SAFETY DATA SHEET

Version #: 07
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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® Flexane® High Performance Putty Resin
Registration number	-
Synonyms	None.
SKU#	6639N

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

Physical hazards		
Flammable liquids	Category 2	H225 - Highly flammable liquid and vapor.
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.
Carcinogenicity	Category 2	H351 - Suspected of causing cancer.
Specific target organ toxicity - single exposure	Category 3 narcotic effects	H336 - May cause drowsiness or dizziness.
Environmental hazards		
Hazardous to the aquatic environment, long-term aquatic hazard	Category 3	H412 - Harmful to aquatic life with long lasting effects.

2.2. Label elements

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

UFI:

Austria: TP45-F1A8-H00F-7SET
Belgium: TP45-F1A8-H00F-7SET
Bulgaria: TP45-F1A8-H00F-7SET
Croatia: TP45-F1A8-H00F-7SET
Cyprus: TP45-F1A8-H00F-7SET
Czech Republic: TP45-F1A8-H00F-7SET
Denmark: TP45-F1A8-H00F-7SET
Estonia: TP45-F1A8-H00F-7SET
EU: TP45-F1A8-H00F-7SET
Finland: TP45-F1A8-H00F-7SET
France: TP45-F1A8-H00F-7SET
Germany: TP45-F1A8-H00F-7SET
Greece: TP45-F1A8-H00F-7SET
Hungary: TP45-F1A8-H00F-7SET
Iceland: TP45-F1A8-H00F-7SET
Ireland: TP45-F1A8-H00F-7SET
Italy: TP45-F1A8-H00F-7SET
Latvia: TP45-F1A8-H00F-7SET
Lithuania: TP45-F1A8-H00F-7SET
Luxembourg: TP45-F1A8-H00F-7SET
Malta: TP45-F1A8-H00F-7SET
Netherlands: TP45-F1A8-H00F-7SET
Norway: TP45-F1A8-H00F-7SET
Poland: TP45-F1A8-H00F-7SET
Portugal: TP45-F1A8-H00F-7SET
Romania: TP45-F1A8-H00F-7SET
Slovakia: TP45-F1A8-H00F-7SET
Slovenia: TP45-F1A8-H00F-7SET
Spain: TP45-F1A8-H00F-7SET
Sweden: TP45-F1A8-H00F-7SET

Contains: 2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3], 4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-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 diisocy, butanone; ethyl methyl ketone, Polyurethane Prepolymer

Hazard pictograms

Signal word Danger

Hazard statements

H225	Highly flammable liquid and vapor.
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.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P235	Keep cool.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing 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 protective gloves/protective clothing/eye protection/face protection/hearing protection.
P284	Wear respiratory protection.

Response

P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P370 + P378	In case of fire: Use appropriate media to extinguish.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information 20% of the mixture consists of component(s) of unknown acute inhalation toxicity.

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
Polyurethane Prepolymer	70 - < 80	N/A -	-	-	
Classification: -					
butanone; ethyl methyl ketone	10 - 20	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					
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-	3 - < 5	128-37-0 204-881-4	-	-	
Classification: Acute Tox. 4;H302;(ATE: 890 mg/kg bw), Aquatic Acute 1;H400, Aquatic Chronic 2;H411					
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3]	1 - 5	584-84-9 209-544-5	-	615-006-00-4	
Classification: Acute Tox. 2;H330;(ATE: 0,5 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, Aquatic Chronic 3;H412					
Specific Concentration Limits: Resp. Sens. 1;H334: C ≥ 0.1 %					
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate	1 - 5	5124-30-1 225-863-2	-	615-009-00-0	
Classification: Acute Tox. 4;H302;(ATE: 1065 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					
Specific Concentration Limits: Resp. Sens. 1;H334: C ≥ 0.5 %, Skin Sens. 1;H317: C ≥ 0.5 %					

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
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 diisocy	1 - 5	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 %

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 Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. 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 May cause drowsiness or dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

4.3. Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards Highly flammable liquid and vapor.

5.1. Extinguishing media

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

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 Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. 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 In case of fire and/or explosion do not breathe fumes. 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

Avoid breathing 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. Wear appropriate protective equipment and clothing during clean-up. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Ventilate closed spaces before entering them. 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

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. 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. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. 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. Put material in suitable, covered, labeled containers.

