SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 as amended by Commission Regulation (EU) 2020/878 and Regulation (EC) No. 1272/2008

Issuing Date 16-Mar-2023 **Revision Date** 16-Mar-2023 **Revision Number** 1

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

1.1. Product identifier

Product Code(s) DHD

Product Name Signature Series Max-Duty Synthetic SAE 5W-30 Diesel Oil

Synonyms None

Pure substance/mixture Mixture

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

Recommended use Diesel oil

Uses advised against Avoid formation of mists

1.3. Details of the supplier of the safety data sheet

Supplier
AMSOIL INC.
One AMSOIL Center
Superior, WI 54880, USA
T: +1 715-392-7101

For further information, please contact
E-mail address compliance@amsoil.com

1.4. Emergency telephone number

Emergency telephone CHEMTREC International: +1 703-741-5970
CHEMTREC (Poland): 48-223988029

Emergency telephone - §45 - (EC)1272/2008	
Europe	**112**

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Chronic aquatic toxicity	Category 3 - (H412)

2.2. Label elements

Hazard statements
H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)
P273 - Avoid release to the environment
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown aquatic toxicity Contains 0 % of components with unknown hazards to the aquatic environment.

2.3. Other hazards

Causes mild skin irritation. Harmful to aquatic life. The product does not contain any substance(s) classified as PBT or vPvB.

Endocrine Disruptor Information Contains a known or suspected endocrine disruptor.

Chemical name	EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances of Very High Concern (SVHC) for Authorisation	EU - REACH (1907/2006) - Endocrine Disruptor Assessment List of Substances
Phenol, dodecyl-, branched	Endocrine disrupting properties	Endocrine disrupting properties

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical name	Weight-%	REACH registration number	EC No (EU Index No)	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Phenol, dodecyl-, branched 121158-58-5	0.1-0.2	No data available	(604-092-00-9) 310-154-3	Skin Corr. 1C (H314) Eye Dam. 1 (H318) Repr. 1B (H360F) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	10	10
2,6-Di-tert-butyl-p-cresol 128-37-0	0.1-0.5	No data available	204-881-4	Aquatic Chronic 1 (H410)	-	1	1
2-methylpropan-1-ol 78-83-1	< 0.01	No data available	(603-108-00-1) 201-148-0	Skin Irrit. 2 (H315) Eye Dam. 1 (H318) STOT SE 3 (H335) STOT SE 3 (H336) Flam. Liq. 3 (H226)	-	-	-
Nonane 111-84-2	< 0.001	No data available	203-913-4	Flam. Liq. 3 (H226) Skin Irrit. 2 (H315) STOT SE 3 (H336) Asp. Tox. 1 (H304)	-	-	-

				Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)			
Toluene 108-88-3	< 0.001	-	(601-021-00-3) 203-625-9	Skin Irrit. 2 (H315) Repr. 2 (H361d) STOT SE 3 (H336) STOT RE 2 (H373) Asp. Tox. 1 (H304) Flam. Liq. 2 (H225)	-	-	-
Naphthalene 91-20-3	< 0.001	No data available	(601-052-00-2) 202-049-5	Acute Tox. 4 (H302) Carc. 2 (H351) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-	-	-
Ethylene oxide 75-21-8	< 0.001	No data available	(603-023-00-X) 200-849-9	Acute Tox. 3 (H301) Acute Tox. 3 (H331) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Muta. 1B (H340) Carc. 1B (H350) STOT SE 3 (H335) Flam. Gas 1 (H220) Press. Gas	-	-	-
Ethylbenzene 100-41-4	< 0.001	No data available	(601-023-00-4) 202-849-4	Acute Tox. 4 (H332) STOT RE 2 (H373) Asp. Tox. 1 (H304) Flam. Liq. 2 (H225)	-	-	-
Benzene 71-43-2	< 0.001	-	(601-020-00-8) 200-753-7	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Muta. 1B (H340) Carc. 1A (H350) STOT RE 1 (H372)	-	-	-

				Asp. Tox. 1 (H304) Flam. Liq. 2 (H225)			

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate
If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Phenol, dodecyl-, branched 121158-58-5	No data available	15000	No data available	No data available	No data available
2,6-Di-tert-butyl-p-cresol 128-37-0	2932.93	2002	No data available	No data available	No data available
2-methylpropan-1-ol 78-83-1	2460	3400	27.2973	No data available	No data available
Nonane 111-84-2	No data available	No data available	No data available	16.7853	No data available
Toluene 108-88-3	2600	12000	12.5	No data available	No data available
Naphthalene 91-20-3	1110	1120	0.4004	No data available	No data available
Ethylene oxide 75-21-8	100 + 72	No data available	No data available	No data available	700 + 800
Ethylbenzene 100-41-4	3500	15400	17.4	No data available	No data available
Benzene 71-43-2	810	8208.2	44.66	No data available	No data available

+ This value is the harmonised acute toxicity estimate (ATE) listed in CLP Annex VI, Part 3. This harmonised ATE value must be used when calculating the acute toxicity estimate (ATEmix) for classifying a mixture containing the listed substance

This product contains one or more candidate substance(s) of very high concern (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Chemical name	CAS No	SVHC candidates
Phenol, dodecyl-, branched	121158-58-5	X

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Get medical attention immediately if symptoms occur. Show this safety data sheet to the doctor in attendance.

Inhalation Remove person to fresh air and keep comfortable for breathing.

Eye contact Rinse thoroughly with plenty of water, also under the eyelids. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact Wash skin with soap and water. Take off contaminated clothing. Get medical attention if irritation develops and persists.

Ingestion	Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.
Self-protection of the first aider	Wear personal protective clothing (see section 8).

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

Symptoms	Prolonged contact may cause redness and irritation. Prolonged contact may cause redness and irritation. May cause gastrointestinal discomfort if consumed in large amounts. May cause temporary eye irritation. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation in susceptible persons. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness and difficulty breathing.

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

Note to doctors	Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Containers can burst or explode when heated, due to excessive pressure build-up. Thermal decomposition can lead to release of irritating gases and vapours.
Hazardous combustion products	Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

5.3. Advice for firefighters

Specific/special fire-fighting measures	Fires need to be assessed to determine appropriate protocols and safety measures for firefighting, including establishing safe zones, extinguishing media to be used, firefighter protection, and actions to control or extinguish the fire.
Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Ensure adequate ventilation. Use personal protective equipment as required. See section 8 for more information.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections For additional information see: Section 8: Exposure controls/personal protection; Section 12: Ecological information; Section 13: Disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with used product. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse. Wash thoroughly after handling.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Do not reuse empty containers. Store away from incompatible materials. See section 10 for more information. Protect from physical damage.

Storage class (TRGS 510) LGK 10.

7.3. Specific end use(s)

Specific use(s). The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits Under conditions which may generate mists, the following exposure limits are recommended: Long-term exposure limit (8-hour TWA): 5 mg/m³. Short-term exposure limit (15-minute): 10 mg/m³.

