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

1.1. Product identifier
UNIBOND Foam Fix

1.2. Relevant identified uses of the substance or mixture and uses advised against
Intended use:
Foam, 1-component with propellant gas

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
Fax-no.: +49 211 798 2009

ua-productsafety.uk@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
24 Hours Emergency Tel: +44 0 8701 906777 - For further general health & safety, technical and practical advice on this product, please call +44 (0) 1606 593933 or write to: Technical Services; Henkel Limited; Road 5; Winsford Industrial Estate; Winsford; Cheshire; CW7 3QY- Email: technical.services@henkel.co.uk

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Flammable aerosols	Category 1
H222 Extremely flammable aerosol.	
H229 Pressurized container: May burst if heated.	
Skin irritation	Category 2
H315 Causes skin irritation.	
Skin sensitizer	Category 1
H317 May cause an allergic skin reaction.	
Serious eye irritation	Category 2
H319 Causes serious eye irritation.	
Respiratory sensitization	Category 1
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
Specific target organ toxicity - single exposure	Category 3
H335 May cause respiratory irritation.	
Target organ: respiratory tract irritation	
Carcinogenicity	Category 2
H351 Suspected of causing cancer.	
Effects on or via lactation	
H362 May cause harm to breast-fed children.	
Specific target organ toxicity - repeated exposure	Category 2
H373 May cause damage to organs through prolonged or repeated exposure.	
Chronic hazards to the aquatic environment	Category 4
H413 May cause long lasting harmful effects to aquatic life.	

2.2. Label elements

Label elements (CLP):

Hazard pictogram:

Contains Diphenylmethane diisocyanate, isomers and homologues

alkanes, C14-17, chloro

Signal word: Danger

Hazard statement:

H222 Extremely flammable aerosol.
H229 Pressurized container: May burst if heated.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H362 May cause harm to breast-fed children.
H373 May cause damage to organs through prolonged or repeated exposure.
H413 May cause long lasting harmful effects to aquatic life.

Supplemental information	As from 24 August 2023 adequate training is required before industrial or professional use. Further information: https://www.feica.eu/PUinfo
Precautionary statement:	P102 Keep out of reach of children.
Precautionary statement: Prevention	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P211 Do not spray on an open flame or other ignition source. P251 Do not pierce or burn, even after use. P260 Do not breathe mist/vapours. P263 Avoid contact during pregnancy and while nursing. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/eye protection.
Precautionary statement: Storage	P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
Precautionary statement: Disposal	P501 Dispose of contents/container in accordance with national regulation.

2.3. Other hazards

Information according to XVII. 56 REACH

Persons already sensitised to diisocyanates may develop allergic reactions when using this product. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.

Solvents contained in the product evaporate during processing and their vapors can form explosive/highly inflammable air/vapor mixtures.

Pregnant women should absolutely avoid inhalation and skin contact.

Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

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.	content	Classification
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9		20- 40 %	Acute Tox. 4; Inhalation H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Skin Sens. 1 H317 Resp. Sens. 1 H334 STOT SE 3 H335 Carc. 2 H351 STOT RE 2 H373
dimethyl ether 115-10-6	204-065-8 01-2119472128-37	5- < 10 %	Flam. Gas 1A H220 Press. Gas Liquef. Gas H280
alkanes, C14-17, chloro 85535-85-9	287-477-0 01-2119519269-33	5- < 10 %	Lact. H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 ===== EU. REACH Candidate List of Substances of Very High Concern for Authorization (SVHC) EU. REACH Candidate List of Substances of Very High Concern for Authorization (SVHC) M factor (Acute Aquat Tox): 100 M factor (Chron Aquat Tox): 10
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	01-2119486772-26	1- < 5 %	Acute Tox. 4; Oral H302 Aquatic Chronic 3 H412
Isobutane 75-28-5	200-857-2 01-2119485395-27	1- < 5 %	Flam. Gas 1A H220 Press. Gas Liquef. Gas H280
Propane 74-98-6	200-827-9 01-2119486944-21	1- < 5 %	Flam. Gas 1A H220 Press. Gas H280
Butane, n- (< 0.1 % butadiene) 106-97-8	203-448-7 01-2119474691-32	1- < 5 %	Press. Gas H280 Flam. Gas 1A H220
2,2'-Methylenediphenyl diisocyanate 2536-05-2	219-799-4 01-2119927323-43	0.1- < 1 %	STOT RE 2 H373 Carc. 2 H351 Acute Tox. 4; Inhalation H332 Eye Irrit. 2 H319 STOT SE 3 H335 Skin Irrit. 2 H315 Resp. Sens. 1 H334 Skin Sens. 1 H317