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

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. 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. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. 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
- P5a, b or c FLAMMABLE LIQUIDS (Lower-tier requirements = 50 tons; Upper-tier requirements = 200 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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	MAK	0,035 mg/m3
		0,005 ppm

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

Components	Type	Value
	STEL	0,14 mg/m3
		0,02 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	Ceiling	0,054 mg/m3
		0,005 ppm
	MAK	0,054 mg/m3
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	Ceiling	0,1 mg/m3
		0,01 ppm
	MAK	0,05 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	MAK	295 mg/m3
		100 ppm
	STEL	590 mg/m3
		200 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	MAK	10 mg/m3

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	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,14 mg/m3	
		0,02 ppm	
	TWA	0,037 mg/m3	
		0,005 ppm	
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	TWA	0,055 mg/m3	
		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	Form
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 diisocy (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	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	2 mg/m3	Vapor and aerosol.

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,15 mg/m3
	TWA	0,04 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 diisocy (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
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	STEL	50 mg/m3
	TWA	10 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
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	MAC	10 mg/m3

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,014 mg/m3
		0,002 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 diisocy (CAS 101-68-8)	TWA	0,2 mg/m3
		0,02 ppm

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)

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

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)

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Ceiling	0,1 mg/m3
	TWA	0,05 mg/m3

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)

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 diisocy (CAS 101-68-8)	Ceiling	0,1 mg/m3
	TWA	0,05 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	Ceiling	900 mg/m3
	TWA	600 mg/m3

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TLV	0,035 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	TLV	0,054 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 diisocy (CAS 101-68-8)	TLV	0,05 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	TLV	145 mg/m3
		50 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TLV	10 mg/m3

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances (Regulation No. 105/2001, Annex), as amended

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,07 mg/m3
		0,01 ppm
	TWA	0,04 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	STEL	0,01 ppm
	TWA	0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	STEL	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

Finland. HTP-arvot, App 3., Binding Limit Values, Social Affairs and Ministry of Health

Components	Type	Value
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	STEL	0,035 mg/m3
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	STEL	0,035 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	300 mg/m3

Finland. HTP-arvot, App 3., Binding Limit Values, Social Affairs and Ministry of Health

Components	Type	Value
		100 ppm
	TWA	60 mg/m3
		20 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	STEL	20 mg/m3
	TWA	10 mg/m3

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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	VLE	0,16 mg/m3
Regulatory status: Indicative limit (VL)		
		0,02 ppm
Regulatory status: Indicative limit (VL)		
	VME	0,08 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 diisocy (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)		
butanone; ethyl methyl ketone (CAS 78-93-3)	VLE	900 mg/m3
Regulatory status: Regulatory binding (VRC)		
		300 ppm
Regulatory status: Regulatory binding (VRC)		

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

Components	Type	Value
	VME	600 mg/m3
Regulatory status: Regulatory binding (VRC)		
		200 ppm
Regulatory status: Regulatory binding (VRC)		
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	VME	10 mg/m3
Regulatory status: Indicative limit (VL)		

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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,007 mg/m3	Vapor and aerosol.
		0,001 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 diisocy (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	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3	Vapor and aerosol, inhalable fraction.

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

Components	Type	Value	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	AGW	0,035 mg/m3	Vapor and aerosol.
		0,005 ppm	Vapor and aerosol.

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

Components	Type	Value	Form
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 diisocy (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	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	AGW	10 mg/m3	Inhalable fraction.

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,14 mg/m3
		0,02 ppm
	TWA	0,07 mg/m3
		0,01 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	STEL	0,11 mg/m3
		0,01 ppm
	TWA	0,11 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 diisocy (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

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

Components	Type	Value
	TWA	600 mg/m3
		200 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,007 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 diisocy (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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,07 mg/m3
		0,01 ppm
	TWA	0,04 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	TWA	0,054 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 diisocy (CAS 101-68-8)	STEL	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	145 mg/m3
		50 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3

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

Components	Type	Value	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,07 mg/m3	
		0,003 ppm	Inhalable fraction and vapor.
	TWA	0,02 mg/m3	
		0,001 ppm	Inhalable fraction and vapor.
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 diisocy (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	
		300 ppm	
	TWA	600 mg/m3	
		200 ppm	

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

Components	Type	Value	Form
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	2 mg/m3	

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

Components	Type	Value	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,005 ppm	Inhalable fraction and vapor.
	TWA	0,001 ppm	Inhalable fraction and vapor.
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	TWA	0,005 ppm	
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (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	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	2 mg/m3	Inhalable fraction and vapor.