Chemical name	European Union	Austria	Belgium	Bulgaria	Croatia
2,6-Di-tert-butyl-p-cresol 128-37-0	-	TWA: 10 mg/m³	TWA: 2 mg/m³	STEL: 50 mg/m³ TWA: 10 mg/m³	TWA: 10 mg/m³
2-methylpropan-1-ol 78-83-1	-	TWA: 50 ppm TWA: 150 mg/m³ STEL 200 ppm STEL 600 mg/m³	TWA: 50 ppm TWA: 154 mg/m³	-	TWA: 50 ppm TWA: 154 mg/m³ STEL: 75 ppm STEL: 231 mg/m³ *
Nonane 111-84-2	-	-	TWA: 200 ppm TWA: 1065 mg/m³	-	-
Toluene 108-88-3	TWA: 50 ppm TWA: 192 mg/m³ *	TWA: 50 ppm TWA: 190 mg/m³ STEL 100 ppm STEL 380 mg/m³ H*	TWA: 20 ppm TWA: 77 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ D*	STEL: 100 ppm STEL: 384.0 mg/m³ TWA: 50 ppm TWA: 192.0 mg/m³ K*	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ *

Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ H*	TWA: 10 ppm TWA: 53 mg/m³ STEL: 15 ppm STEL: 80 mg/m³ D*	STEL: 75.0 mg/m³ TWA: 50.0 mg/m³	TWA: 10 ppm TWA: 50 mg/m³
Ethylene oxide 75-21-8	TWA: 1.8 mg/m³ TWA: 1 ppm *	H*	TWA: 1 ppm TWA: 1.8 mg/m³ D*	TWA: 1.8 mg/m³ TWA: 1 ppm K*	TWA: 1 ppm TWA: 1.8 mg/m³ *
Ethylbenzene 100-41-4	TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ *	TWA: 100 ppm TWA: 440 mg/m³ STEL 200 ppm STEL 880 mg/m³ H*	TWA: 20 ppm TWA: 87 mg/m³ STEL: 125 ppm STEL: 551 mg/m³ D*	STEL: 545 mg/m³ TWA: 435 mg/m³ K*	TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ *
Benzene 71-43-2	TWA: 0.2 ppm TWA: 0.66 mg/m³ *	H*	TWA: 1 ppm TWA: 3.25 mg/m³ D*	TWA: 3.25 mg/m³ TWA: 1 ppm K*	TWA: 1 ppm TWA: 3.25 mg/m³ *
Chemical name	Cyprus	Czech Republic	Denmark	Estonia	Finland
2,6-Di-tert-butyl-p-cresol 128-37-0	-	-	TWA: 10 mg/m³ STEL: 20 mg/m³	-	TWA: 10 mg/m³ STEL: 20 mg/m³
2-methylpropan-1-ol 78-83-1	-	TWA: 300 mg/m³ Ceiling: 600 mg/m³ D*	Ceiling: 50 ppm Ceiling: 150 mg/m³ H*	TWA: 50 ppm TWA: 150 mg/m³	TWA: 150 mg/m³ TWA: 50 ppm STEL: 75 ppm STEL: 230 mg/m³ iho*
Nonane 111-84-2	-	-	TWA: 200 ppm TWA: 1050 mg/m³ STEL: 400 ppm STEL: 2100 mg/m³	TWA: 150 ppm TWA: 800 mg/m³ STEL: 200 ppm STEL: 1100 mg/m³	TWA: 200 ppm TWA: 1100 mg/m³ STEL: 250 ppm STEL: 1300 mg/m³
Toluene 108-88-3	* STEL: 100 ppm STEL: 384 mg/m³ TWA: 50 ppm TWA: 192 mg/m³	TWA: 200 mg/m³ Ceiling: 500 mg/m³ D*	TWA: 25 ppm TWA: 94 mg/m³ H* STEL: 384 mg/m³ STEL: 100 ppm	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ A*	TWA: 25 ppm TWA: 81 mg/m³ STEL: 100 ppm STEL: 380 mg/m³ iho*
Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³	TWA: 50 mg/m³ Ceiling: 100 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ STEL: 20 ppm STEL: 100 mg/m³	TWA: 10 ppm TWA: 50 mg/m³	TWA: 1 ppm TWA: 5 mg/m³ STEL: 2 ppm STEL: 10 mg/m³
Ethylene oxide 75-21-8	* TWA: 1.8 mg/m³ TWA: 1 ppm	TWA: 1 mg/m³ Ceiling: 3 mg/m³ D*	TWA: 1 ppm TWA: 1.8 mg/m³ H* STEL: 2 ppm STEL: 3.6 mg/m³	TWA: 1 ppm TWA: 1.8 mg/m³ STEL: 5 ppm STEL: 9 mg/m³ A*	TWA: 1 ppm TWA: 1.8 mg/m³ iho*
Ethylbenzene 100-41-4	* STEL: 200 ppm STEL: 884 mg/m³ TWA: 100 ppm TWA: 442 mg/m³	TWA: 200 mg/m³ Ceiling: 500 mg/m³ D*	TWA: 50 ppm TWA: 217 mg/m³ H* STEL: 434 mg/m³ STEL: 100 ppm	S+ TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ A*	TWA: 50 ppm TWA: 220 mg/m³ STEL: 200 ppm STEL: 880 mg/m³ iho*
Benzene 71-43-2	* TWA: 1 ppm TWA: 3.25 mg/m³	TWA: 3 mg/m³ Ceiling: 10 mg/m³ D*	TWA: 0.5 ppm TWA: 1.6 mg/m³ H* STEL: 1 ppm STEL: 3.2 mg/m³	TWA: 0.5 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 9 mg/m³ A*	TWA: 1 ppm TWA: 3.25 mg/m³ iho*
Chemical name	France	Germany TRGS	Germany DFG	Greece	Hungary
2,6-Di-tert-butyl-p-cresol 128-37-0	TWA: 10 mg/m³	TWA: 10 mg/m³	TWA: 10 mg/m³ Peak: 40 mg/m³	TWA: 10 mg/m³	-
2-methylpropan-1-ol 78-83-1	TWA: 50 ppm TWA: 150 mg/m³	TWA: 100 ppm TWA: 310 mg/m³	TWA: 100 ppm TWA: 310 mg/m³ Peak: 100 ppm	TWA: 100 ppm TWA: 300 mg/m³ STEL: 100 ppm	-