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

General information:
In case of adverse health effects seek medical advice.

Inhalation:
Move to fresh air, consult doctor if complaint persists.
Delayed effects possible after inhalation.

Skin contact:
Fresh foam : Wipe off affected skin area immediately with a soft cloth and then remove residues with vegetable oil; apply skin care product. Cured foam can be removed only mechanically.

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, do not induce vomiting, consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed
Causes serious eye irritation.

May cause an allergic skin reaction.

RESPIRATORY: Irritation, coughing, shortness of breath, chest tightness.

SKIN: Redness, inflammation.

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:
carbon dioxide, foam, powder, water spray jet, fine water spray

Extinguishing media which must not be used for safety reasons:
High pressure waterjet

5.2. Special hazards arising from the substance or mixture
In the event of fire, isocyanate vapors may be formed.
In the event of a fire, carbon monoxide (CO), carbon dioxide (CO2) and nitrogen oxides (NOx) can be released.

5.3. Advice for firefighters
Wear self-contained breathing apparatus.
Wear protective equipment.

Additional information:
Cool endangered containers with water spray jet.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear protective equipment.
Danger of slipping on spilled product.
Ensure adequate ventilation.
Avoid contact with skin and eyes.

6.2. Environmental precautions
Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up
Remove mechanically.
Dispose of contaminated material as waste according to Section 13.

6.4. Reference to other sections
See advice in section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Ventilate working rooms thoroughly. Avoid naked flames, sparking and sources of ignition. Switch off electrical devices. Do not smoke, do not weld. Do not empty waste into waste water drains.
During processing and drying after adhesion, ventilate well. Avoid all sources of fire such as stoves and ovens. Switch off all electrical devices such as parabolic heaters, hot plates, storage heaters etc. in good time for them to have cooled down before commencing work. Avoid all sparks, including those occurring at electrical switches and devices.
Transport by automobile: leave the container wrapped in a cloth in the trunk, never in the passenger area.
Avoid skin and eye contact.

Hygiene measures:

Do not eat, drink or smoke while working.
Wash hands before work breaks and after finishing work.
Remove any dirt that gets onto the skin with vegetable oil; skin care.

7.2. Conditions for safe storage, including any incompatibilities
For pressurized can: protect from direct sunshine and temperatures above 50°C.
Ensure that storage and workrooms are adequately ventilated.
Store in a cool, dry place.
Avoid strictly temperatures below - 20 °C and above + 50 °C.
Do not store or use near heat, spark, open flame or other sources of ignition.
Do not store together with food or other consumables (coffee, tea, tobacco, etc.).
Do not store together with oxidants.
Do not store together with flammable solutions.

