PART B - Curing Agent

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Date of issue: 31/07/2024 Version: 1.1

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

1.1. Product identifier

Product form	:	Mixture
Product name	:	PART B - Curing Agent
Product code	:	3695
UFI	:	2H00-C0TV-P00Y-15CM

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Adhesive

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Polymarine Ltd.
Anglo House
The Airfield
Dalby Road,
Melton Mowbray
LE13 0BL
United Kingdom
Telephone: +44 (0)1492 583 322
E-mail: info@polymarine.com

1.4. Emergency telephone number

Emergency number : +44 (0)1492 583 322 (Office hours only, English language only) or NHS 111

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2	H225
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Resp. Sens. 1	H334
Skin Sens. 1	H317
Carc. 2	H351
STOT SE 3	H336
STOT SE 3	H335
STOT RE 2	H373

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS07 GHS08

Signal word (CLP) : Danger

Contains	:	Ethyl acetate; Diphenylmethane Diisocyanate, isomers and homologues
Hazard statements (CLP)	:	H225 - Highly flammable liquid and vapour. 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. H336 - May cause drowsiness or dizziness. H351 - Suspected of causing cancer. H373 - May cause damage to organs (respiratory system) through prolonged or repeated exposure (if inhaled).
Precautionary statements (CLP)	:	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P342+P311 - If experiencing respiratory symptoms: Call doctor. P403+P235 - Store in a well-ventilated place. Keep cool.
EUH-statements	:	EUH204 - Contains isocyanates. May produce an allergic reaction.
Extra phrases	:	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.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Ethyl acetate	(CAS-No.) 141-78-6 (EC No.) 205-500-4 (EC index No.) 607-022-00-5 (REACH-no) 01-2119475103-46-XXXX	60 - 100	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336
Diphenylmethane Diisocyanate, isomers and homologues	(CAS-No.) 9016-87-9 (EC index No.) 615-005-00-9 (REACH-no) 01-2119457024-46-XXXX	10 - 30	Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373

Diphenylmethane-4,4'-di-isocyanate	(CAS-No.) 101-68-8 (EC No.) 202-966-0 (EC index No.) 615-005-00-9 (REACH-no) 01-2119457014-47-XXXX	5 - 10	Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373
o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	(CAS-No.) 5873-54-1 (EC No.) 227-534-9 (EC index No.) 615-005-00-9 (REACH-no) 01-2119480143-45-XXXX	< 1	Carc. 2, H351 Acute Tox. 4 (Inhalation), H332 STOT RE 2, H373 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317
2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	(CAS-No.) 2536-05-2 (EC No.) 219-799-4 (EC index No.) 615-005-00-9 (REACH-no) 01-2119927323-43-XXXX	< 1	Carc. 2, H351 Acute Tox. 4 (Inhalation), H332 STOT RE 2, H373 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove to fresh air, keep the patient warm and at rest. If symptoms develop, obtain medical attention.

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Ensure that folded skin of eyelids is thoroughly washed with water. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth. Give 100 - 200 ml of water to drink. Obtain medical attention.

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

Symptoms/effects after inhalation : May cause drowsiness or dizziness. Nausea. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Even minimal concentrations of isocyanate can lead to a reaction in sensitised people. Symptoms that may occur include the following: irritation of the eyes, nose, throat and lungs, possibly together with a dry throat, a feeling of chest tightness and breathing difficulties. The symptoms may only arise several hours after exposure.

Symptoms/effects after skin contact : Causes skin irritation. May cause an allergic skin reaction. Animal research has shown that skin contact with substances known to have a sensitising effect on airways, such as diisocyanate, can cause airways to be sensitised.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : Ingestion may cause discomfort. May cause stomach pain or vomiting if ingested.

Chronic symptoms : Suspected of causing cancer. May cause damage to organs (respiratory system) through prolonged or repeated exposure (if inhaled).

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

In instances of existing sensitisation towards isocyanates, a doctor should be consulted with regards to work-related contact with other sensitising substances, or substances which irritate the airway. Treatment for exposure should be geared towards monitoring symptoms and the patient's clinical condition. It must be ensured that the patient has sufficient ventilation and oxygen supply. Isocyanates can cause sensitisation of the airways, or asthma-like symptoms (bronchospasms). Delayed breathing symptoms, including lung oedema, may occur. People who have shown signs of breathlessness after considerable exposure should remain under observation for 24-48 hours.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide. Dry chemical. For large fire: Water spray.

