

SAFETY DATA SHEET

Version #: 08

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

1.1. Product identifier

Trade name or designation of the mixture DEVCON® R-Flex® II Resin

Registration number -

Synonyms None.

SKU# 0339B

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

Identified uses Not available.

Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Company Name ITW Performance Polymers

Address Bay 150
Shannon Industrial Estate
Co. Clare
Ireland
V14 DF82

Contact Person Customer Service

Telephone Number 353(61)771500
353(61)471285

Email customerservice.shannon@itwpp.com

Emergency Phone Number 44(0) 1235 239 670 (24 hours)

1.4. Emergency telephone number

General in EU 112 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Austria National Poisons Information Center +431 406 4343 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Belgium National Poisons Control Center 070 245 245 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Bulgaria National Toxicological Information Center +359 2 9154 233 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Croatia Poisons Information Center +385 1 2348 342 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)

Cyprus Poison Center 1401 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Czech Republic National Poisons Information Center +420 224 919 293, or +420 224 915 402 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)

Denmark National Poisons Control Center +45 82 12 12 12 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Estonia National Poisons Information Center 16662 or abroad: (+372) 626 9390 (Monday 9:00AM to Saturday 9:00AM (closed on Sundays and on national holidays). SDS/Product information may not be available for the Emergency Service.)

Finland National Poison Information Center (09) 471 977 (direct) or (09) 4711 (exchange) (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

France National Poisons Control Center ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

1.4. Emergency telephone number

Greece Poison Information Centre	(0030) 2107793777 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Hungary National Emergency Phone Number	+36-80-201-199 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Iceland Poison Center	(+354) 543 2222 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Latvia Emergency medical aid	113
Latvia Poison and Drug Information Center	+371 67042473 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Lithuania Neatidėliotina informacija apsinuodijus	+370 5 236 20 52 or +37068753378 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Malta Accident and Emergency Department	2545 4030 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Netherlands National Poisons Information Center (NVIC)	NVIC: +31 (0)88 755 8000 (Only for the purpose of informing medical personnel in cases of acute intoxications)
Norway Norwegian Poison Information Center	22 59 13 00 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Portugal Poison Center	800 250 250 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Romania Biroul RSI si Informare Toxicologica	021.318.36.06 (Available 8:00AM-3:00PM. SDS/Product information may not be available for the Emergency Service.)
Slovakia National Toxicological Information Center	+421 2 5477 4166 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Spain Toxicology Information Service	+ 34 91 562 04 20 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Sweden National Poison Information Center	112 - and ask for Poison Information (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Switzerland Tox Info Suisse	145 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/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.
Skin sensitization	Category 1	H317 - May cause an allergic skin reaction.
Specific target organ toxicity - single exposure	Category 3 respiratory tract irritation	H335 - May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Category 2	H373 - May cause damage to organs through prolonged or repeated exposure.

Environmental hazards

Hazardous to the aquatic environment, long-term aquatic hazard	Category 2	H411 - Toxic to aquatic life with long lasting effects.
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2.2. Label elements

UFI:

Austria: Q030-J0YE-9002-YQGX
 Belgium: Q030-J0YE-9002-YQGX
 Bulgaria: Q030-J0YE-9002-YQGX
 Croatia: Q030-J0YE-9002-YQGX
 Cyprus: Q030-J0YE-9002-YQGX
 Czech Republic: Q030-J0YE-9002-YQGX
 Denmark: Q030-J0YE-9002-YQGX
 Estonia: Q030-J0YE-9002-YQGX
 EU: Q030-J0YE-9002-YQGX
 Finland: Q030-J0YE-9002-YQGX
 France: Q030-J0YE-9002-YQGX
 Germany: Q030-J0YE-9002-YQGX
 Greece: Q030-J0YE-9002-YQGX
 Hungary: Q030-J0YE-9002-YQGX
 Iceland: Q030-J0YE-9002-YQGX
 Ireland: Q030-J0YE-9002-YQGX
 Italy: Q030-J0YE-9002-YQGX
 Latvia: Q030-J0YE-9002-YQGX
 Lithuania: Q030-J0YE-9002-YQGX
 Luxembourg: Q030-J0YE-9002-YQGX
 Malta: Q030-J0YE-9002-YQGX
 Netherlands: Q030-J0YE-9002-YQGX
 Norway: Q030-J0YE-9002-YQGX
 Poland: Q030-J0YE-9002-YQGX
 Portugal: Q030-J0YE-9002-YQGX
 Romania: Q030-J0YE-9002-YQGX
 Slovakia: Q030-J0YE-9002-YQGX
 Slovenia: Q030-J0YE-9002-YQGX
 Spain: Q030-J0YE-9002-YQGX
 Sweden: Q030-J0YE-9002-YQGX