7.3. Specific end use(s)
Foam, 1-component with propellant gas

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Great Britain

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9 [ISOCYANATES, ALL (AS -NCO)]		0,02	Time Weighted Average (TWA):		EH40 WEL
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9 [ISOCYANATES, ALL (AS -NCO)]		0,07	Short Term Exposure Limit (STEL):	15 minutes	EH40 WEL
Dimethyl ether 115-10-6 [DIMETHYL ETHER]	400	766	Time Weighted Average (TWA):		EH40 WEL
Dimethyl ether 115-10-6 [DIMETHYLETHER]	1.000	1.920	Time Weighted Average (TWA):	Indicative	ECTLV
Dimethyl ether 115-10-6 [DIMETHYL ETHER]	500	958	Short Term Exposure Limit (STEL):	15 minutes	EH40 WEL
Butane 106-97-8 [Butane]	600	1.450	Time Weighted Average (TWA):		EH40 WEL
Butane 106-97-8 [Butane]	750	1.810	Short Term Exposure Limit (STEL):	15 minutes	EH40 WEL

Occupational Exposure Limits

Valid for
Ireland

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9 [ISOCYANATES, ALL, EXCEPT METHYL ISOCYANATE (CAS NO. 624-83-9) AND TOLUENE (2,4 OR 2,6 DIISOCYANATE (CAS NO. 584-84-9, 91-08-7)]		0,07	Short Term Exposure Limit (STEL):	15 minutes	IR_OEL
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9 [ISOCYANATES, ALL, EXCEPT METHYL ISOCYANATE (CAS NO. 624-83-9) AND TOLUENE (2,4 OR 2,6 DIISOCYANATE (CAS NO. 584-84-9, 91-08-7)]		0,02	Time Weighted Average (TWA):		IR_OEL
Dimethyl ether 115-10-6 [DIMETHYL ETHER]	1.000	1.920	Time Weighted Average (TWA):	Indicative OELV	IR_OEL
Dimethyl ether 115-10-6 [DIMETHYLETHER]	1.000	1.920	Time Weighted Average (TWA):	Indicative	ECTLV
Isobutane 75-28-5 [ISOBUTANE]	1.000		Short Term Exposure Limit (STEL):	15 minutes	IR_OEL
Butane 106-97-8 [N-BUTANE]	1.000		Short Term Exposure Limit (STEL):	15 minutes	IR_OEL

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
Dimethyl ether 115-10-6	aqua (freshwater)		0,155 mg/l				
Dimethyl ether 115-10-6	sediment (freshwater)				0,681 mg/kg		
Dimethyl ether 115-10-6	Soil				0,045 mg/kg		
Dimethyl ether 115-10-6	sewage treatment plant (STP)		160 mg/l				
Dimethyl ether 115-10-6	aqua (marine water)		0,016 mg/l				
Dimethyl ether 115-10-6	aqua (intermittent releases)		1,549 mg/l				
Dimethyl ether 115-10-6	sediment (marine water)				0,069 mg/kg		
Alkanes, C14-17, chloro 85535-85-9	aqua (freshwater)		1 µg/l				
Alkanes, C14-17, chloro 85535-85-9	aqua (marine water)		0,2 µg/l				
Alkanes, C14-17, chloro 85535-85-9	sewage treatment plant (STP)		80 mg/l				
Alkanes, C14-17, chloro 85535-85-9	sediment (freshwater)				13 mg/kg		
Alkanes, C14-17, chloro 85535-85-9	sediment (marine water)				2,6 mg/kg		
Alkanes, C14-17, chloro 85535-85-9	Soil				11,9 mg/kg		
Alkanes, C14-17, chloro 85535-85-9	oral				10 mg/kg		
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	aqua (intermittent releases)		0,51 mg/l				
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	oral				11,6 mg/kg		
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	aqua (marine water)		0,032 mg/l				
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	aqua (freshwater)		0,32 mg/l				
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	sewage treatment plant (STP)		19,1 mg/l				
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	sediment (marine water)				1,15 mg/kg		
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	sediment (freshwater)				11,5 mg/kg		
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	Soil				0,34 mg/kg		
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (freshwater)		1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (marine water)		0,1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Soil				1 mg/kg		
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sewage treatment plant (STP)		1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (intermittent releases)		10 mg/l				