Unsuitable extinguishing media : Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Highly flammable liquid and vapour. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours.

Explosion hazard : May form flammable/explosive vapour-air mixture. May form explosive peroxides.

Hazardous decomposition products in case of fire : Carbon monoxide. Carbon dioxide. Nitrogen oxides.

5.3. Advice for firefighters

Firefighting instructions : Move containers from fire area if you can do it without risk. Cool closed containers exposed to fire with water spray. Exercise caution when fighting any chemical fire. Avoid fire-fighting water entering the environment.

Protection during firefighting : As in any fire, wear self-contained breathing apparatus and full protective gear.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Remove ignition sources. Ventilate area. Do not breathe vapours. Avoid contact with eyes, skin and clothing. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Use personal protective equipment as required. In case of inadequate ventilation wear respiratory protection. See Section 8.

Emergency procedures : Remove ignition sources. Use only non-sparking tools. Ventilate area. Do not breathe vapours. Avoid contact with eyes, skin and clothing.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if large amounts of the product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak, if possible without risk. Dam up the liquid spill.

Methods for cleaning up : Liquid: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Cured product: Pick up mechanically. Dispose in a safe manner in accordance with local/national regulations.

6.4. Reference to other sections

SECTION 8: Exposure controls/personal protection. SECTION 13: Disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Use only non-sparking tools. Take precautionary measures against static discharge. Use explosion-proof equipment. Do not handle until all safety precautions have been read and understood. Avoid contact with skin, eyes and clothing. Do not breathe vapours. Provide good ventilation in process area to prevent formation of vapour. Use only outdoors or in a well-ventilated area.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep only in original container. Store tightly closed in a dry, cool and well-ventilated place.
Incompatible materials	:	Strong oxidising agents. Strong acids. Strong alkalis.
Storage temperature	:	5 – 25 °C

7.3. Specific end use(s)

Adhesive.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Ethyl acetate (141-78-6)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Ethyl acetate
IOELV TWA (mg/m³)	734 mg/m³
IOELV TWA (ppm)	200 ppm
IOELV STEL (mg/m³)	1468 mg/m³
IOELV STEL (ppm)	400 ppm
Regulatory reference	COMMISSION DIRECTIVE (EU) 2017/164
Ireland - Occupational Exposure Limits	
Local name	Ethyl acetate
OEL (8 hours ref) (mg/m³)	734 mg/m³
OEL TWA [2]	200 ppm
OEL (15 min ref) (mg/m3)	1468 mg/m³
OEL STEL [ppm]	400 ppm
Notes (IE)	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2020
United Kingdom - Occupational Exposure Limits	
Local name	Ethyl acetate
WEL TWA (mg/m³)	734 mg/m³
WEL TWA (ppm)	200 ppm
WEL STEL (mg/m³)	1468 mg/m³

Ethyl acetate (141-78-6)	
WEL STEL (ppm)	400 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
Ireland - Occupational Exposure Limits	
Local name	Isocyanates, All, (as -NCO) except Methyl isocyanate and Toluene (2,4 or 2,6 diisocyanate)
OEL (8 hours ref) (mg/m³)	0.02 mg/m³
OEL (15 min ref) (mg/m3)	0.07 mg/m³
Notes (IE)	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2020
Ireland - Biological limit values	
Local name	Isocyanates
BLV	1 µmol/mol creatinine Parameter: urinary diamine - Medium: urine - Sampling time: Post task
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
United Kingdom - Occupational Exposure Limits	
Local name	Isocyanates, all (as –NCO)
WEL TWA (mg/m³)	0.02 mg/m³
WEL STEL (mg/m³)	0.07 mg/m³
Remark (WEL)	Sen
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
United Kingdom - Biological limit values	
Local name	Isocyanates (applies to HDI, IPDI, TDI and MDI)
BMGV	1 µmol/mol creatinine Parameter: isocyanate-derived diamine - Medium: urine - Sampling time: At the end of the period of exposure
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
Ireland - Occupational Exposure Limits	
Local name	4,4'-Methylene-diphenyl diisocyanate (as —NCO) [MDI]
OEL TWA [2]	0.005 ppm