			Peak: 310 mg/m³	STEL: 300 mg/m³	
Nonane 111-84-2	TWA: 200 ppm TWA: 1050 mg/m³ STEL: 1500 mg/m³	-	-	-	-
Toluene 108-88-3	TWA: 20 ppm TWA: 76.8 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ *	TWA: 50 ppm TWA: 190 mg/m³ H*	TWA: 50 ppm TWA: 190 mg/m³ Peak: 100 ppm Peak: 380 mg/m³ *	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ *	TWA: 190 mg/m³ STEL: 380 mg/m³ b*
Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³	TWA: 0.4 ppm TWA: 2 mg/m³ H*	*	TWA: 10 ppm TWA: 50 mg/m³	TWA: 50 mg/m³
Ethylene oxide 75-21-8	TWA: 1 ppm TWA: 1.8 mg/m³ *	H*	*	TWA: 1 ppm TWA: 1.8 mg/m³ *	TWA: 1.8 mg/m³ sz+ b*
Ethylbenzene 100-41-4	TWA: 20 ppm TWA: 88.4 mg/m³ STEL: 100 ppm STEL: 442 mg/m³ *	TWA: 20 ppm TWA: 88 mg/m³ H*	TWA: 20 ppm TWA: 88 mg/m³ Peak: 40 ppm Peak: 176 mg/m³ *	TWA: 100 ppm TWA: 435 mg/m³ STEL: 125 ppm STEL: 545 mg/m³	TWA: 442 mg/m³ STEL: 884 mg/m³ b*
Benzene 71-43-2	TWA: 1 ppm TWA: 3.25 mg/m³ STEL: 1500 mg/m³ *	H*	*	TWA: 3.25 mg/m³ TWA: 1.0 ppm *	TWA: 3.25 mg/m³ b*
Chemical name	Ireland	Italy MDLPS	Italy AIDII	Latvia	Lithuania
2,6-Di-tert-butyl-p-cresol 128-37-0	TWA: 2 mg/m³ STEL: 6 mg/m³	-	TWA: 2 mg/m³	-	-
2-methylpropan-1-ol 78-83-1	TWA: 150 mg/m³ TWA: 50 ppm STEL: 225 mg/m³ STEL: 75 ppm	-	TWA: 50 ppm TWA: 152 mg/m³	TWA: 10 mg/m³	O* TWA: 10 mg/m³
Nonane 111-84-2	TWA: 200 ppm TWA: 1050 mg/m³ STEL: 600 ppm STEL: 3150 mg/m³	-	TWA: 200 ppm TWA: 1049 mg/m³	TWA: 100 mg/m³ STEL: 300 mg/m³	TWA: 150 ppm TWA: 800 mg/m³ STEL: 200 ppm STEL: 1100 mg/m³
Toluene 108-88-3	TWA: 192 mg/m³ TWA: 50 ppm STEL: 384 mg/m³ STEL: 100 ppm Sk*	TWA: 50 ppm TWA: 192 mg/m³ cute*	TWA: 20 ppm TWA: 75.4 mg/m³	TWA: 14 ppm TWA: 50 mg/m³ STEL: 40 ppm STEL: 150 mg/m³ Ada*	O* TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³
Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³ STEL: 30 ppm STEL: 150 mg/m³	-	TWA: 10 ppm TWA: 52 mg/m³ cute*	TWA: 10 ppm TWA: 50 mg/m³	TWA: 10 ppm TWA: 50 mg/m³
Ethylene oxide 75-21-8	TWA: 1 ppm TWA: 1.8 mg/m³ STEL: 3 ppm STEL: 5.4 mg/m³ Sk*	TWA: 1.8 mg/m³ TWA: 1 ppm cute*	TWA: 1 ppm TWA: 1.8 mg/m³	TWA: 1 mg/m³ TWA: 0.55 ppm Ada*	O* TWA: 1 ppm TWA: 1.8 mg/m³ STEL: 5 ppm STEL: 9 mg/m³
Ethylbenzene 100-41-4	TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ Sk*	TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ cute*	TWA: 20 ppm TWA: 87 mg/m³	TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³ Ada*	O* TWA: 100 ppm TWA: 442 mg/m³ STEL: 200 ppm STEL: 884 mg/m³
Benzene 71-43-2	TWA: 1 ppm TWA: 3.25 mg/m³ STEL: 3 ppm STEL: 9.75 mg/m³ Sk*	TWA: 3.25 mg/m³ TWA: 1 ppm cute*	TWA: 0.5 ppm TWA: 1.6 mg/m³ STEL: 2.5 ppm STEL: 8 mg/m³ cute*	TWA: 1 ppm TWA: 3.25 mg/m³ Ada*	O* TWA: 1 ppm TWA: 3.25 mg/m³ STEL: 6 ppm STEL: 19 mg/m³

Chemical name	Luxembourg	Malta	Netherlands	Norway	Poland
2-methylpropan-1-ol 78-83-1	-	-	-	Ceiling: 25 ppm Ceiling: 75 mg/m³ H*	STEL: 200 mg/m³ TWA: 100 mg/m³ skóra*
Nonane 111-84-2	-	-	-	TWA: 100 ppm TWA: 525 mg/m³ STEL: 150 ppm STEL: 656.25 mg/m³	-
Toluene 108-88-3	Peau* STEL: 100 ppm STEL: 384 mg/m³ TWA: 50 ppm TWA: 192 mg/m³	skin* STEL: 100 ppm STEL: 384 mg/m³ TWA: 50 ppm TWA: 192 mg/m³	TWA: 150 mg/m³ STEL: 384 mg/m³	TWA: 25 ppm TWA: 94 mg/m³ STEL: 37.5 ppm STEL: 141 mg/m³ H*	STEL: 200 mg/m³ TWA: 100 mg/m³ skóra*
Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³	TWA: 10 ppm TWA: 50 mg/m³	TWA: 50 mg/m³ STEL: 80 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ STEL: 20 ppm STEL: 75 mg/m³	STEL: 50 mg/m³ TWA: 20 mg/m³ skóra*
Ethylene oxide 75-21-8	-	-	TWA: 0.84 mg/m³ H*	TWA: 1 ppm TWA: 1.8 mg/m³ STEL: 3 ppm STEL: 3.6 mg/m³ H*	TWA: 1 mg/m³ skóra*
Ethylbenzene 100-41-4	Peau* STEL: 200 ppm STEL: 884 mg/m³ TWA: 100 ppm TWA: 442 mg/m³	skin* STEL: 200 ppm STEL: 884 mg/m³ TWA: 100 ppm TWA: 442 mg/m³	TWA: 215 mg/m³ STEL: 430 mg/m³ H*	TWA: 5 ppm TWA: 20 mg/m³ STEL: 10 ppm STEL: 30 mg/m³ H*	STEL: 400 mg/m³ TWA: 200 mg/m³ skóra*
Benzene 71-43-2	-	-	TWA: 0.7 mg/m³ H*	TWA: 0.2 ppm TWA: 0.66 mg/m³ STEL: 0.6 ppm STEL: 1.98 mg/m³ H*	TWA: 1.6 mg/m³ skóra*

Chemical name	Portugal	Romania	Slovakia	Slovenia	Spain
2,6-Di-tert-butyl-p-cresol 128-37-0	TWA: 2 mg/m³	-	-	TWA: 10 mg/m³ STEL: 40 mg/m³	TWA: 10 mg/m³
2-methylpropan-1-ol 78-83-1	TWA: 50 ppm	TWA: 33 ppm TWA: 100 mg/m³ STEL: 66 ppm STEL: 200 mg/m³	TWA: 100 ppm TWA: 310 mg/m³	TWA: 100 ppm TWA: 310 mg/m³ STEL: 100 ppm STEL: 310 mg/m³	TWA: 50 ppm TWA: 154 mg/m³
Nonane 111-84-2	TWA: 200 ppm	TWA: 700 mg/m³ STEL: 1000 mg/m³	TWA: 800 mg/m³ TWA: 150 ppm Ceiling: 1100 mg/m³	-	TWA: 200 ppm TWA: 1065 mg/m³
Toluene 108-88-3	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ Cutânea*	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ P*	TWA: 50 ppm TWA: 192 mg/m³ K* Ceiling: 384 mg/m³	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ K*	TWA: 50 ppm TWA: 192 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ vía dérmica*
Naphthalene 91-20-3	TWA: 10 ppm TWA: 50 mg/m³ STEL: 15 ppm Cutânea*	TWA: 10 ppm TWA: 50 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ K* Ceiling: 80 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ STEL: 10 ppm STEL: 50 mg/m³ K*	TWA: 10 ppm TWA: 53 mg/m³ STEL: 15 ppm STEL: 80 mg/m³ vía dérmica*
Ethylene oxide 75-21-8	TWA: 1 ppm TWA: 1.8 mg/m³ Cutânea*	TWA: 1 ppm TWA: 1.8 mg/m³	TWA: 1 ppm TWA: 2 mg/m³ STEL: 5 ppm STEL: 10 mg/m³ K*	TWA: 1 ppm TWA: 1.8 mg/m³ K*	TWA: 1 ppm TWA: 1.8 mg/m³ vía dérmica*
Ethylbenzene 100-41-4	TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm TWA: 442 mg/m³	TWA: 100 ppm TWA: 441 mg/m³