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,05 mg/m3
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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Ceiling	0,07 mg/m3
		0,01 ppm
	TWA	0,04 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	Ceiling	0,01 ppm
	TWA	0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (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/m3
		300 ppm
	TWA	600 mg/m3
		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/m3
		300 ppm
	TWA	600 mg/m3
		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/m3
	TWA	590 mg/m3

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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,01 ppm
	TLV	0,035 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	STEL	0,01 ppm
	TLV	0,05 mg/m3
		0,005 ppm
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	STEL	0,01 ppm
	TLV	0,05 mg/m3
		0,005 ppm
butanone; ethyl methyl ketone (CAS 78-93-3)	TLV	220 mg/m3
		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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,021 mg/m3
	TWA	0,007 mg/m3

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 diisocy (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
		300 ppm
	TWA	600 mg/m3
		200 ppm

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

Components	Type	Value	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,02 ppm	
	TWA	0,005 ppm	
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	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 diisocy (CAS 101-68-8)	TWA	0,005 ppm	
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	300 ppm	
	TWA	200 ppm	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	2 mg/m3	Inhalable fraction and vapor.

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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,15 mg/m3
		0,02 ppm
	TWA	0,07 mg/m3
		0,009 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 diisocy (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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,014 mg/m3
		0,002 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 diisocy (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

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
	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	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	TWA	0,035 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 diisocy (CAS 101-68-8)	TWA	0,05 mg/m3	
		0,005 ppm	
butanone; ethyl methyl ketone (CAS 78-93-3)	TWA	600 mg/m3	
		200 ppm	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3	Inhalable fraction.

Spain. OELs. INSST, Límites de Exposición Profesional Para Agentes Químicos, Table 1-Valores Límites Ambientales (VLAs)

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,14 mg/m3
		0,02 ppm
	TWA	0,036 mg/m3
		0,005 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	TWA	0,055 mg/m3
		0,005 ppm

Spain. OELs. INSST, Límites de Exposición Profesional Para Agentes Químicos, Table 1-Valores Límites Ambientales (VLAs)

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 diisocy (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
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Ceiling	0,04 mg/m3
		0,005 ppm
	TWA	0,014 mg/m3
		0,002 ppm
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	Ceiling	0,005 ppm
	TWA	0,002 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 diisocy (CAS 101-68-8)	Ceiling	0,05 mg/m3
		0,005 ppm
	TWA	0,03 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
butanone; ethyl methyl ketone (CAS 78-93-3)	Ceiling	900 mg/m3
		300 ppm
	TWA	150 mg/m3
		50 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz: Aktuelle MAK-Werte

Components	Type	Value	Form
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	STEL	0,02 mg/m3	
	TWA	0,02 mg/m3	
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	STEL	0,02 mg/m3	
	TWA	0,02 mg/m3	
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (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	
		200 ppm	
	TWA	590 mg/m3	
		200 ppm	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	STEL	40 mg/m3	Vapor and aerosol, inhalable.
	TWA	10 mg/m3	Vapor and aerosol, inhalable.

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

Components	Type	Value
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	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'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	STEL	0,07 mg/m3
	TWA	0,02 mg/m3
4,4'-methylenediphenyl diisocyanate; diphenylmethane4,4'-diisoc yanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisoc yanate; [2] o-(p-isocyanatobenzyl)phen yl isocyanate; diphenylmethane-2,4'-diisoc yanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	STEL	0,07 mg/m3
	TWA	0,02 mg/m3
butanone; ethyl methyl ketone (CAS 78-93-3)	STEL	899 mg/m3
		300 ppm
	TWA	600 mg/m3
		200 ppm
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	TWA	10 mg/m3

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/m3
		300 ppm
	TWA	600 mg/m3
		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	Méthyléthylcéto ne	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 diisocy (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 diisocy (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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	1 umol/mol	Isocyanate-derived diamine	Creatinine in urine	*
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di -isocyanate (CAS 5124-30-1)	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
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 diisocy (CAS 101-68-8)	1 umol/mol	Isocyanate-derived diamine	Creatinine in urine	*
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.