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
Notes (IE)	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2020
Ireland - Biological limit values	
Local name	Isocyanates
BLV	1 µmol/mol creatinine Parameter: urinary diamine - Medium: urine - Sampling time: Post task
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
United Kingdom - Occupational Exposure Limits	
Local name	Isocyanates, all (as –NCO)
WEL TWA (mg/m³)	0.02 mg/m³
WEL STEL (mg/m³)	0.07 mg/m³
Remark (WEL)	Sen
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
United Kingdom - Biological limit values	
Local name	Isocyanates (applies to HDI, IPDI, TDI and MDI)
BMGV	1 µmol/mol creatinine Parameter: isocyanate-derived diamine - Medium: urine - Sampling time: At the end of the period of exposure
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
Ireland - Occupational Exposure Limits	
Local name	Isocyanates, All, (as -NCO) except Methyl isocyanate and Toluene (2,4 or 2,6 diisocyanate)
OEL (8 hours ref) (mg/m³)	0.02 mg/m³
OEL (15 min ref) (mg/m3)	0.07 mg/m³
Notes (IE)	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2020
Ireland - Biological limit values	
Local name	Isocyanates
BLV	1 µmol/mol creatinine Parameter: urinary diamine - Medium: urine - Sampling time: Post task
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
United Kingdom - Occupational Exposure Limits	
Local name	Isocyanates
WEL TWA (mg/m³)	0.02 mg/m³ all (as –NCO) Except methyl isocyanate
WEL STEL (mg/m³)	0.07 mg/m³ all (as –NCO) Except methyl isocyanate
Remark (WEL)	Sen (Capable of causing occupational asthma)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
United Kingdom - Biological limit values	
Local name	Isocyanates (applies to HDI, IPDI, TDI and MDI)
BMGV	1 µmol/mol creatinine Parameter: isocyanate-derived diamine - Medium: urine - Sampling time: At the end of the period of exposure
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate (2536-05-2)	
Ireland - Occupational Exposure Limits	
Local name	Isocyanates, All, (as -NCO) except Methyl isocyanate and Toluene (2,4 or 2,6 diisocyanate)
OEL (8 hours ref) (mg/m³)	0.02 mg/m³
OEL (15 min ref) (mg/m3)	0.07 mg/m³
Notes (IE)	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2020
Ireland - Biological limit values	
Local name	Isocyanates
BLV	1 µmol/mol creatinine Parameter: urinary diamine - Medium: urine - Sampling time: Post task
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
United Kingdom - Occupational Exposure Limits	
Local name	Isocyanates
WEL TWA (mg/m³)	0.02 mg/m³ all (as –NCO) Except methyl isocyanate
WEL STEL (mg/m³)	0.07 mg/m³ all (as –NCO) Except methyl isocyanate
Remark (WEL)	Sen (Capable of causing occupational asthma)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
United Kingdom - Biological limit values	
Local name	Isocyanates (applies to HDI, IPDI, TDI and MDI)
BMGV	1 µmol/mol creatinine Parameter: isocyanate-derived diamine - Medium: urine - Sampling time: At the end of the period of exposure
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Ethyl acetate (141-78-6)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	1468 mg/m³
Acute - local effects, inhalation	1468 mg/m³
Long-term - systemic effects, dermal	63 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	734 mg/m³
Long-term - local effects, inhalation	734 mg/m³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	734 mg/m³
Acute - local effects, inhalation	734 mg/m³
Long-term - systemic effects,oral	4.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	367 mg/m³
Long-term - systemic effects, dermal	37 mg/kg bodyweight/day
Long-term - local effects, inhalation	367 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.24 mg/l
PNEC aqua (marine water)	0.024 mg/l
PNEC aqua (intermittent, freshwater)	1.65 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	1.15 mg/kg dwt
PNEC sediment (marine water)	0.115 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.148 mg/kg dwt
PNEC (Oral)	
PNEC oral (secondary poisoning)	0.2 kg/kg food
PNEC (STP)	
PNEC sewage treatment plant	650 mg/l

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
DNEL/DMEL (Workers)	
Acute - local effects, inhalation	0.1 mg/m³
Long-term - local effects, inhalation	0.05 mg/m³
DNEL/DMEL (General population)	
Acute - local effects, inhalation	0.05 mg/m³
Long-term - local effects, inhalation	0.025 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	1 mg/l