	STEL: 200 ppm STEL: 884 mg/m³ Cutânea*	STEL: 200 ppm STEL: 884 mg/m³ P*	K* Ceiling: 884 mg/m³	STEL: 200 ppm STEL: 884 mg/m³ K*	STEL: 200 ppm STEL: 884 mg/m³ vía dérmica*
Benzene 71-43-2	TWA: 1 ppm TWA: 3.25 mg/m³ STEL: 2.5 ppm Cutânea*	TWA: 1 ppm TWA: 3.25 mg/m³ P*	TWA: 1.0 ppm TWA: 3.25 mg/m³ STEL: 5.0 ppm STEL: 16.25 mg/m³ K*	TWA: 1 ppm TWA: 3.25 mg/m³ K*	TWA: 1 ppm TWA: 3.25 mg/m³ vía dérmica*

Chemical name	Sweden	Switzerland	United Kingdom
2,6-Di-tert-butyl-p-cresol 128-37-0	-	TWA: 10 mg/m³ STEL: 40 mg/m³	TWA: 10 mg/m³ STEL: 30 mg/m³
2-methylpropan-1-ol 78-83-1	NGV: 50 ppm NGV: 150 mg/m³ Vägledande KGV: 75 ppm Vägledande KGV: 250 mg/m³ H*	TWA: 50 ppm TWA: 150 mg/m³ STEL: 50 ppm STEL: 150 mg/m³	TWA: 50 ppm TWA: 154 mg/m³ STEL: 75 ppm STEL: 231 mg/m³
Nonane 111-84-2	NGV: 150 ppm NGV: 800 mg/m³ NGV: 350 mg/m³	TWA: 200 ppm TWA: 1050 mg/m³	-
Toluene 108-88-3	NGV: 50 ppm NGV: 192 mg/m³ Bindande KGV: 100 ppm Bindande KGV: 384 mg/m³ H*	TWA: 50 ppm TWA: 190 mg/m³ STEL: 200 ppm STEL: 760 mg/m³ H*	TWA: 50 ppm TWA: 191 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ Sk*
Naphthalene 91-20-3	NGV: 10 ppm NGV: 50 mg/m³ Vägledande KGV: 15 ppm Vägledande KGV: 80 mg/m³	TWA: 10 ppm TWA: 50 mg/m³ H*	-
Ethylene oxide 75-21-8	NGV: 1 ppm NGV: 1.8 mg/m³ Bindande KGV: 5 ppm Bindande KGV: 9 mg/m³ H*	TWA: 1 ppm TWA: 1.8 mg/m³ H*	TWA: 1 ppm TWA: 1.8 mg/m³ STEL: 3 ppm STEL: 5.4 mg/m³ Sk*
Ethylbenzene 100-41-4	NGV: 50 ppm NGV: 220 mg/m³ Bindande KGV: 200 ppm Bindande KGV: 884 mg/m³ H*	TWA: 50 ppm TWA: 220 mg/m³ STEL: 50 ppm STEL: 220 mg/m³ H*	TWA: 100 ppm TWA: 441 mg/m³ STEL: 125 ppm STEL: 552 mg/m³ Sk*
Benzene 71-43-2	NGV: 0.5 ppm NGV: 1.5 mg/m³ Bindande KGV: 3 ppm Bindande KGV: 9 mg/m³ H*	TWA: 0.2 ppm TWA: 0.7 mg/m³ H*	TWA: 1 ppm TWA: 3.25 mg/m³ STEL: 3 ppm STEL: 9.75 mg/m³ Sk*

Biological occupational exposure limits

Chemical name	European Union	Austria	Bulgaria	Croatia	Czech Republic
Toluene 108-88-3	-	10 g/dL Hemoglobin (blood - by the first screening and once yearly) 12 g/dL Hemoglobin (blood - by the first screening and once yearly) 3.2 million/µL Erythrocytes (blood - by the first screening	1.6 mmol/mmol Creatinine - urine (Hippuric acid) - at the end of exposure or end of work shift	1.0 mg/L - blood (Toluene) - at the end of the work shift 20 ppm - final exhaled air (Toluene) - during exposure 2.50 g/g Creatinine - urine (Hippuric acid) - at the end of the work shift	1.6 µmol/mmol Creatinine (urine - o-Cresol end of shift) 1000 µmol/mmol Creatinine (urine - Hippuric acid end of shift) 1.5 mg/g Creatinine (urine - o-Cresol end of shift) 1600 mg/g

		and once yearly) 3.8 million/µL Erythrocytes (blood - by the first screening and once yearly) 4000 Leukocytes/µL (blood - by the first screening and once yearly) 13000 Leukocytes/µL (blood - by the first screening and once yearly) 130000 Thrombocytes/µL (blood - by the first screening and once yearly) 150000 Thrombocytes/µL (blood - by the first screening and once yearly) 0.8 mg/L (urine - o-Cresol after end of work day, at the end of a work week/end of the shift)		1.0 mg/g Creatinine - urine (o-Cresol) - at the end of the work shift	Creatinine (urine - Hippuric acid end of shift)
Ethylene oxide 75-21-8	-	-	-	-	1.9 nmol/g of Globin (blood - N-(2-Hydroxyethyl)valine discretionary) 0.3 µg/g of Globin (blood - N-(2-Hydroxyethyl)valine discretionary)
Ethylbenzene 100-41-4	-	-	2000 mg/g Creatinine - urine (Mandelic acid and Phenylglyoxylic acid - total) - at the end of exposure or end of work shift	1.50 mg/L - blood (Ethylbenzene) - during exposure 1.50 g/g Creatinine - urine (Mandelic acid) - at the end of the work shift and at the end of the working week	1100 µmol/mmol Creatinine (urine - Mandelic acid end of shift) 1500 mg/g Creatinine (urine - Mandelic acid end of shift)
Benzene 71-43-2	-	10 g/dL Hemoglobin (blood - by the first screening and once yearly or for work in cokery plants every six months) 12 g/dL Hemoglobin (blood - by the first screening and once yearly or for work in cokery plants every six months) 79 - 97 fL mean corpuscular volume	2.0 mg/L - urine (Trans, trans-Muconic acid) - at the end of exposure or end of work shift 0.045 mg/g Creatinine - urine (S-Phenyl Mercapturic acid) - at the end of exposure or end of work shift	28 µg/L - blood (Benzene) - right at the end of the work shift 46 µg/g Creatinine - urine (S-Phenylmercapturic acid) - at the end of the work shift	0.024 µmol/mmol Creatinine (urine - S-Phenylmercapturic acid end of shift) 0.05 mg/g Creatinine (urine - S-Phenylmercapturic acid end of shift) 1.2 µmol/mmol Creatinine (urine - trans,trans-Muconic acid end of shift) 1.5 mg/g Creatinine (urine -