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 diisocy (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 diisocy (CAS 101-68-8)	Can be absorbed through the skin.
butanone; ethyl methyl ketone (CAS 78-93-3)	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

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.

Italy OELs: Skin designation

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Danger of cutaneous absorption

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 diisocy (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; diphenylmethane4,4'-diisocyanate; [1] 2,2'-methylenediphenyl diisocyanate; diphenylmethane2,2'-diisocyanate; [2] o-(p-isocyanatobenzyl)phenyl isocyanate; diphenylmethane-2,4'-diisocyanate; [3] methylenediphenyl diisocy (CAS 101-68-8)	Can be absorbed through the skin.
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: Explosion-proof general and local exhaust ventilation. 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. 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: Observe any medical surveillance requirements. When using do not smoke. 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	Colorless to light yellow.
Odor	Sweet.
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	24,0 °F (-4,4 °C)

Auto-ignition temperature	941 °F (505 °C) estimated
Decomposition temperature	Not available.
pH	Not available.
Kinematic viscosity	Not available.
Solubility	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water) (log value)	Not available.
Vapor pressure	120,8 hPa estimated
Density and/or relative density	
Density	0,99 g/cm3
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

Percent volatile	20 %
pH in aqueous solution	5 @ 5% solution
Specific gravity	0,99

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	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidizing agents. Amines. Ammonia. Caustics. Isocyanates.
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 drowsiness or dizziness. Headache. Nausea, vomiting. 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	May cause drowsiness or dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. 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
2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)		
Acute		
Oral		
LD50	Rat	5800 mg/kg
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)		
Acute		
Dermal		
LD50	Rabbit	> 10000 mg/kg

Components	Species	Test Results
Oral		
LD50	Rat	1065 mg/kg

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

Acute		
Dermal		
LD50	Rabbit	> 8000 mg/kg
Oral		
LD50	Rat	2300 - 3500 mg/kg

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)

Acute		
Dermal		
LD50	Rat	> 2000 mg/kg
Oral		
LD50	Rat	890 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 Suspected of causing cancer.

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

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)
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 diisocy (CAS 101-68-8)

IARC Monographs. Overall Evaluation of Carcinogenicity

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	2B Possibly carcinogenic to humans.
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 diisocy (CAS 101-68-8)	3 Not classifiable as to carcinogenicity to humans.
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS 128-37-0)	3 Not classifiable as to carcinogenicity to humans.

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

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Carcinogenic, Category 2.
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 diisocy (CAS 101-68-8)	Carcinogenic, Category 2.

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

Specific target organ toxicity - single exposure May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure Due to partial or complete lack of data the classification is not possible.

Aspiration hazard Not likely, due to the form of the product.

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 Harmful 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)

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3]	3,74
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 diisocy	5,22
butanone; ethyl methyl ketone	0,29
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-	5,1

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	UN1866
14.2. UN proper shipping name	RESIN SOLUTION, flammable, Limited Quantity
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Hazard No. (ADR)	30
Tunnel restriction code	D/E
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN1866
14.2. UN proper shipping name	RESIN SOLUTION, flammable, Limited Quantity
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN1866
14.2. UN proper shipping name	RESIN SOLUTION, flammable
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number	UN1866
14.2. UN proper shipping name	Resin solution flammable, Limited Quantity
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
14.4. Packing group	III
14.5. Environmental hazards	No.
ERG Code	3L
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

14.1. UN number	UN1866
14.2. UN proper shipping name	RESIN SOLUTION flammable, Limited Quantity
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
14.4. Packing group	III

14.5. Environmental hazards

Marine pollutant No.