PNEC aqua (marine water)	1 mg/l
PNEC aqua (intermittent, freshwater)	10 mg/l
PNEC (Soil)	
PNEC soil	1 mg/kg dwt

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
DNEL/DMEL (Workers)	
Acute - local effects, inhalation	0.1 mg/m³
Long-term - local effects, inhalation	0.05 mg/m³
DNEL/DMEL (General population)	
Acute - local effects, inhalation	0.05 mg/m³
Long-term - local effects, inhalation	0.025 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	1 mg/l
PNEC aqua (marine water)	0.1 mg/l
PNEC aqua (intermittent, freshwater)	10 mg/l
PNEC (Soil)	
PNEC soil	1 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	1 mg/l

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:
Provide good ventilation in process area to prevent formation of vapour. Ensure exposure is below occupational exposure limits (where available). Local exhaust ventilation (LEV) may be required to control inhalation exposure. Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure.

8.2.2. Personal protection equipment

Personal protective equipment:
Avoid all unnecessary exposure.

8.2.2.1. Eye and face protection

Eye protection:
Safety goggles. Standard EN 166 - Personal eye-protection.

8.2.2.2. Skin protection

Skin and body protection:
Long-sleeved protective clothing

Hand protection:
Wear protective gloves if skin contact is possible. Standard EN 374 - Protective gloves against chemicals. Recommended: Nitrile rubber gloves. The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed. Gloves should be removed and replaced if there are any signs of degradation or breakthrough.

8.2.2.3. Respiratory protection

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment. Short term exposure/At low concentrations: Respiratory filter device. Filter type. A1. EN 14387. Long term exposure/In high concentrations : Approved supplied air respirator

8.2.2.4. Thermal hazards

Thermal hazard protection:
Not required for normal conditions of use.

8.2.3. Environmental exposure controls

Environmental exposure controls:
Avoid release to the environment. Assure that emissions are compliant with all applicable air pollution control regulations. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Other information:
Do not eat, drink or smoke during use. Handle in accordance with good industrial hygiene and safety procedures.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Liquid.
Colour	:	Colourless.
Odour	:	No data available
Odour threshold	:	No data available
pH	:	Not applicable
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	77 °C (approx.)
Flash point	:	-1 °C (approx.)
Auto-ignition temperature	:	460 °C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Not applicable
Vapour pressure	:	No data available
Relative vapour density at 20 °C	:	No data available
Relative density	:	0.94 approx. (20°C), (Water = 1)
Solubility	:	In water, material is partially soluble.
Log Pow	:	No data available
Viscosity, kinematic	:	> 20.5 mm²/s
Viscosity, dynamic	:	No data available
Explosive properties	:	May form flammable/explosive vapour-air mixture.
Oxidising properties	:	Not oxidising.
Explosive limits	:	1.1 – 11 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended handling and storage conditions (see section 7). Highly flammable liquid and vapour.

10.2. Chemical stability

Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of hazardous reactions

May form flammable/explosive vapour-air mixture.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5. Incompatible materials

Strong oxidising agents. Strong acids. Strong alkalis.

10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide. Nitrogen oxides.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified.
Additional information : Based on available data, the classification criteria are not met

Ethyl acetate (141-78-6)	
LD50 dermal, rabbit	> 20000 mg/kg bodyweight
LC50 inhalation, rat (ppm)	> 6000 ppm - 6 Hours

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
LD50 oral, rat	> 2000 mg/kg bodyweight
LD50 dermal, rabbit	9400 mg/kg bodyweight
LC50 inhalation, rat (mg/l)	0.49 mg/l - 4 Hours

Diphenylmethane-4,4’-di-isocyanate (101-68-8)	
LC50 inhalation, rat (mg/l)	431 mg/m³ - 4 Hours

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
LC50 inhalation, rat (mg/l)	431 mg/m³ - 4 Hours

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate (2536-05-2)	
LD50 oral, rat	> 5000 mg/kg bodyweight
LC50 inhalation, rat (mg/l)	431 mg/m³ - 4 Hours

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitisation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Additional information : Based on available data, the classification criteria are not met
Carcinogenicity : Suspected of causing cancer.