		(blood - by the first screening and once yearly or for work in cokery plants every six months) 3.8 million/µL Erythrocytes (blood - by the first screening and once yearly or for work in cokery plants every six months) 3.2 million/µL Erythrocytes (blood - by the first screening and once yearly or for work in cokery plants every six months) 13000 Leukocytes/µL (blood - by the first screening and once yearly or for work in cokery plants every six months) 4000 Leukocytes/µL (blood - by the first screening and once yearly or for work in cokery plants every six months) 130000 Thrombocytes/µL (blood - by the first screening and once yearly or for work in cokery plants every six months) 150000 Thrombocytes/µL (blood - by the first screening and once yearly or for work in cokery plants every six months) 1.6 mg/L (urine - t,t-Muconic acid after end of work day, at the end of a work week/end of the shift)			trans,trans-Muconic acid end of shift)
Chemical name	Denmark	Finland	France	Germany DFG	Germany TRGS
2,6-Di-tert-butyl-p-cresol 128-37-0	-	-	-	7 µg/L - BAR (end of exposure or end of shift) urine	-
Toluene 108-88-3	-	500 nmol/L (blood - Toluene in the morning after a working day)	1 mg/L - venous blood (Toluene) - end of shift 2500 mg/g creatinine	600 µg/L (whole blood - Toluene immediately after exposure)	600 µg/L (whole blood - Toluene immediately after exposure)

			- urine (Hippuric acid) - end of shift	75 µg/L (urine - Toluene end of shift) 1.5 mg/L (urine - o-Cresol (after hydrolysis) for long-term exposures: at the end of the shift after several shifts) 1.5 mg/L (urine - o-Cresol (after hydrolysis) end of shift) 600 µg/L - BAT (immediately after exposure) blood 75 µg/L - BAT (end of exposure or end of shift) urine 1.5 mg/L - BAT (for long-term exposures: at the end of the shift after several shifts) urine 1.5 mg/L - BAT (end of exposure or end of shift) urine	75 µg/L (urine - Toluene end of shift) 1.5 mg/L (urine - o-Cresol (after hydrolysis) for long-term exposures: at the end of the shift after several shifts) 1.5 mg/L (urine - o-Cresol (after hydrolysis) end of shift)
Naphthalene 91-20-3	-	-	-	35 µg/L - BAR (end of exposure or end of shift) urine 35 µg/L - BAR (for long-term exposures: at the end of the shift after several shifts) urine 4000 µg/L - (end of exposure or end of shift) - urine 13500 µg/L - (end of exposure or end of shift) - urine 23300 µg/L - (end of exposure or end of shift) - urine 34200 µg/L - (end of exposure or end of shift) - urine 30 µg/L - (end of exposure or end of shift) - urine 60 µg/L - (end of exposure or end of shift) - urine 175 µg/L - (end of exposure or end of shift) - urine 280 µg/L - (end of exposure or end of shift) - urine 390 µg/L - (end of	-

				exposure or end of shift) - urine 220 µg/L - (end of exposure or end of shift) - urine 500 µg/L - (end of exposure or end of shift) - urine 1500 µg/L - (end of exposure or end of shift) - urine 2300 µg/L - (end of exposure or end of shift) - urine 3300 µg/L - (end of exposure or end of shift) - urine	
Ethylene oxide 75-21-8	-	-	-	60 pmol/g Globin - BAR (after exposure for at least 3 months) erythrocytes 5 µg/g Creatinine - BAR (end of exposure or end of shift) urine 5 µg/g Creatinine - BAR (for long-term exposures: at the end of the shift after several shifts) urine 45 µg/L whole blood - (after exposure for at least 3 months) - erythrocyte fraction of whole blood 90 µg/L whole blood - (after exposure for at least 3 months) - erythrocyte fraction of whole blood 180 µg/L whole blood - (after exposure for at least 3 months) - erythrocyte fraction of whole blood	-
Ethylbenzene 100-41-4	-	5.2 mmol/L (urine - Mandelic acid after the shift after a working week or exposure period)	1500 mg/g creatinine - urine (Mandelic acid) - end of shift at end of workweek	250 mg/g Creatinine (urine - Mandelic acid plus Phenylglyoxylic acid end of shift) 250 mg/g Creatinine - BAT (end of exposure or end of shift) urine 130 mg/g Creatinine - (end of exposure or end of shift) - urine 250 mg/g Creatinine	250 mg/g Creatinine (urine - Mandelic acid plus Phenylglyoxylic acid end of shift)

				- (end of exposure or end of shift) - urine 330 mg/g Creatinine - (end of exposure or end of shift) - urine 670 mg/g Creatinine - (end of exposure or end of shift) - urine 1300 mg/g Creatinine - (end of exposure or end of shift) - urine	
Benzene 71-43-2	-	-	5 mg/L - urine (Muconic acid) - end of shift	0.3 µg/g Creatinine - BAR (end of exposure or end of shift) urine 150 µg/g Creatinine - BAR (end of exposure or end of shift) urine 0.3 µg/L - BAR (end of exposure or end of shift) urine 0.5 µg/L - (end of exposure or end of shift) - urine 0.8 µg/L - (end of exposure or end of shift) - urine 1.5 µg/L - (end of exposure or end of shift) - urine 2.75 µg/L - (end of exposure or end of shift) - urine 5.0 µg/L - (end of exposure or end of shift) - urine 7.5 µg/L - (end of exposure or end of shift) - urine 12.5 µg/L - (end of exposure or end of shift) - urine 300 µg/g Creatinine - (end of exposure or end of shift) - urine 500 µg/g Creatinine - (end of exposure or end of shift) - urine 750 µg/g Creatinine - (end of exposure or end of shift) - urine 1200 µg/g Creatinine - (end of exposure or end of shift) - urine	-

				1.5 µg/g Creatinine - (end of exposure or end of shift) - urine 3 µg/g Creatinine - (end of exposure or end of shift) - urine 5 µg/g Creatinine - (end of exposure or end of shift) - urine 12 µg/g Creatinine - (end of exposure or end of shift) - urine 25 µg/g Creatinine - (end of exposure or end of shift) - urine 45 µg/g Creatinine - (end of exposure or end of shift) - urine 90 µg/g Creatinine - (end of exposure or end of shift) - urine	

Chemical name	Hungary	Ireland	Italy MDLPS	Italy AIDII
Toluene 108-88-3	1 mg/g Creatinine (urine - o-Cresol end of shift) 1 µmol/mmol Creatinine (urine - o-Cresol end of shift)	0.02 mg/L (blood - Toluene prior to last shift of workweek) 0.03 mg/L (urine - Toluene end of shift) 0.3 mg/g Creatinine (urine - o-Cresol end of shift)	-	0.3 mg/g Creatinine - urine (o-Cresol (with hydrolysis)) - end of shift 0.03 mg/L - urine (Toluene) - end of shift 0.02 mg/L - blood (Toluene) - prior to last shift of workweek
Naphthalene 91-20-3	-	-	-	- () - end of shift
Ethylene oxide 75-21-8	-	-	-	5000 pmol HEV/g globin - blood (N-(2-Hydroxyethyl)valine (HEV) hemoglobin adducts) - not critical 5 µg HEMA/g Creatinine - urine (S-(2-Hydroxyethyl)mercapturic acid (HEMA)) - end of shift
Ethylbenzene 100-41-4	1500 mg/g Creatinine (urine - Mandelic acid at end of workweek, end of shift) 1110 µmol/mmol Creatinine (urine - Mandelic acid at end of workweek, end of shift)	0.7 g/g Creatinine (urine - sum of Mandelic acid and Phenylglyoxylic acid end of shift at end of workweek) 0.7 g (end-exhaled air - not critical)	-	0.15 g/g Creatinine - urine (Sum of Mandelic acid and Phenylglyoxylic acid) - end of shift at end of workweek
Benzene 71-43-2	0.04 mg/g Creatinine (urine - s-Phenyl mercapturic acid end of shift) 0.22 µmol/mmol Creatinine (urine - s-Phenyl mercapturic acid end of shift)	25 µg/g Creatinine (urine - s-Phenylmercapturic acid end of shift) 500 µg/g Creatinine (urine - t,t-Muconic acid end of shift)	-	25 µg/g Creatinine - urine (S-Phenylmercapturic acid) - end of shift 500 µg/g Creatinine - urine (t,t-Muconic acid) - end of shift