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
Dimethyl ether 115-10-6	Workers	inhalation	Long term exposure - systemic effects		1894 mg/m3	
Dimethyl ether 115-10-6	General population	inhalation	Long term exposure - systemic effects		471 mg/m3	
Alkanes, C14-17, chloro 85535-85-9	Workers	inhalation	Long term exposure - systemic effects		6,7 mg/m3	
Alkanes, C14-17, chloro 85535-85-9	Workers	dermal	Long term exposure - systemic effects		47,9 mg/kg	
Alkanes, C14-17, chloro 85535-85-9	General population	oral	Long term exposure - systemic effects		0,58 mg/kg	
Alkanes, C14-17, chloro 85535-85-9	General population	inhalation	Long term exposure - systemic effects		2,0 mg/m3	
Alkanes, C14-17, chloro 85535-85-9	General population	dermal	Long term exposure - systemic effects		28,75 mg/kg	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	Workers	Inhalation	Long term exposure - systemic effects		8,2 mg/m3	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	Workers	Inhalation	Acute/short term exposure - systemic effects		22,6 mg/m3	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	Workers	dermal	Long term exposure - systemic effects		2,91 mg/kg	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	General population	inhalation	Long term exposure - systemic effects		1,45 mg/m3	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	General population	inhalation	Acute/short term exposure - systemic effects		5,6 mg/m3	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	General population	dermal	Long term exposure - systemic effects		1,04 mg/kg	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	General population	oral	Long term exposure - systemic effects		0,52 mg/kg	
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	General population	oral	Acute/short term exposure - systemic effects		2 mg/kg	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	inhalation	Acute/short term exposure - local effects		0,1 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	inhalation	Long term exposure - local effects		0,05 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	inhalation	Acute/short term exposure - local effects		0,05 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	inhalation	Long term exposure - local effects		0,025 mg/m3	

Biological Exposure Indices:

Ingredient [Regulated substance]	Parameters	Biological specimen	Sampling time	Conc.	Basis of biol. exposure index	Remark	Additional Information
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9 [ISOCYANATES (APPLIES TO HDI, IPDI, TDI AND MDI)]	Isocyanate-derived diamine	Creatinine in urine	Sampling time: At the end of the period of exposure.		UKEH40BMGV		

8.2. Exposure controls:

Respiratory protection:
The product should only be used at workplaces with intensive ventilation/extraction. If intensive ventilation/extraction is not possible then self-contained independent respiratory protection should be worn.

Hand protection:
Use attached gloves. Perforation time < 5 minutes.

Eye protection:
Goggles which can be tightly sealed.
Protective eye equipment should conform to EN166.

Skin protection:
Suitable protective clothing
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

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

Appearance	pressurized can liquid brownish
Odor	ether-like
Odour threshold	No data available / Not applicable
pH	Not applicable, Mixture reacts with water.
Melting point	No data available / Not applicable
Solidification temperature	No data available / Not applicable
Initial boiling point	-42 °C (-43.6 °F)
Flash point	-104 °C (-155.2 °F)
Flash point	
Evaporation rate	No data available / Not applicable
Flammability	No data available / Not applicable
Explosive limits	No data available / Not applicable
Vapour pressure	No data available / Not applicable
Relative vapour density:	No data available / Not applicable
Density (20 °C (68 °F))	1 g/cm3
Bulk density	No data available / Not applicable
Solubility	No data available / Not applicable
Solubility (qualitative) (23 °C (73.4 °F); Solvent: Water)	Reacts slowly with water to liberate carbon dioxide gas.
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	Insoluble
Partition coefficient: n-octanol/water	No data available / Not applicable

Auto-ignition temperature	No data available / Not applicable
Decomposition temperature	No data available / Not applicable
Viscosity	No data available / Not applicable
Viscosity (kinematic)	No data available / Not applicable
Explosive properties	No data available / Not applicable
Oxidising properties	No data available / Not applicable

9.2. Other information

No data available / Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity
Reaction with water, formation of CO2
Pressure build-up in closed containers.
Reaction with water, alcohols, amines.