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
IARC group	3 - Not classifiable

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified
Additional information : Based on available data, the classification criteria are not met

STOT-single exposure : May cause drowsiness or dizziness. May cause respiratory irritation.

Ethyl acetate (141-78-6)	
STOT-single exposure	May cause drowsiness or dizziness.

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
STOT-single exposure	May cause respiratory irritation.

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
STOT-single exposure	May cause respiratory irritation.

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
STOT-single exposure	May cause respiratory irritation.

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate (2536-05-2)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : May cause damage to organs (respiratory system) through prolonged or repeated exposure (if inhaled).

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Diphenylmethane-4,4'-di-isocyanate (101-68-8)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate (2536-05-2)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified
Additional information : Based on available data, the classification criteria are not met

PART B - Curing Agent	
Viscosity, kinematic	> 20.5 mm²/s

Potential adverse human health effects and symptoms : May cause drowsiness or dizziness, Nausea, May cause respiratory irritation, May cause allergy or asthma symptoms or breathing difficulties if inhaled, Even minimal concentrations of isocyanate can lead to a reaction in sensitised people. Symptoms that may occur include the following: irritation of the eyes, nose, throat and lungs, possibly together with a dry throat, a feeling of chest tightness and breathing difficulties. The symptoms may only arise several hours after exposure, Causes serious eye irritation, May cause an allergic skin reaction, Animal research has shown that skin contact with substances known to have a sensitising effect on airways, such as diisocyanate, can cause airways to be sensitised, Causes skin irritation, May cause stomach pain or vomiting if ingested, Ingestion may cause discomfort, Suspected of causing cancer, May cause damage to organs (respiratory system) through prolonged or repeated exposure (if inhaled)

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Ethyl acetate (141-78-6)	
LC50 fish	230 mg/l - 96 Hours (Pimephales promelas)(US EPA E03-05)
NOEC chronic fish	> 100 mg/l - 72 Hours (Desmodesmus subspicatus)
NOEC chronic crustacea	2.4 mg/l - 21 days (Daphnia magna)(OECD 211 method)
NOEC, algae	> 100 mg/l (72 Hours, Desmodesmus subspicatus, Growth rate (OECD 201 method))

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
LC50 fish	> 1000 mg/l - 96 Hours (Danio rerio)
EC50 Daphnia	> 500 mg/l - 48 Hours (Daphnia magna)
ErC50 algae	≈ 1640 mg/l - 3 days (Desmodesmus subspicatus)
NOEC chronic crustacea	10 mg/l - 21 days (Daphnia magna)

12.2. Persistence and degradability

PART B - Curing Agent	
Persistence and degradability	No information available.

Ethyl acetate (141-78-6)	
Persistence and degradability	Readily biodegradable.
Biodegradation	≈ 62 % - 10 days (O2 consumption)

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
Persistence and degradability	Not biodegradable.

12.3. Bioaccumulative potential

PART B - Curing Agent	
Bioaccumulative potential	No information available.

Ethyl acetate (141-78-6)	
BCF - Fish [1]	30 Leuciscus idus melanotus
Log Pow	0.68 (25 °C, pH 7)
Bioaccumulative potential	Low bioaccumulation potential.

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
Bioaccumulative potential	Not expected to bioaccumulate.

Diphenylmethane-4,4’-di-isocyanate (101-68-8)	
BCF - Fish [1]	200 Cyprinus carpio (OECD 305 E method)
Log Pow	4.51 (22 °C, pH ≈ 7), (OECD 117 method)
Bioaccumulative potential	Low bioaccumulation potential.

o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate (5873-54-1)	
BCF - Fish [1]	200

12.4. Mobility in soil

PART B - Curing Agent	
Ecology - soil	No information available.

Ethyl acetate (141-78-6)	
Ecology - soil	Miscible with water.

Diphenylmethane Diisocyanate, isomers and homologues (9016-87-9)	
Ecology - soil	Not volatile.

Diphenylmethane-4,4’-di-isocyanate (101-68-8)	
Ecology - soil	Slightly soluble in: Water.

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate (2536-05-2)	
Log Koc	5.22 (QSAR)

12.5. Results of PBT and vPvB assessment

PART B - Curing Agent
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Empty containers should be taken to an approved waste handling site for recycling or disposal. The correct waste code must be determined by the producer of the waste, based on how the waste has been produced.

