogPow.
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	Not necessary - The substance has a low LogPow.
2-(2-methoxyethoxy)ethanol	Not necessary - The substance has a low LogPow.

12.5. Results of PBT and vPvB assessment

The mixture does not contain substances at a concentration equal to or greater than 0,1% by weight, known to be PBT and/or vPvB according to Annex XIII of REACH.

	PBT and vPvB assessment
Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate	The substance is not PBT / vPvB
2-(2-(2-butoxyethoxy)ethoxy)ethanol	The substance is not PBT / vPvB
Poly(oxy-1,2-ethanediyl), α-butyl-ω-hydroxy-	The substance is not PBT / vPvB
2-(2-methoxyethoxy)ethanol	The substance is not PBT / vPvB

12.6. Endocrine disrupting properties

The mixture does not contain substances at a concentration equal to or greater than 0,1% by weight, known to be:

- included in the Candidate list for having endocrine disrupting properties (art. 59(1));
- identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation EU 2100/2017 or Commission Regulation EU 605/2018.

12.7. Other adverse effects

Information not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal must be entrusted to a company authorized to manage waste, in compliance with national and possibly local regulations.

CONTAMINATED PACKAGING
Contaminated packaging must be sent for recovery or disposal in compliance with national regulations on the management of waste.

SECTION 14: Transport information

14.1. UN number or ID number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Not applicable.

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

Not relevant.

SECTION 15: Regulatory information

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

<table>
<tr><td>Seveso – Directive EC 18/2012</td><td colspan="2">None</td></tr>
<tr><td rowspan="5">Restrictions relating to the product or the contained substances according to Title VIII and Annex XVII of Regulation EC 1907/2006 (REACH) and its amendments</td><td>Substance</td><td>Entry(ies)</td></tr>
<tr><td>Tris[2-[2-(2-methoxyethoxy)ethoxy]ethyl]orthoborate (CAS 30989-05-0)</td><td>75</td></tr>
<tr><td>2-(2-(2-butoxyethoxy)ethoxy)ethanol (CAS 143-22-6)</td><td>75</td></tr>
<tr><td>2-(2-methoxyethoxy)ethanol (CAS 111-77-3)</td><td>30 + 54 + 75</td></tr>
<tr><td colspan="2">The use of the product does not fall under the restriction conditions of the single substances.</td></tr>
<tr><td>Substances of Very High Concern (SVHC) in Candidate List (Art. 59 REACH)</td><td colspan="2">None</td></tr>
</table>

Substances subject to authorization according to Title VII and Annex XIV of Regulation EC 1907/2006 (REACH) and its amendments	None
Chemicals subject to export notification – Reg. EU 649/2012 (PIC) and its amendments	None
Persistent Organic Pollutants (POPs) – Reg. EU 1021/2019 and its amendments	None
Substances that deplete the Ozone layer – Reg. EC 1005/2009 and its amendments	None
Chemical weapons convention - OPCW	None
Explosives precursors – Reg EU 1148/2019	None
Drug precursors – Reg. EU 273/2004 and Reg. EU 111/2005 and their amendments	None

15.2. Chemical safety assessment

No chemical safety assessment has been performed for the mixture.

SECTION 16: Other information

Full text of relevant hazard statements and precautionary statements:

Eye Dam. 1	Serious eye damage, category 1
Eye Irrit. 2	Eye irritation, category 2
Repr. 1B	Reproductive toxicity, category 1B
Repr. 2	Reproductive toxicity, category 2
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360D	May damage the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

Acronyms:

- ACGIH: American Conference of Governmental Industrial Hygienists
- ADR: Agreement concerning the carriage of Dangerous goods by Road
- AGS: Ausschuss für Gefahrstoffe - German Committee on Hazardous Substances
- BW: body weight
- CAS NUMBER: Chemical Abstract Service number
- CE NUMBER: Identifier in EINECS (European Inventory of Existing Commercial Chemical Substances) / ELINCS (European List of Notified Chemical Substances)
- CLP: Regulation EC 1272/2008
- DFG: Deutsche Forschungsgemeinschaft - German Research Foundation
- DNEL: Derived No Effect Level
- DW: dry weight
- EC50: Concentration that affects 50% of the test population
- FHSLA: Federal Hazardous Substances Labeling Act
- FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act (USA)
- GHS: Globally Harmonized System of Classification and Labeling of Chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration that affects 50% of the test population
- IMDG: International Maritime Code for Dangerous Goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration that affects 50% of the test population
- LD50: Lethal Dose that affects 50% of the test population
- LOAEL: Lowest Observed Adverse Effect Level
- NOAEC: No Observed Adverse Effect Level
- NOEC: No Observed Effect Concentration

- NOEL: No Observed Effect Level
- OEL: Occupational Exposure Level
- PBT: Persistent, Bioaccumulative, and Toxic according to REACH Regulation
- PNEC: Predicted No Effect Concentration
- REACH: Regulation EC 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- STEL: Short-Term Exposure Limit
- TLV: Threshold limit value
- TWA: Time-Weighted Average
- vPvB: Very Persistent and very Bioaccumulative according to REACH Regulation

Key literature:

1. Regulation EC 1907/2006 (REACH) of the European Parliament and its amendments;
2. Regulation EC 1272/2008 (CLP) of the European Parliament and its amendments;
3. Regulation EU 878/2020 of the European Parliament;
4. Delegated Regulation EU 2100/2017 of European Commission;
5. Regulation EU 605/2018 of European Commission;
6. IFA GESTIS website;
7. ECHA website.

Methods of evaluating information:

Application of the criteria for classification for each hazard class or differentiation in Parts 2 to 5 of Annex I of Reg. EC 1272/2008 and its amendments.

MODIFIED SECTIONS COMPARED TO THE PREVIOUS VERSION: 1.

***Note for the user(s)*:**
The information contained in the present Safety Data Sheet is based on our own knowledge at the date of the last version. Users must verify the suitability and thoroughness of provided information according to the specific use of the product. The product must not be used for purposes other than those indicated in the specific technical documentation without first obtaining written instructions. No responsibility is assumed for any improper use. This document should not be construed as a guarantee of any specific product property. Since the use of the product does not fall under the direct control of Brembo N.V., the user is obliged to observe the laws and regulations in force on hygiene, environment, health and safety under his own responsibility.