10.2. Chemical stability
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions
See section reactivity

10.4. Conditions to avoid
Temperatures over appr. 50 °C
Humidity

10.5. Incompatible materials
See section reactivity.

10.6. Hazardous decomposition products
At higher temperatures isocyanate may be released.
Carbon dioxide is generated under contact with moisture, leading to pressure in the cans. Danger of cans bursting!

SECTION 11: Toxicological information

General toxicological information:
Cross-reactions with other isocyanate compounds are possible.

11.1. Information on toxicological effects

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	LD50	> 10.000 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
alkanes, C14-17, chloro 85535-85-9	LD50	> 4.000 mg/kg	rat	not specified
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	LD50	632 mg/kg	rat	not specified
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LD50	> 2.000 mg/kg	rat	EU Method B.1 (Acute Toxicity (Oral))

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	LD50	> 9.400 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
alkanes, C14-17, chloro 85535-85-9	LD50	> 2.800 mg/kg	rat	not specified
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	LD50	> 2.000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LD50	> 9.400 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)

Acute inhalative toxicity:

In the event of protracted or repeated exposure, damage to health cannot be excluded.
The toxicity of the product is due to its narcotic effect after inhalation.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
dimethyl ether 115-10-6	LC50	164000 ppm	gas	4 h	rat	not specified
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	LC50	> 7 mg/l	dust/mist	4 h	rat	OECD Guideline 403 (Acute Inhalation Toxicity)
Isobutane 75-28-5	LC50	260200 ppm	gas	4 h	mouse	not specified
Propane 74-98-6	LC50	> 800000 ppm	gas	15 min	rat	not specified
Butane, n- (< 0.1 % butadiene) 106-97-8	LC50	274200 ppm	gas	4 h	rat	not specified

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	irritating		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
alkanes, C14-17, chloro 85535-85-9	slightly irritating		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

No data available.

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	sensitising	Skin sensitisation	guinea pig	OECD Guideline 406 (Skin Sensitisation)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sensitising	Respiratory sensitisation	guinea pig	not specified

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		EU Method B.13/14 (Mutagenicity)
dimethyl ether 115-10-6	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
dimethyl ether 115-10-6	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
dimethyl ether 115-10-6	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Isobutane 75-28-5	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Isobutane 75-28-5	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Propane 74-98-6	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Propane 74-98-6	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Butane, n- (< 0.1 % butadiene) 106-97-8	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Butane, n- (< 0.1 % butadiene) 106-97-8	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
dimethyl ether 115-10-6	negative	inhalation: gas		Drosophila melanogaster	equivalent or similar to OECD Guideline 477 (Genetic Toxicology: Sex-linked Recessive Lethal Test in Dros. melanog.)
Isobutane 75-28-5	negative	oral: feed		Drosophila melanogaster	not specified
Isobutane 75-28-5	negative	inhalation: gas		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Propane 74-98-6	negative			Drosophila melanogaster	not specified
Propane 74-98-6	negative	inhalation: gas		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Butane, n- (< 0.1 % butadiene) 106-97-8	negative			Drosophila melanogaster	not specified
Butane, n- (< 0.1 % butadiene) 106-97-8	negative	inhalation: gas		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	negative	inhalation		rat	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
dimethyl ether 115-10-6	not carcinogenic	inhalation	2 y 6 h/d, 5 d/w	rat	male/female	equivalent or similar OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	carcinogenic	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	male/female	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
dimethyl ether 115-10-6	NOAEL P 2.5 %	other	inhalation	rat	other guideline:
Isobutane 75-28-5	NOAEL P 21,4 mg/l NOAEL F1 21,4 mg/l	screening	inhalation: gas	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Propane 74-98-6	NOAEL P 21,6 mg/l NOAEL F1 21,6 mg/l	screening	inhalation: gas	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Butane, n- (< 0.1 % butadiene) 106-97-8	NOAEL P 21,4 mg/l NOAEL F1 21,4 mg/l	screening	inhalation: gas	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