Additional information : Handle empty containers with care because residual vapours are flammable.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA

14.1 UN number

UN-No. (ADR) : UN 1133

UN-No. (IMDG) : UN 1133

UN-No. (IATA) : UN 1133

14.2. UN proper shipping name

Proper Shipping Name : ADHESIVES

Proper Shipping Name (IMDG) : ADHESIVES

Proper Shipping Name (IATA) : Adhesives

Transport document description (ADR) : UN 1133 ADHESIVES, 3, II, (D/E)

Transport document description (IMDG) : UN 1133 ADHESIVES, 3, II

Transport document description (IATA) : UN 1133 Adhesives, 3, II

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 3

Hazard labels : 3

:

IMDG

Transport hazard class(es) (IMDG) : 3

Danger labels (IMDG) : 3

:

IATA

Transport hazard class(es) (IATA) : 3

Danger labels (IATA) : 3

:

14.4. Packing group

Packing group	:	II
Packing group (IMDG)	:	II
Packing group (IATA)	:	II

14.5. Environmental hazards

Dangerous for the environment	:	No
Marine pollutant	:	No
Other information	:	No supplementary information available

14.6. Special precautions for user

Overland transport

Tunnel restriction code (ADR) : D/E

Transport by sea

No data available

Air transport

No data available

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

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Authorisations and/or restrictions on use (Annex XVII):

Reference code	Applicable on	Entry title or description
3.	PART B - Curing Agent ; Ethyl acetate ; Diphenylmethane Diisocyanate, isomers and homologues	Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008
3(a)	PART B - Curing Agent ; Ethyl acetate	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	PART B - Curing Agent ; Ethyl acetate ; Diphenylmethane Diisocyanate, isomers and homologues	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
40.	PART B - Curing Agent ; Ethyl acetate	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.
56.	Diphenylmethane Diisocyanate, isomers and homologues ; Diphenylmethane-4,4'-di-isocyanate ; o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate ; 2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	Methylenediphenyl diisocyanate (MDI)
56(a)	Diphenylmethane-4,4'-di-isocyanate	Methylenediphenyl diisocyanate (MDI) isomers: 4,4'-Methylenediphenyl diisocyanate

56(b)	o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	Methylenediphenyl diisocyanate (MDI) isomers: 2,4'-Methylenediphenyl diisocyanate
56(c)	2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	Methylenediphenyl diisocyanate (MDI) isomers: 2,2'-Methylenediphenyl diisocyanate

Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances
Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.
Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:	
	ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route)
	BCF (Bioconcentration factor)
	CAS (Chemical Abstracts Service) number
	CLP (Classification, Labeling and Packaging)
	DNEL (Derived No Effect Level)
	EC (European Community)
	EC50 (Effective Concentration 50%)
	EN (European Norm)
	IARC (International Agency for Research on Cancer)
	IATA (International Air Transport Association)
	IBC (Intermediate Bulk Container)
	IMDG (International Maritime Dangerous Goods Code)
	Koc (Soil adsorption coefficient)
	LC50 (Lethal Concentration 50%)
	LD50 (Lethal Dose 50%)
	OECD (Organisation for Economic Co-operation and Development)
	OEL (Occupational exposure limit)
	NOAEL (No Observed Adverse Effect Level)
	NOEC (No Observed Effect Concentration)
	PBT (Persistent, Bioaccumulative and Toxic)
	PNEC (Predicted No Effect Concentration)
	QSAR (Quantitative Structure-Activity Relationship)
	REACH (Registration, Evaluation and Authorisation of CHemicals)
	STEL (Short Term Exposure Limit)
	TWA (Time Weighted Average)

	UNxxxx (Number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods)
	UVCB (Unknown or Variable composition, Complex reaction products or Biological materials)
	vPvB (very Persistent and very Bioaccumulative)
	WAF (Water Accommodated Fraction)

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : Classification procedure according to Regulation (EC) No. 1272/2008 [CLP]: Physical hazards: On basis of test data. Health hazards: Calculation method. Environmental hazards: Calculation method.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Carc. 2	Carcinogenicity, Category 2
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 2	Flammable liquids, Category 2
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H225	Highly flammable liquid and vapour.
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.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
EUH204	Contains isocyanates. May produce an allergic reaction.