Chemical name	Latvia	Luxembourg	Romania	Slovakia
Toluene	1.6 g/g Creatinine - urine	-	2 g/L - urine (Hippuric	600 µg/L (blood - Toluene

108-88-3	(Hippuric acid) - end of shift 0.05 mg/L - blood (Toluene) - end of shift		acid) - end of shift 3 mg/L - urine (o-Cresol) - end of shift	end of exposure or work shift) 1.5 mg/L (urine - o-Cresol after all work shifts) 1.5 mg/L (urine - o-Cresol end of exposure or work shift) 1600 mg/g creatinine (- Hippuric acid end of exposure or work shift)
Ethylbenzene 100-41-4	-	-	1.5 g/g Creatinine - urine (Mandelic acid) - end of work week	12 mg/L (urine - 2 and 4-Ethylphenol end of exposure or work shift) 1600 mg/L (urine - Mandelic acid and Phenylglycolic acid end of exposure or work shift)
Benzene 71-43-2	46 µg/g Creatinine - urine (Phenol) - end of shift 28 µg/L - blood () - end of shift	-	25 µg/g Creatinine - urine (S-Phenylmercapturic acid) - end of shift 500 µg/g Creatinine - urine (Trans, trans-muconic acid) - end of shift 50 mg/L - urine (total Phenols) - end of shift	-
Chemical name	Slovenia	Spain	Switzerland	United Kingdom
Toluene 108-88-3	600 µg/L - blood (Toluene) - immediately after exposure 1.5 mg/L - urine (o-Cresol (after hydrolysis)) - at the end of the work shift; for long-term exposure: at the end of the work shift after several consecutive workdays 75 µg/L - urine (Toluene) - at the end of the work shift	0.6 mg/L (urine - o-Cresol end of shift) 0.05 mg/L (blood - Toluene start of last shift of workweek) 0.08 mg/L (urine - Toluene end of shift)	600 µg/L (whole blood - Toluene end of shift) 6.48 µmol/L (whole blood - Toluene end of shift) 2 g/g creatinine (urine - Hippuric acid end of shift, and after several shifts (for long-term exposures)) 1.26 mmol/mmol creatinine (urine - Hippuric acid end of shift, and after several shifts (for long-term exposures)) 0.5 mg/L (urine - o-Cresol end of shift, and after several shifts (for long-term exposures)) 4.62 µmol/L (urine - o-Cresol end of shift, and after several shifts (for long-term exposures)) 75 µg/L (urine - Toluol end of shift)	-
Ethylene oxide 75-21-8	3900 pmol/g Globin - erythrocyte fraction of the whole blood (N-(2-Hydroxyethyl)valine) - after a minimum of 3 months exposure	-	-	-
Ethylbenzene 100-41-4	250 mg/g Creatinine - urine (Mandelic acid and Phenylglyoxylic acid) - at the end of the work shift	700 mg/g Creatinine (urine - Mandelic acid plus Phenylglyoxylic acid end of workweek)	600 mg/g creatinine (urine - Mandelic acid and Phenylglyoxylacid end of shift)	-

Benzene 71-43-2	5 µg/L - urine (Benzene) - at the end of the work shift 0.025 mg/g Creatinine - urine ((S)-Phenylmercapturic acid) - at the end of the work shift 500 µg/g Creatinine - urine (trans, trans-Muconic acid) - at the end of the work shift	0.045 mg/g Creatinine (urine - S-Phenyl mercapturic acid end of exposure or end of shift) 2 mg/L (urine - trans, trans-Muconic acid end of exposure or end of shift)	25 µg/g creatinine (urine - S-Phenyl-mercapturic acid end of shift) 0.01 µmol/mmol creatinine (urine - S-Phenyl-mercapturic acid end of shift) 500 µg/g creatinine (urine - t,t-Muconic acid end of shift) 0.4 µmol/mmol creatinine (urine - t,t-Muconic acid end of shift)	-

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
Hydrogenated base oil 72623-87-1	-	0.97 mg/kg bw/day [4] [6]	2.73 mg/m³ [4] [6] 5.58 mg/m³ [5] [6]
Hydrogenated base oil 72623-87-1	-	0.97 mg/kg bw/day [4] [6]	2.73 mg/m³ [4] [6] 5.58 mg/m³ [5] [6]
Hydrogenated base oil 64742-54-7	-	0.97 mg/kg bw/day [4] [6]	2.73 mg/m³ [4] [6] 5.58 mg/m³ [5] [6]
Hydrogenated base oil 64742-54-7	-	0.97 mg/kg bw/day [4] [6]	2.73 mg/m³ [4] [6] 5.58 mg/m³ [5] [6]
Hydrogenated base oil 64742-65-0	-	0.97 mg/kg bw/day [4] [6]	2.73 mg/m³ [4] [6] 5.58 mg/m³ [5] [6]
Phenol, dodecyl-, branched 121158-58-5	-	0.25 mg/kg bw/day [4] [6] 166 mg/kg bw/day [4] [7]	44.18 mg/m³ [4] [7]
2,6-Di-tert-butyl-p-cresol 128-37-0	-	0.5 mg/kg bw/day [4] [6]	3.5 mg/m³ [4] [6]
2-methylpropan-1-ol 78-83-1	-	-	310 mg/m³ [5] [6]
Nonane 111-84-2	-	773 mg/kg bw/day [4] [6]	2035 mg/m³ [4] [6]
Naphthalene 91-20-3	-	3.57 mg/kg bw/day [4] [6]	25 mg/m³ [4] [6] 25 mg/m³ [5] [6]
Ethylene oxide 75-21-8	-	-	10 mg/m³ [4] [7]
Ethylbenzene 100-41-4	-	180 mg/kg bw/day [4] [6]	77 mg/m³ [4] [6] 293 mg/m³ [5] [7]
Toluene 108-88-3	-	384 mg/kg bw/day [4] [6]	192 mg/m³ [4] [6] 384 mg/m³ [4] [7] 192 mg/m³ [5] [6] 384 mg/m³ [5] [7]

Notes

[4] Systemic health effects.
[5] Local health effects.
[6] Long term.
[7] Short term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
Hydrogenated base oil 72623-87-1	0.74 mg/kg bw/day [4] [6]	-	1.19 mg/m³ [5] [6]
Hydrogenated base oil	0.74 mg/kg bw/day [4] [6]	-	1.19 mg/m³ [5] [6]

Chemical name	Oral	Dermal	Inhalation
72623-87-1			
Hydrogenated base oil 64742-54-7	0.74 mg/kg bw/day [4] [6]	-	1.19 mg/m³ [5] [6]
Hydrogenated base oil 64742-54-7	0.74 mg/kg bw/day [4] [6]	-	1.19 mg/m³ [5] [6]
Hydrogenated base oil 64742-65-0	0.74 mg/kg bw/day [4] [6]	-	1.19 mg/m³ [5] [6]
Phenol, dodecyl-, branched 121158-58-5	0.075 mg/kg bw/day [4] [6] 1.26 mg/kg bw/day [4] [7]	50 mg/kg bw/day [4] [6] 50 mg/kg bw/day [4] [7]	0.79 mg/m³ [4] [6] 13.26 mg/m³ [4] [7]
2,6-Di-tert-butyl-p-cresol 128-37-0	-	-	0.86 mg/m³ [4] [6]
2-methylpropan-1-ol 78-83-1	-	-	55 mg/m³ [5] [6]
Nonane 111-84-2	699 mg/kg bw/day [4] [6]	-	608 mg/m³ [4] [6]
Ethylbenzene 100-41-4	1.6 mg/kg bw/day [4] [6]	-	15 mg/m³ [4] [6]
Toluene 108-88-3	8.13 mg/kg bw/day [4] [6]	-	56.5 mg/m³ [4] [6] 226 mg/m³ [4] [7] 56.5 mg/m³ [5] [6] 226 mg/m³ [5] [7]