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
Isocyanic acid, polymethylenepolyphenyl ene ester 9016-87-9	NOAEL 0,0002 mg/l	inhalation: aerosol	2 y 6 h per d, 5 d per week	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
dimethyl ether 115-10-6	NOAEL 2.5 %	inhalation	2 y 6 h/d; 5 d/w	rat	equivalent or similar to OECD Guideline 452 (Chronic Toxicity Studies)
Isobutane 75-28-5	NOAEL 9000 ppm	inhalation: gas	28 d 6 h/d, 7 d/w	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Propane 74-98-6		inhalation: gas	28 d 6 h/d, 7 d/w	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Butane, n- (< 0.1 % butadiene) 106-97-8		inhalation: gas	28 d	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOAEL 0,2 mg/m³	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Aspiration hazard:

No data available.

SECTION 12: Ecological information

General ecological information:
Do not empty into drains, soil or bodies of 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
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	LC50	> 1.000 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
dimethyl ether 115-10-6	LC50	> 4.000 mg/l	96 h	Poecilia reticulata	OECD Guideline 203 (Fish, Acute Toxicity Test)
alkanes, C14-17, chloro 85535-85-9	NOEC	3,4 mg/l	20 d	Oryzias latipes	OECD Guideline 212 (Fish, Short-term Toxicity Test on Embryo and Sac-Fry Stages)
alkanes, C14-17, chloro 85535-85-9	LC50	> 5.000 mg/l	96 h	Alburnus alburnus	OECD Guideline 203 (Fish, Acute Toxicity Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	LC50	56,2 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	other guideline:
Butane, n- (< 0.1 % butadiene) 106-97-8	LC50	27,98 mg/l	96 h		not specified
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LC50	Tox>Water Solubility	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)

Toxicity (Daphnia):

EC50 > 100 mg product/l.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	EC50	> 1.000 mg/l	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
dimethyl ether 115-10-6	EC50	> 4.000 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
alkanes, C14-17, chloro 85535-85-9	EC50	0,0059 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	EC50	131 mg/l	48 h	Daphnia magna	not specified
Butane, n- (< 0.1 % butadiene) 106-97-8	EC50	14,22 mg/l	48 h		not specified
2,2'-Methylenediphenyl diisocyanate 2536-05-2	EC50	Tox>Water Solubility	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

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
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	NOEC	10 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
alkanes, C14-17, chloro 85535-85-9	NOEC	0,01 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Phosphorous oxychloride,	NOEC	32 mg/l	21 d	Daphnia magna	OECD Guideline 202

reaction products with propylene oxide 1244733-77-4					(Daphnia sp. Chronic Immobilisation Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOEC	Toxicity > Water solubility	21 day	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

EC50 > 100 mg product/l.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	EC50	> 1.640 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
dimethyl ether 115-10-6	EC50	> 1.000 mg/l	72 h	not specified	OECD Guideline 201 (Alga, Growth Inhibition Test)
alkanes, C14-17, chloro 85535-85-9	EC50	> 3,2 mg/l	72 h	not specified	OECD Guideline 201 (Alga, Growth Inhibition Test)
alkanes, C14-17, chloro 85535-85-9	NOEC	0,1 mg/l	72 h	not specified	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	EC50	82 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	NOEC	13 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Butane, n- (< 0.1 % butadiene) 106-97-8	EC50	7,71 mg/l	96 h		not specified
2,2'-Methylenediphenyl diisocyanate 2536-05-2	EC50	Tox>Water Solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOELR	Tox>Water Solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	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
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	EC50	> 100 mg/l	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
dimethyl ether 115-10-6	EC10	> 1.600 mg/l	30 min	Pseudomonas putida	DIN 38412, part 27 (Bacterial oxygen consumption test)
alkanes, C14-17, chloro 85535-85-9	EC50	> 2.000 mg/l	3 h	not specified	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	EC 50	784 mg/l	3 h	activated sludge	ISO 8192 (Test for Inhibition of Oxygen Consumption by Activated Sludge)