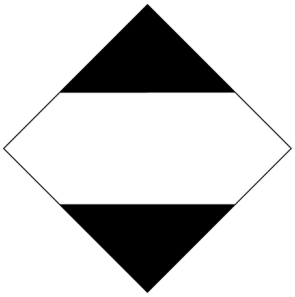
EmS F-E, S-E

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

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

ADN

ADR; IMDG; RID



IATA

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: TP45-F1A8-H00F-7SET
Belgium: TP45-F1A8-H00F-7SET
Bulgaria: TP45-F1A8-H00F-7SET
Croatia: TP45-F1A8-H00F-7SET
Cyprus: TP45-F1A8-H00F-7SET
Czech Republic: TP45-F1A8-H00F-7SET
Denmark: TP45-F1A8-H00F-7SET
Estonia: TP45-F1A8-H00F-7SET
EU: TP45-F1A8-H00F-7SET
Finland: TP45-F1A8-H00F-7SET
France: TP45-F1A8-H00F-7SET
Germany: TP45-F1A8-H00F-7SET
Greece: TP45-F1A8-H00F-7SET
Hungary: TP45-F1A8-H00F-7SET
Iceland: TP45-F1A8-H00F-7SET
Ireland: TP45-F1A8-H00F-7SET
Italy: TP45-F1A8-H00F-7SET
Latvia: TP45-F1A8-H00F-7SET
Lithuania: TP45-F1A8-H00F-7SET
Luxembourg: TP45-F1A8-H00F-7SET
Malta: TP45-F1A8-H00F-7SET
Netherlands: TP45-F1A8-H00F-7SET
Norway: TP45-F1A8-H00F-7SET
Poland: TP45-F1A8-H00F-7SET
Portugal: TP45-F1A8-H00F-7SET
Romania: TP45-F1A8-H00F-7SET
Slovakia: TP45-F1A8-H00F-7SET
Slovenia: TP45-F1A8-H00F-7SET
Spain: TP45-F1A8-H00F-7SET
Sweden: TP45-F1A8-H00F-7SET

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

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
- P5a, b or c FLAMMABLE LIQUIDS

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

According to Directive 92/85/EEC as amended, pregnant women should not work with the product, if there is the least risk of exposure.

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

2-methyl-m-phenylene diisocyanate; toluene-2,4-di-isocyanate; [1] 4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate; [2] m-tolylidene diisocyanate; toluene-diisocyanate [3] (CAS 584-84-9)	Affections professionnelles provoquées par les isocyanates organiques 62
4,4'-methylenedi(cyclohexyl isocyanate); dicyclohexylmethane-4,4'-di-isocyanate (CAS 5124-30-1)	Affections professionnelles provoquées par les isocyanates organiques 62

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 diisocy (CAS 101-68-8)	Affections professionnelles provoquées par les isocyanates organiques 62
butanone; ethyl methyl ketone (CAS 78-93-3)	Affections engendrées par les solvants organiques liquides à usage professionnel : hydrocarbures liquides aliphatiques ou cycliques saturés ou insaturés et leurs mélanges; hydrocarbures halogénés liquides; dérivés nitrés des hydrocarbures aliphatiques; al 84

Product registration number

Austria	UFI: TP45-F1A8-H00F-7SET
Belgium	UFI: TP45-F1A8-H00F-7SET
Czech Republic	UFI: TP45-F1A8-H00F-7SET
Denmark	UFI: TP45-F1A8-H00F-7SET
European Union	UFI: TP45-F1A8-H00F-7SET
Finland	UFI: TP45-F1A8-H00F-7SET
France	UFI: TP45-F1A8-H00F-7SET
Germany	UFI: TP45-F1A8-H00F-7SET
Greece	UFI: TP45-F1A8-H00F-7SET
Hungary	UFI: TP45-F1A8-H00F-7SET
Italy	UFI: TP45-F1A8-H00F-7SET
Netherlands	UFI: TP45-F1A8-H00F-7SET
Norway	UFI: TP45-F1A8-H00F-7SET
Poland	UFI: TP45-F1A8-H00F-7SET
Portugal	UFI: TP45-F1A8-H00F-7SET
Slovakia	UFI: TP45-F1A8-H00F-7SET
Slovenia	UFI: TP45-F1A8-H00F-7SET
Spain	UFI: TP45-F1A8-H00F-7SET
Sweden	UFI: TP45-F1A8-H00F-7SET
Switzerland	UFI: TP45-F1A8-H00F-7SET

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.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.
H330 Fatal if inhaled.
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.
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

Revision information Physical & Chemical Properties: Multiple Properties

Training information Follow training instructions when handling this material.

Disclaimer 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.