Contains:

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate, 4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate; butanone; ethyl methyl ketone, Polypropylene Glycols, Polytetramethylene Ether Glycol

Hazard pictograms



Signal word

Danger

Hazard statements

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.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P260	Do not breathe mist/vapors.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear eye protection/face protection.
P280	Wear protective gloves.
P284	Wear respiratory protection.

Response

P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor if you feel unwell.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.

P342 + P311
P362 + P364
P391

If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
Take off contaminated clothing and wash it before reuse.
Collect spillage.

Storage

P403 + P233
P405

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information

None.

2.3. Other hazards

This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII. The mixture does not contain any substances included in the list established in accordance with REACH Article 59(1) for having endocrine disrupting properties at a concentration equal to or greater than 0.1% by weight.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate	20 - < 30	4098-71-9 223-861-6	-	615-008-00-5	
Classification: Acute Tox. 4;H302;(ATE: 1000 mg/kg bw), Acute Tox. 4;H312;(ATE: 1060 mg/kg bw), Acute Tox. 3;H331;(ATE: 3 mg/l), Skin Irrit. 2;H315, Eye Irrit. 2;H319, Resp. Sens. 1;H334, Skin Sens. 1;H317, STOT SE 3;H335, Aquatic Chronic 2;H411 Specific Concentration Limits: Resp. Sens. 1;H334: C ≥ 0.5 %, Skin Sens. 1;H317: C ≥ 0.5 %					
Polytetramethylene Ether Glycol	10 - < 20	25190-06-1	-	-	
Classification: -					
butanone; ethyl methyl ketone	5 - < 10	78-93-3 201-159-0	-	606-002-00-3	#
Classification: Flam. Liq. 2;H225, Eye Irrit. 2;H319, STOT SE 3;H336 Supplemental Hazard Statement(s): EUH066					
Polypropylene Glycols	5 - < 10	25322-69-4 500-039-8	-	-	
Classification: -					
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate	< 1	101-68-8 202-966-0	-	615-005-00-9	
Classification: Acute Tox. 4;H332;(ATE: 11 mg/l), 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 Specific Concentration Limits: Skin Irrit. 2;H315: C ≥ 5 %, Eye Irrit. 2;H319: C ≥ 5 %, Resp. Sens. 1;H334: C ≥ 0.1 %, STOT SE 3;H335: C ≥ 5 %					
Other components below reportable levels	40 - < 50				

List of abbreviations and symbols that may be used above

ATE: Acute toxicity estimate.

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Union workplace exposure limit(s).

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments

The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.
4.1. Description of first aid measures	
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a poison center or doctor/physician.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
4.2. Most important symptoms and effects, both acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
4.3. Indication of any immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards	No unusual fire or explosion hazards noted.
5.1. Extinguishing media	
Suitable extinguishing media	Foam. Powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Water. Do not use water jet as an extinguisher, as this will spread the fire.
5.2. Special hazards arising from the substance or mixture	During fire, gases hazardous to health may be formed.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special fire fighting procedures	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Do not breathe mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material.
For emergency responders	Keep unnecessary personnel away. Ensure adequate ventilation. Avoid breathing mist/vapors. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.
6.3. Methods and material for containment and cleaning up	Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not breathe mist/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store locked up. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

ANNEX 1, PART 1 Categories of dangerous substances

Hazard categories in accordance with Regulation (EC) No 1272/2008

- E2 Hazardous to the Aquatic Environment Chronic (Lower-tier requirements = 200 tons;

Upper-tier requirements = 500 tons)