Notes

[4] Systemic health effects.
[5] Local health effects.
[6] Long term.
[7] Short term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
Phenol, dodecyl-, branched 121158-58-5	0.074 µg/L	0.37 µg/L	0.0074 µg/L	-	-
2,6-Di-tert-butyl-p-cresol 128-37-0	0.199 µg/L	1.99 µg/L	0.0199 µg/L	-	-
2-methylpropan-1-ol 78-83-1	0.4 mg/L	11 mg/L	0.04 mg/L	-	-
Nonane 111-84-2	3.6 µg/L	14 µg/L	3.6 µg/L	-	-
Naphthalene 91-20-3	2.4 µg/L	20 µg/L	2.4 µg/L	-	-
Ethylene oxide 75-21-8	0.084 mg/L	0.84 mg/L	0.0084 mg/L	-	-
Toluene 108-88-3	0.68 mg/L	0.68 mg/L	0.68 mg/L	-	-

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Hydrogenated base oil 72623-87-1	-	-	-	-	9.33 mg/kg food
Hydrogenated base oil 72623-87-1	-	-	-	-	9.33 mg/kg food

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
Hydrogenated base oil 64742-54-7	-	-	-	-	9.33 mg/kg food
Hydrogenated base oil 64742-54-7	-	-	-	-	9.33 mg/kg food
Hydrogenated base oil 64742-65-0	-	-	-	-	9.33 mg/kg food
Phenol, dodecyl-, branched 121158-58-5	0.226 mg/kg sediment dw	0.0266 mg/kg sediment dw	100 mg/L	0.118 mg/kg soil dw	4 mg/kg food
2,6-Di-tert-butyl-p-cresol 128-37-0	99.6 µg/kg sediment dw	9.96 µg/kg sediment dw	0.17 mg/L	47.69 µg/kg soil dw	8.33 mg/kg food
2-methylpropan-1-ol 78-83-1	1.56 mg/kg sediment dw	0.156 mg/kg sediment dw	10 mg/L	0.0765 mg/kg soil dw	-
Nonane 111-84-2	0.62 mg/kg sediment dw	0.62 mg/kg sediment dw	54 µg/L	0.25 mg/kg soil dw	-
Naphthalene 91-20-3	67.2 µg/kg sediment dw	67.2 µg/kg sediment dw	2.9 mg/L	53.3 µg/kg soil dw	-
Ethylene oxide 75-21-8	0.329 mg/kg sediment dw	0.0329 mg/kg sediment dw	13 mg/L	0.0165 mg/kg soil dw	-
Toluene 108-88-3	16.39 mg/kg sediment dw	16.39 mg/kg sediment dw	13.61 mg/L	2.89 mg/kg soil dw	-

8.2. Exposure controls

Engineering controls Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection If there is a risk of contact: Wear safety glasses with side shields (or goggles). Eye protection must conform to standard EN 166.

Hand protection If there is a risk of contact: Wear suitable gloves. Gloves must conform to standard EN 374.

Skin and body protection If there is a risk of contact: Wear suitable protective clothing (EN ISO 6529).

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

Environmental exposure controls Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid

Colour Brown

Odour Mild hydrocarbon

Odour threshold No information available

Property	Values	Remarks • Method
Melting point / freezing point		No data available
Initial boiling point and boiling range		No data available
Flammability		No data available
Flammability Limit in Air		
Upper flammability or explosive limits		No data available
Lower flammability or explosive limits		No data available
Flash point	222 °C	Cleveland Open Cup ASTM D 92
Autoignition temperature		No data available
Decomposition temperature		No data available
pH		No data available
pH (as aqueous solution)		No data available
Kinematic viscosity	72.3 cSt @ 40 °C 12 cSt @ 100 °C	ASTM D445
Dynamic viscosity		No data available
Water solubility		No data available
Solubility(ies)		No data available
Partition coefficient		No data available
Vapour pressure		No data available
Relative density	0.8524	No data available
Bulk density		No data available
Liquid Density		No data available
Vapour density		No data available
Particle characteristics		
Particle Size		No data available
Particle Size Distribution		No data available

9.2. Other information
Pour Point -43 °C [ASTM D 97]

9.2.1. Information with regards to physical hazard classes
Not applicable

9.2.2. Other safety characteristics
No information available
Fire Point 238 °C (COC)[ASTM D 92]

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity None under normal use conditions.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data
Sensitivity to mechanical impact None.
Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition can lead to release of irritating gases and vapours. Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11: Toxicological information

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

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available.

Eye contact Specific test data for the substance or mixture is not available.

Skin contact Specific test data for the substance or mixture is not available. Causes mild skin irritation.

Ingestion Specific test data for the substance or mixture is not available.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Prolonged contact may cause redness and irritation.

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document:
ATEmix (dermal) 10,010.00 mg/kg

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Phenol, dodecyl-, branched 121158-58-5	-	= 15000 mg/kg (Rabbit)	-
2,6-Di-tert-butyl-p-cresol 128-37-0	> 6000 mg/kg (Rat)	> 2000 mg/kg (Rat)	-
2-methylpropan-1-ol 78-83-1	= 2460 mg/kg (Rat)	= 3400 mg/kg (Rabbit)	> 18.18 mg/L (Rat) 6 h
Nonane 111-84-2	-	-	= 3200 ppm (Rat) 4 h
Toluene 108-88-3	= 2600 mg/kg (Rat)	= 12000 mg/kg (Rabbit)	= 12.5 mg/L (Rat) 4 h
Naphthalene 91-20-3	= 1110 mg/kg (Rat)	= 1120 mg/kg (Rabbit)	> 0.4 mg/L (Rat) 4 h
Ethylene oxide 75-21-8	= 72 mg/kg (Rat)	-	= 800 ppm (Rat) 4 h
Ethylbenzene 100-41-4	= 3500 mg/kg (Rat)	= 15400 mg/kg (Rabbit)	= 17.4 mg/L (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 8200 mg/kg (Rabbit)	= 44.66 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes mild skin irritation.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Chemical name	European Union
Ethylene oxide	Muta. 1B
Benzene	Muta. 1B

Carcinogenicity The supplier declares that it can be shown that the substance(s) contain less than 3% DMSO extract as measured by IP 346.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	European Union
Naphthalene	Carc. 2
Ethylene oxide	Carc. 1B
Benzene	Carc. 1A

Reproductive toxicity Based on available data, the classification criteria are not met.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	European Union
Phenol, dodecyl-, branched	Repr. 1B
Toluene	Repr. 2
Ethylene oxide	Repr. 1B

STOT - single exposure Based on available data, the classification criteria are not met.

STOT - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Due to the viscosity, this product does not present an aspiration hazard.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties No information available.

11.2.2. Other information

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Harmful to aquatic life with long lasting effects.