12.2. Persistence and degradability

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	not inherently biodegradable	aerobic	0 %	28 d	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	not readily biodegradable.	not specified	0 %	28 d	OECD 301 A - F
dimethyl ether 115-10-6	readily biodegradable	aerobic	> 60 %	28 d	OECD 301 A - F
alkanes, C14-17, chloro 85535-85-9	not inherently biodegradable	aerobic	90 %	10 d	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
alkanes, C14-17, chloro 85535-85-9	not readily biodegradable.	aerobic	> 13 - 66 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	not readily biodegradable.	aerobic	14 %	28 day	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
Isobutane 75-28-5	readily biodegradable	aerobic	71,43 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
Propane 74-98-6	readily biodegradable	aerobic	> 60 %	28 d	OECD 301 A - F
Butane, n- (< 0.1 % butadiene) 106-97-8	readily biodegradable	aerobic	> 60 %	28 d	OECD 301 A - F
2,2'-Methylenediphenyl diisocyanate 2536-05-2	not readily biodegradable.	aerobic	0 %	28 day	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))

12.3. Bioaccumulative potential

Hazardous substances CAS-No.	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
Isocyanic acid, polymethylenepolyphenylene ester 9016-87-9	200			Cyprinus carpio	OECD Guideline 305 (Bioconcentration: Flow-through Fish Test)
alkanes, C14-17, chloro 85535-85-9	349	35 d		Oncorhynchus mykiss	OECD Guideline 305 (Bioconcentration: Flow-through Fish Test)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	0,8 - < 14	42 d		Cyprinus carpio	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	200	28 day		Cyprinus carpio	OECD Guideline 305 E (Bioaccumulation: Flow-through Fish Test)

12.4. Mobility in soil

Hazardous substances CAS-No.	LogPow	Temperature	Method
dimethyl ether 115-10-6	0,07	25 °C	QSAR (Quantitative Structure Activity Relationship)
alkanes, C14-17, chloro 85535-85-9	7		other (measured)
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	2,68	30 °C	EU Method A.8 (Partition Coefficient)
Isobutane 75-28-5	2,88	20 °C	OECD Guideline 107 (Partition Coefficient (n-octanol / water). Shake Flask Method)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	5,22		QSAR (Quantitative Structure Activity Relationship)

12.5. Results of PBT and vPvB assessment

Hazardous substances CAS-No.	PBT / vPvB
dimethyl ether 115-10-6	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
alkanes, C14-17, chloro 85535-85-9	Fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Phosphorous oxychloride, reaction products with propylene oxide 1244733-77-4	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Isobutane 75-28-5	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Propane 74-98-6	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Butane, n- (< 0.1 % butadiene) 106-97-8	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

12.6. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:
Dispose of waste and residues in accordance with local authority requirements.

Disposal of uncleaned packages:
Use packages for recycling only when totally empty.

Waste code
160504 gases in pressure containers (including halons) containing dangerous substances

SECTION 14: Transport information

14.1. UN number

ADR	1950
RID	1950
ADN	1950
IMDG	1950
IATA	1950

14.2. UN proper shipping name

ADR	AEROSOLS
RID	AEROSOLS
ADN	AEROSOLS
IMDG	AEROSOLS
IATA	Aerosols, flammable

14.3. Transport hazard class(es)

ADR	2.1
RID	2.1
ADN	2.1
IMDG	2.1
IATA	2.1

14.4. Packing group

ADR
RID
ADN
IMDG
IATA

14.5. Environmental hazards

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.6. Special precautions for user

ADR	not applicable Tunnelcode: (D)
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

SECTION 15: Regulatory information

No information available:

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

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

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:

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H362 May cause harm to breast-fed children.
H373 May cause 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.

Further information:

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