7.3. Specific end use(s)

Observe industrial sector guidance on best practices.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Ceiling	0,092 mg/m ³
		0,01 ppm
	MAK	0,046 mg/m ³
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	0,1 mg/m ³
		0,01 ppm
	MAK	0,05 mg/m ³
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	MAK	295 mg/m ³
		100 ppm
	STEL	590 mg/m ³
		200 ppm

Belgium. OEL. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1 - Chemical agents, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,046 mg/m ³
		0,005 ppm

Belgium. OEL. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1 - Chemical agents, as amended

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,052 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	300 ppm 600 mg/m3 200 ppm

Bulgaria. OELs. Ordinance No 13 on protection of workers against risks of exposure to chemical agents at work, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,1 mg/m3
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,07 mg/m3
	TWA	0,05 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	885 mg/m3
	TWA	590 mg/m3

Croatia. OELs (GVI). Regulation on Protection of Workers against Exposure to Dangerous Chemicals at Work, OELs and Biological Limit Values, Annex I (NN 91/2018), as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	MAC	600 mg/m3
		200 ppm
	STEL	900 mg/m3 300 ppm

Components

Cyprus. OELs. Occupational Exposure Limit Values of Chemicals at Work (Safety and Health at Work (Chem. Agents) Reg., Ann. 1, R.A.A. 268/2001, as amended)

Czech Republic. Occupational exposure limit values of chemicals at work (Decree on protection of health at work, 361/2007, Annex 2, Part A & Annex 3, Part A, as amended)

Denmark. Work Environment Authority. Exposure Limits for Substances & Materials, Annex 2

SDS EU
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Components

Type

Value

4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate; [1] 2,2'-methylenebis(phenyl isocyanate); [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TLV	0,05 mg/m ³
butanone; ethyl methyl ketone (CAS 78-93-3)	TLV	0,005 ppm 145 mg/m ³ 50 ppm

Components

Type

Value

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,09 mg/m3
		0,01 ppm
	TWA	0,05 mg/m3
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1]	STEL	0,1 mg/m3
2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2]		
o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3]		
methylenediphenyl diisocyanate (CAS 101-68-8)		
		0,01 ppm
	TWA	0,05 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Components

Type

Value

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,035 mg/m3
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Finland. HTP-arvot, App 3., Binding Limit Values, Social Affairs and Ministry of Health

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,035 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	300 mg/m3
		100 ppm
	TWA	60 mg/m3
		20 ppm

France. OELs. Occupational Exposure Limits as Prescribed by Art. R.4412-149 of Labor Code, as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	VLE	900 mg/m3
		300 ppm
	VME	600 mg/m3
		200 ppm

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	VLE	0,18 mg/m3
Regulatory status: Indicative limit (VL)		
		0,02 ppm
Regulatory status: Indicative limit (VL)		
	VME	0,09 mg/m3
Regulatory status: Indicative limit (VL)		
		0,01 ppm
Regulatory status: Indicative limit (VL)		
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	VLE	0,2 mg/m3
Regulatory status: Indicative limit (VL)		
		0,02 ppm
Regulatory status: Indicative limit (VL)		
	VME	0,1 mg/m3
Regulatory status: Indicative limit (VL)		
		0,01 ppm
Regulatory status: Indicative limit (VL)		

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	VLE	900 mg/m3
Regulatory status:	Regulatory binding (VRC)	
		300 ppm
Regulatory status:	Regulatory binding (VRC)	
	VME	600 mg/m3
Regulatory status:	Regulatory binding (VRC)	
		200 ppm
Regulatory status:	Regulatory binding (VRC)	

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG), as updated

Components	Type	Value	Form
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,046 mg/m3	Vapor and aerosol.
		0,005 ppm	Vapor and aerosol.
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,05 mg/m3	Inhalable fraction.
butanone; ethyl methyl ketone (CAS 78-93-3)	TWA	600 mg/m3	
		200 ppm	

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value	Form
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	AGW	0,046 mg/m3	Vapor and aerosol.
		0,005 ppm	Vapor and aerosol.
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	AGW	0,05 mg/m3	Inhalable fraction.
butanone; ethyl methyl ketone (CAS 78-93-3)	AGW	600 mg/m3	
		200 ppm	