Unknown aquatic toxicity Contains 0 % of components with unknown hazards to the aquatic environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
2,6-Di-tert-butyl-p-cresol 128-37-0	EC50: >0.42mg/L (72h, Desmodesmus subspicatus)	-	-	-
2-methylpropan-1-ol 78-83-1	-	LC50: =375mg/L (96h, Pimephales promelas) LC50: 1370 - 1670mg/L (96h, Pimephales promelas) LC50: 1480 - 1730mg/L (96h, Lepomis macrochirus) LC50: 1120 - 1520mg/L (96h, Oncorhynchus mykiss)	-	EC50: =1300mg/L (48h, Daphnia magna) EC50: 1070 - 1933mg/L (48h, Daphnia magna)
Toluene 108-88-3	EC50: >433mg/L (96h, Pseudokirchneriella subcapitata) EC50: =12.5mg/L (72h, Pseudokirchneriella subcapitata)	LC50: 15.22 - 19.05mg/L (96h, Pimephales promelas) LC50: =12.6mg/L (96h, Pimephales promelas) LC50: 5.89 - 7.81mg/L (96h, Oncorhynchus mykiss) LC50: 14.1 - 17.16mg/L (96h, Oncorhynchus mykiss) LC50: =5.8mg/L (96h, Oncorhynchus mykiss) LC50: 11.0 - 15.0mg/L (96h, Lepomis macrochirus) LC50: =54mg/L (96h, Oryzias latipes) LC50: =28.2mg/L (96h, Poecilia reticulata) LC50: 50.87 - 70.34mg/L (96h, Poecilia reticulata)	-	EC50: 5.46 - 9.83mg/L (48h, Daphnia magna) EC50: =11.5mg/L (48h, Daphnia magna)
Naphthalene 91-20-3	-	LC50: 0.91 - 2.82mg/L (96h, Oncorhynchus mykiss)	-	EC50: 1.09 - 3.4mg/L (48h, Daphnia magna)
Ethylene oxide 75-21-8	-	LC50: 73 - 96mg/L (96h, Pimephales promelas)	-	LC50: 137 - 300mg/L (48h, Daphnia magna)
Ethylbenzene 100-41-4	EC50: >438mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 11.0 - 18.0mg/L (96h, Oncorhynchus mykiss)	-	EC50: 1.8 - 2.4mg/L (48h, Daphnia magna)
Benzene 71-43-2	EC50: =29mg/L (72h, Pseudokirchneriella subcapitata)	LC50: =22.49mg/L (96h, Lepomis macrochirus)	-	EC50: =10mg/L (48h, Daphnia magna)

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation

Component Information

Chemical name	Partition coefficient

Phenol, dodecyl-, branched	7.14
2,6-Di-tert-butyl-p-cresol	5.1
2-methylpropan-1-ol	1
Toluene	2.73
Naphthalene	3.4
Ethylene oxide	-0.3
Ethylbenzene	3.6
Benzene	2.13

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment
Phenol, dodecyl-, branched 121158-58-5	The substance is not PBT / vPvB
2,6-Di-tert-butyl-p-cresol 128-37-0	The substance is not PBT / vPvB
2-methylpropan-1-ol 78-83-1	The substance is not PBT / vPvB
Nonane 111-84-2	The substance is not PBT / vPvB
Toluene 108-88-3	The substance is not PBT / vPvB
Naphthalene 91-20-3	The substance is not PBT / vPvB
Ethylene oxide 75-21-8	The substance is not PBT / vPvB
Ethylbenzene 100-41-4	The substance is not PBT / vPvB
Benzene 71-43-2	The substance is not PBT / vPvB

12.6. Endocrine disrupting properties

Endocrine disrupting properties This product does not contain any known or suspected endocrine disruptors.

12.7. Other adverse effects

Other adverse effects No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

Waste codes / waste designations according to EWC / AVV According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

IMDG	Not regulated
14.1 UN number or ID number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	None
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID	Not regulated
14.1 UN number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	None

ADR	Not regulated
14.1 UN number or ID number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	None

IATA	Not regulated
14.1 UN number or ID number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special Precautions for Users	
Special Provisions	None
Note:	None

SECTION 15: Regulatory information

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

National regulations

France
Occupational Illnesses (R-463-3, France)

Chemical name	French RG number
2-methylpropan-1-ol 78-83-1	RG 84
Nonane 111-84-2	RG 84
Toluene 108-88-3	RG 4bis,RG 84
Ethylene oxide 75-21-8	RG 66

Ethylbenzene 100-41-4	RG 84
Benzene 71-43-2	RG 4,RG 4bis,RG 84

Germany

Water hazard class (WGK) strongly hazardous to water (WGK 3)

Netherlands

Chemical name	Netherlands - List of Carcinogens	Netherlands - List of Mutagens	Netherlands - List of Reproductive Toxins
Phenol, dodecyl-, branched	-	-	Fertility Category 1B
Toluene	-	-	Development Category 2
Ethylene oxide	Present	Present	Fertility Category 1B Development Category 2
Benzene	Present	Present	-

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Authorisations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
Phenol, dodecyl-, branched - 121158-58-5	30. 75.	-
2-methylpropan-1-ol - 78-83-1	75.	-
Toluene - 108-88-3	48. 75.	-
Naphthalene - 91-20-3	75.	-
Ethylene oxide - 75-21-8	28. 29. 30. 75.	-
Benzene - 71-43-2	72. 5. 28. 29. 75.	-

Persistent Organic Pollutants

Not applicable

Export Notification requirements

This product contains substances which are regulated pursuant to Regulation (EC) No. 649/2012 of the European parliament and of the council concerning the export and import of dangerous chemicals

Chemical name	European Export/Import Restrictions per (EC) 689/2008 - Annex Number
Ethylene oxide - 75-21-8	I.1 I.3
Benzene - 71-43-2	I.1

Named dangerous substances per Seveso Directive (2012/18/EU)

Chemical name	Lower-tier requirements (tons)	Upper-tier requirements (tons)
Ethylene oxide - 75-21-8	5	50

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not applicable

Biocidal Products Regulation (EU) No 528/2012 (BPR)

Chemical name	Biocidal Products Regulation (EU) No 528/2012 (BPR)
Ethylene oxide - 75-21-8	Product-type 2: Disinfectants and algaecides not intended for direct application to humans or animals

EU - Water Framework Directive (2000/60/EC)

Chemical name	EU - Water Framework Directive (2000/60/EC)
Naphthalene - 91-20-3	Priority substance
Benzene - 71-43-2	Priority substance

EU - Environmental Quality Standards (2008/105/EC)

Chemical name	EU - Environmental Quality Standards (2008/105/EC)
Naphthalene - 91-20-3	Priority substance
Benzene - 71-43-2	Priority substance

International Inventories
Contact supplier for inventory compliance status

15.2. Chemical safety assessment

Chemical Safety Report No information available

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H220 - Extremely flammable gas
H225 - Highly flammable liquid and vapour
H226 - Flammable liquid and vapour
H301 - Toxic if swallowed
H302 - Harmful if swallowed
H304 - May be fatal if swallowed and enters airways
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects
H350 - May cause cancer
H351 - Suspected of causing cancer
H360F - May damage fertility
H361d - Suspected of damaging the unborn child
H372 - Causes damage to organs through prolonged or repeated exposure
H373 - May cause damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Legend
ATE: Acute Toxicity Estimate
SVHC: Substances of Very High Concern for Authorisation:
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Chemicals
vPvB: Very Persistent and very Bioaccumulative (vPvB) Chemicals

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer
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End of Safety Data Sheet