Greece. OELs, Presidential Decree No. 307/1986, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,18 mg/m3
		0,02 ppm
	TWA	0,09 mg/m3
		0,01 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,2 mg/m3
		0,02 ppm
	TWA	0,2 mg/m3
		0,02 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Hungary. OELs. Decree on protection of workers exposed to chemical agents (5/2020. (II.6)), Annex 1&2, as amended

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,05 mg/m3
	TWA	0,05 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	600 mg/m3

Iceland. OELs. Regulation 390/2009 on Pollution Limits and Measures to Reduce Pollution at the Workplace, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,09 mg/m3
		0,01 ppm
	TWA	0,05 mg/m3
		0,005 ppm

Iceland. OELs. Regulation 390/2009 on Pollution Limits and Measures to Reduce Pollution at the Workplace, as amended

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,1 mg/m3
	TWA	0,01 ppm 0,05 mg/m3 0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	300 ppm 145 mg/m3 50 ppm

Ireland. OELVs, Schedules 1 & 2, Code of Practice for Chemical Agents and Carcinogens Regulations

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,07 mg/m3
	TWA	0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,07 mg/m3
	TWA	0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	300 ppm 600 mg/m3 200 ppm

Italy. OELs (Legislative Decree n.81, 9 April 2008), as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,005 ppm

Italy. OELs (Legislative Decree n.81, 9 April 2008), as amended

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Latvia. OELs. Occupational Exposure Limits of Chemical Substances at Workplace (Reg. No. 325/ 2007, L.V. 80, Annex 1), as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	200 mg/m3
		67 ppm

Lithuania. OELs. Occupational Exposure Limit Values for Chemical Substances (Hygiene Norm HN 23:2011; Order No. V-824/A1-389), as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Ceiling	0,09 mg/m3
		0,01 ppm
	TWA	0,05 mg/m3
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	0,1 mg/m3
		0,01 ppm
	TWA	0,05 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Luxembourg. OELs. Binding Occupational Exposure Limit Values (Annex I), G.D.R. of 14 November 2016, OJ Memorial A, n ° 235/2016, as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m ³
		300 ppm
	TWA	600 mg/m ³
		200 ppm

Malta. OELs. Protection of Health and Safety of Workers from Risks related to Chemical Agents at Work (L.N 227/2003 Schedules I and V), as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m ³
		300 ppm
	TWA	600 mg/m ³
		200 ppm

Netherlands. OELs per Annex XIII of Working Conditions Regulation (Staatscourant no. 252, 29 December 2006), as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m ³
	TWA	590 mg/m ³

Norway. Regulation No. 1358 on Measures and Limit Values for Physical and Chemical Factors in Work Environment and Infection Groups for Biological Factors, as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,01 ppm
	TLV	0,045 mg/m ³ 0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,01 ppm
	TLV	0,05 mg/m ³ 0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	TLV	220 mg/m ³
		75 ppm

Poland. Maximum permissible concentrations and intensities of harmful factors in the work environment (Dz.U.Poz. 1286/2018, Annex 1)

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,04 mg/m ³

Poland. Maximum permissible concentrations and intensities of harmful factors in the work environment (Dz.U.Poz. 1286/2018, Annex 1)

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,09 mg/m3
	TWA	0,03 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	450 mg/m3

Portugal. Decree-Law No. 24/2012, Occupational Exposure Limit Values, Annex II, as amended

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
	TWA	300 ppm 600 mg/m3 200 ppm

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796-2014)

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	300 ppm
	TWA	200 ppm

Romania. OELs. Limit Values of Chemical Agents at Workplace (Regulation 1.218/2006, M.O 845, Annex 1, 3&4, as amended)

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,15 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Slovakia. OELs. Maximum permissible exposure limits for chemical factors in workplace air (Regulation No 355/2006, Annex 1, Table 1, as amended)

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,03 mg/m3
		0,002 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Slovenia. OELs. Occupational Exposure Limits of Chemicals at Workplace (Reg. on Protection of Workers from Risks due to Exp. to Chemicals at Work, Annex I), as amended

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	TWA	0,046 mg/m3
		0,005 ppm

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1]	TWA	0,05 mg/m3
2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2]		
o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3]		
methylenediphenyl diisocyanate (CAS 101-68-8)		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	TWA	600 mg/m3
		200 ppm

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone diisocyanate (CAS 4098-71-9)	TWA	0,046 mg/m3
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	TWA	0,052 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Ceiling	0,046 mg/m3
	TWA	0,005 ppm
		0,018 mg/m3
		0,002 ppm

Sweden. OELs (Annex 1). Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2018:1), as amended

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Ceiling	0,05 mg/m3
	TWA	0,005 ppm 0,03 mg/m3 0,002 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	Ceiling	900 mg/m3
	TWA	300 ppm 150 mg/m3 50 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle MAK-Werte

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,02 mg/m3
	TWA	0,02 mg/m3
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,02 mg/m3
	TWA	0,02 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	590 mg/m3
	TWA	200 ppm 590 mg/m3 200 ppm

UK. OELs. Workplace Exposure Limits (WELs) (EH40/2005 (Fourth Edition 2020)), Table 1

Components	Type	Value
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	STEL	0,07 mg/m3
	TWA	0,02 mg/m3

UK. OELs. Workplace Exposure Limits (WELs) (EH40/2005 (Fourth Edition 2020)), Table 1

Components	Type	Value
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	STEL	0,07 mg/m ³
	TWA	0,02 mg/m ³
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	899 mg/m ³
		300 ppm
	TWA	600 mg/m ³
		200 ppm

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU

Components	Type	Value
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	900 mg/m ³
		300 ppm
	TWA	600 mg/m ³
		200 ppm

Biological limit values
Croatia. BELs (BGV). Regulation on Protection of Workers against Exposure to Dangerous Chemicals at Work, OELs and BELs, Annex IV (NN 91/2018), as amended

Components	Value	Determinant	Specimen	Sampling Time
butanone; ethyl methyl ketone (CAS 78-93-3)	2,6 mg/g	methyl ethyl ketone	Creatinine in urine	*
	4,08 mmol/mol	methyl ethyl ketone	Creatinine in urine	*

* - For sampling details, please see the source document.

France. Biological indicators of exposure (IBE) (National Institute for Research and Security (INRS), ND 2065)

Components	Value	Determinant	Specimen	Sampling Time
butanone; ethyl methyl ketone (CAS 78-93-3)	2 mg/l	Méthyléthylcétone	Urine	*

* - For sampling details, please see the source document.

Germany. TRGS 903, BAT List (Biological Limit Values)

Components	Value	Determinant	Specimen	Sampling Time
butanone; ethyl methyl ketone (CAS 78-93-3)	150 mg/l	2-Butanon	Urine	*

* - For sampling details, please see the source document.

Hungary. BELs. Decree on protection of workers exposed to chemical agents (5/2020. (II.6)), Annex 3&4, as amended

Components	Value	Determinant	Specimen	Sampling Time
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	0,05 µmol/l	4,4'-Diaminodiphenyl following hydrolysis	Urine	*
	0,01 mg/l	4,4'-Diaminodiphenyl following hydrolysis	Urine	*
butanone; ethyl methyl ketone (CAS 78-93-3)	28 µmol/l	MEK	Urine	*
	2 mg/l	MEK	Urine	*

* - For sampling details, please see the source document.

Spain. BELs. INSST, Límites de Exposición Profesional Para Agentes Químicos, Table 3-Valores Límite Biológicos (VLB)

Components	Value	Determinant	Specimen	Sampling Time
butanone; ethyl methyl ketone (CAS 78-93-3)	2 mg/l	Metiletilcetona	Urine	*

* - For sampling details, please see the source document.

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle BAT-Werte

Components	Value	Determinant	Specimen	Sampling Time
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	10 µg/g	4,4'-Diaminodiphenylmethan	Creatinine in urine	*
butanone; ethyl methyl ketone (CAS 78-93-3)	2 mg/l	2-Butanon (MEK)	Urine	*

* - For sampling details, please see the source document.

UK. BELs. Biological Monitoring Guidance Values (BMGVs) (EH40/2005 (Fourth Edition 2020)), Table 2

Components	Value	Determinant	Specimen	Sampling Time
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	1 umol/mol	Isocyanate-derived diamine	Creatinine in urine	*
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	1 umol/mol	Isocyanate-derived diamine	Creatinine in urine	*

UK. BELs. Biological Monitoring Guidance Values (BMGVs) (EH40/2005 (Fourth Edition 2020)), Table 2

Components	Value	Determinant	Specimen	Sampling Time
butanone; ethyl methyl ketone (CAS 78-93-3)	70 umol/l	Butan-2-one	Urine	*
* - For sampling details, please see the source document.				
Recommended monitoring procedures	Follow standard monitoring procedures.			
Derived no effect levels (DNELs)	Not available.			
Predicted no effect concentrations (PNECs)	Not available.			
Exposure guidelines				
Austria MAK: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Belgium OELs: Skin designation				
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Can be absorbed through the skin.			
Denmark GV: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Finland Exposure Limit Values: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
France INRS: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
France Mandatory OELs (VLEP): Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Germany DFG MAK (advisory): Skin designation				
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Can be absorbed through the skin.			
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Germany TRGS 900 Limit Values: Skin designation				
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Can be absorbed through the skin.			
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Greece OEL: Skin designation				
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Can be absorbed through the skin.			
Hungary OELs: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Iceland OELs: Skin designation				
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Can be absorbed through the skin.			
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Ireland Exposure Limit Values: Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Netherlands OELs (binding): Skin designation				
butanone; ethyl methyl ketone (CAS 78-93-3)	Can be absorbed through the skin.			
Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)				
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)	Can be absorbed through the skin.			

butanone; ethyl methyl ketone (CAS 78-93-3)

Can be absorbed through the skin.

Switzerland SUVA Limit Values at the Workplace: Skin designation

4,4'-methylenediphenyl diisocyanate;

Can be absorbed through the skin.

diphenylmethane4,4'-diisocyanate; [1]

2,2'-methylenediphenyl diisocyanate;

diphenylmethane2,2'-diisocyanate; [2]

o-(p-isocyanatobenzyl)phenyl isocyanate;

diphenylmethane-2,4'-diisocyanate; [3]

methylenediphenyl diisocyanate (CAS 101-68-8)

butanone; ethyl methyl ketone (CAS 78-93-3)

Can be absorbed through the skin.

UK EH40 WEL: Skin designation

butanone; ethyl methyl ketone (CAS 78-93-3)

Can be absorbed through the skin.

8.2. Exposure controls

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. General ventilation normally adequate. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

General information

Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

- Hand protection

Wear appropriate chemical resistant gloves.

- Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

Hygiene measures

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

Environmental exposure controls

Inform appropriate managerial or supervisory personnel of all environmental releases. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid.

Form

Liquid.

Color

Clear colorless or nearly colorless

Odor

Slight.

Melting point/freezing point

-123,95 °F (-86,64 °C) estimated

Boiling point or initial boiling point and boiling range

175,26 °F (79,59 °C) estimated

Flammability

Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)

1,8 % estimated

Explosive limit - upper (%)

11,4 % estimated

Flash point

399,9 °F (204,4 °C) Closed Cup

Auto-ignition temperature

941 °F (505 °C) estimated

Decomposition temperature

Not available.

pH

7 @ 5% solution

Kinematic viscosity

Not available.

Solubility

Solubility (water)

Not available.

Partition coefficient

Not available.

(n-octanol/water) (log value)

Vapor pressure	16,94 hPa estimated
Density and/or relative density	
Density	1,00 g/cm3 estimated
Vapor density	Not available.
Particle characteristics	Not available.

9.2. Other information

9.2.1. Information with regard to physical hazard classes No relevant additional information available.

9.2.2. Other safety characteristics

Specific gravity 1 estimated

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidizing agents. Alcohols. Amides. Amines. Ammonia. Caustics. Isocyanates. Phenols.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

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

Acute toxicity Not known.

Components	Species	Test Results
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)		
Acute		
Dermal		
LD50	Rat	1060 mg/kg
Oral		
LD50	Rat	> 1000 mg/kg
butanone; ethyl methyl ketone (CAS 78-93-3)		
Acute		
Dermal		
LD50	Rabbit	> 8000 mg/kg
Oral		
LD50	Rat	2300 - 3500 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory sensitization	May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.	
Carcinogenicity	Due to partial or complete lack of data the classification is not possible.	

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate (CAS 101-68-8)

IARC Monographs. Overall Evaluation of Carcinogenicity

4,4'-methylenediphenyl diisocyanate; 3 Not classifiable as to carcinogenicity to humans.
diphenylmethane4,4'-diisocyanate; [1]
2,2'-methylenediphenyl diisocyanate;
diphenylmethane2,2'-diisocyanate; [2]
o-(p-isocyanatobenzyl)phenyl isocyanate;
diphenylmethane-2,4'-diisocyanate; [3]
methylenediphenyl diisocyanate (CAS 101-68-8)

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

4,4'-methylenediphenyl diisocyanate; Carcinogenic, Category 2.
diphenylmethane4,4'-diisocyanate; [1]
2,2'-methylenediphenyl diisocyanate;
diphenylmethane2,2'-diisocyanate; [2]
o-(p-isocyanatobenzyl)phenyl isocyanate;
diphenylmethane-2,4'-diisocyanate; [3]
methylenediphenyl diisocyanate (CAS 101-68-8)

Reproductive toxicity Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information No information available.

11.2. Information on other hazards

Endocrine disrupting properties This mixture does not contain any substances having endocrine disrupting properties with respect to human health as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity Toxic to aquatic life with long lasting effects. Based on available data, the classification criteria are not met for hazardous to the aquatic environment, acute hazard.

12.2. Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

12.3. Bioaccumulative potential

Partition coefficient

n-octanol/water (log Kow)

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate;	4,75
isophorone di-isocyanate	
4,4'-methylenediphenyl diisocyanate;	5,22
diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2]	
o-(p-isocyanatobenzyl)phenyl isocyanate;	
diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocyanate	
butanone; ethyl methyl ketone	0,29

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

12.6. Endocrine disrupting properties This mixture does not contain any substances having endocrine disrupting properties with respect to the environment as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

12.7. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

12.8. Additional information

Estonia Dangerous substances in soil Data

butanone; ethyl methyl ketone (CAS 78-93-3)

Chemical pesticides (As the total sum of the active substances)
0,5 MG/KG

Chemical pesticides (As the total sum of the active substances) 20
MG/KG

Chemical pesticides (As the total sum of the active substances) 5
MG/KG

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
Hazard No. (ADR)	Not assigned.
Tunnel restriction code	Not assigned.
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

RID

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

ADN

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.
14.3. Transport hazard class(es)	
Class	Not assigned.
Subsidiary risk	-
14.4. Packing group	-
14.5. Environmental hazards	No.
14.6. Special precautions for user	Not assigned.

IATA

14.1. UN number	Not regulated as dangerous goods.
14.2. UN proper shipping name	Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group -

14.5. Environmental hazards No.

14.6. Special precautions for user Not assigned.

IMDG

14.1. UN number Not regulated as dangerous goods.

14.2. UN proper shipping name Not regulated as dangerous goods.

14.3. Transport hazard class(es)

Class Not assigned.

Subsidiary risk -

14.4. Packing group -

14.5. Environmental hazards

Marine pollutant No.

EmS Not assigned.

14.6. Special precautions for user Not assigned.

14.7. Maritime transport in bulk according to IMO instruments Not established.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulations**

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

UFI:

Austria: Q030-J0YE-9002-YQGX
Belgium: Q030-J0YE-9002-YQGX
Bulgaria: Q030-J0YE-9002-YQGX
Croatia: Q030-J0YE-9002-YQGX
Cyprus: Q030-J0YE-9002-YQGX
Czech Republic: Q030-J0YE-9002-YQGX
Denmark: Q030-J0YE-9002-YQGX
Estonia: Q030-J0YE-9002-YQGX
EU: Q030-J0YE-9002-YQGX
Finland: Q030-J0YE-9002-YQGX
France: Q030-J0YE-9002-YQGX
Germany: Q030-J0YE-9002-YQGX
Greece: Q030-J0YE-9002-YQGX
Hungary: Q030-J0YE-9002-YQGX
Iceland: Q030-J0YE-9002-YQGX
Ireland: Q030-J0YE-9002-YQGX
Italy: Q030-J0YE-9002-YQGX
Latvia: Q030-J0YE-9002-YQGX
Lithuania: Q030-J0YE-9002-YQGX
Luxembourg: Q030-J0YE-9002-YQGX
Malta: Q030-J0YE-9002-YQGX
Netherlands: Q030-J0YE-9002-YQGX
Norway: Q030-J0YE-9002-YQGX
Poland: Q030-J0YE-9002-YQGX
Portugal: Q030-J0YE-9002-YQGX
Romania: Q030-J0YE-9002-YQGX
Slovakia: Q030-J0YE-9002-YQGX
Slovenia: Q030-J0YE-9002-YQGX
Spain: Q030-J0YE-9002-YQGX
Sweden: Q030-J0YE-9002-YQGX

Authorizations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended

- Conditions of restriction given for the associated entry number should be considered

4,4'-methylenediphenyl diisocyanate; 56
diphenylmethane4,4'-diisocyanate; [1]
2,2'-methylenediphenyl diisocyanate;
diphenylmethane2,2'-diisocyanate; [2]
o-(p-isocyanatobenzyl)phenyl isocyanate;
diphenylmethane-2,4'-diisocyanate; [3]
methylenediphenyl diisocyanate (CAS 101-68-8)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

ANNEX 1, PART 1 Categories of dangerous substances
Hazard categories in accordance with Regulation (EC) No 1272/2008
- E2 Hazardous to the Aquatic Environment Chronic

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations

Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended. Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

France regulations

France INRS Table of Occupational Diseases

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; isophorone di-isocyanate (CAS 4098-71-9)	Affections professionnelles provoquées par les isocyanates organiques 62
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisocyanate; [1]	Affections professionnelles provoquées par les isocyanates organiques 62
2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2]	
o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3]	
methylenediphenyl diisocyanate (CAS 101-68-8)	

Product registration number

Austria	UFI: Q030-J0YE-9002-YQGX
Belgium	UFI: Q030-J0YE-9002-YQGX
Czech Republic	UFI: Q030-J0YE-9002-YQGX
Denmark	UFI: Q030-J0YE-9002-YQGX
European Union	UFI: Q030-J0YE-9002-YQGX
Finland	UFI: Q030-J0YE-9002-YQGX
France	UFI: Q030-J0YE-9002-YQGX
Germany	UFI: Q030-J0YE-9002-YQGX
Greece	UFI: Q030-J0YE-9002-YQGX
Hungary	UFI: Q030-J0YE-9002-YQGX
Italy	UFI: Q030-J0YE-9002-YQGX
Netherlands	UFI: Q030-J0YE-9002-YQGX
Norway	UFI: Q030-J0YE-9002-YQGX
Poland	UFI: Q030-J0YE-9002-YQGX
Portugal	UFI: Q030-J0YE-9002-YQGX
Slovakia	UFI: Q030-J0YE-9002-YQGX
Slovenia	UFI: Q030-J0YE-9002-YQGX
Spain	UFI: Q030-J0YE-9002-YQGX
Sweden	UFI: Q030-J0YE-9002-YQGX
Switzerland	UFI: Q030-J0YE-9002-YQGX

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information**List of abbreviations**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
 AGW: Occupational threshold limit value (Arbeitsplatzgrenzwert – Germany).
 CAS: Chemical Abstract Service.
 CEN: European Committee for Standardization.
 IATA: International Air Transport Association.
 IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
 IMDG: International Maritime Dangerous Goods.
 MAC: Maximum Allowed Concentration.
 MARPOL: International Convention for the Prevention of Pollution from Ships.
 PBT: Persistent, bioaccumulative and toxic.
 RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
 STEL: Short term exposure limit.
 TLV: Threshold Limit Value.
 TWA: Time Weighted Average.
 VLE: Exposure Limit Value.
 VME: Exposure Average Value.
 vPvB: Very persistent and very bioaccumulative.

References

Not available.

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any statements, which are not written out in full under sections 2 to 15

H225 Highly flammable liquid and vapor.
 H302 Harmful if swallowed.
 H312 Harmful in contact with skin.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H331 Toxic if inhaled.
 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.
H411 Toxic to aquatic life with long lasting effects.

Revision information

Training information

Disclaimer

None.

Follow training instructions when handling this material.

ITW Performance Polymers cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release.