

# SAFETY DATA SHEET



SCAN FINISH 0849-25

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

### 1.1 Product identifier

**Product name** : SCAN FINISH 0849-25

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

**Product use** : Paint.

### 1.3 Details of the supplier of the safety data sheet

Teknos Group Oy, Takkatie 3, FI-00370 HELSINKI, FINLAND. Tel. +358 9 506 091.

**e-mail address of person responsible for this SDS** : Prod-safe@teknos.com

#### National contact

Teknos Group Oy, Takkatie 3, FI-00370 HELSINKI, FINLAND. Tel. +358 9 506 091.

### 1.4 Emergency telephone number

#### National advisory body/Poison Centre

**Telephone number** : In an emergency, call 112

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** : Mixture

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

Flam. Liq. 2, H225  
Skin Irrit. 2, H315  
Eye Dam. 1, H318  
Repr. 2, H361d  
STOT SE 3, H336  
STOT RE 2, H373

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

**Hazard pictograms** :



**Signal word** : Danger

**Hazard statements** :

- H225 - Highly flammable liquid and vapour.
- H315 - Causes skin irritation.
- H318 - Causes serious eye damage.
- H336 - May cause drowsiness or dizziness.
- H361d - Suspected of damaging the unborn child.
- H373 - May cause damage to organs through prolonged or repeated exposure.

#### Precautionary statements

## SECTION 2: Hazards identification

<b>Prevention</b>	: P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 - Do not breathe vapour.
<b>Response</b>	: P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>Storage</b>	: P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazardous ingredients</b>	: Contains: n-Butyl acetate; Toluene and iso-butanol
<b>Supplemental label elements</b>	:
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	:

### 2.3 Other hazards

<b>Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII</b>	: This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
<b>Other hazards which do not result in classification</b>	: None known.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
n-Butyl acetate	REACH #: 01-2119485493-29 EC: 204-658-1 CAS: 123-86-4 Index: 607-025-00-1	≥10 - ≤25	Flam. Liq. 3, H226 STOT SE 3, H336 EUH066	-	[1] [2]
Toluene	REACH #: 01-2119471310-51 EC: 203-625-9 CAS: 108-88-3 Index: 601-021-00-3	≥10 - ≤25	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361d STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304	-	[1] [2]
Ethyl acetate	REACH #: 01-2119475103-46 EC: 205-500-4 CAS: 141-78-6 Index: 607-022-00-5	≥10 - ≤25	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336 EUH066	-	[1] [2]
Ethanol	REACH #: 01-2119457610-43 EC: 200-578-6 CAS: 64-17-5 Index: 603-002-00-5	≤10	Flam. Liq. 2, H225 Eye Irrit. 2, H319	-	[1]
iso-butanol	REACH #: 01-2119484609-23 EC: 201-148-0	≤10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Dam. 1, H318	-	[1]

## SECTION 3: Composition/information on ingredients

	CAS: 78-83-1 Index: 603-108-00-1		STOT SE 3, H335 STOT SE 3, H336 <b>See Section 16 for the full text of the H statements declared above.</b>		
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There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

### Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

Occupational exposure limits, if available, are listed in Section 8.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

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

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain  
watering  
redness

## SECTION 4: First aid measures

- Inhalation** : Adverse symptoms may include the following:  
nausea or vomiting  
headache  
drowsiness/fatigue  
dizziness/vertigo  
unconsciousness  
reduced foetal weight  
increase in foetal deaths  
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:  
pain or irritation  
redness  
blistering may occur  
reduced foetal weight  
increase in foetal deaths  
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:  
stomach pains  
reduced foetal weight  
increase in foetal deaths  
skeletal malformations

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

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

### 5.2 Special hazards arising from the substance or mixture

- Hazards from the substance or mixture** : Highly flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
- Hazardous combustion products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides

### 5.3 Advice for firefighters

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- 6.2 Environmental precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### 6.3 Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

- 6.4 Reference to other sections** : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

### 7.2 Conditions for safe storage, including any incompatibilities

## SECTION 7: Handling and storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

### Seveso Directive - Reporting thresholds

#### Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P5c	5000 tonnes	50000 tonnes

### 7.3 Specific end use(s)

**Recommendations** : Not available.

**Industrial sector specific solutions** : Not available.

## SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
n-Butyl acetate	<b>Regulation on Limit Values - MAC (Austria, 4/2021) [Butylacetat alle Isomeren außer tert-Butylacet]</b> CEIL: 480 mg/m <sup>3</sup> . CEIL: 100 ppm. TWA 8 hours: 241 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm.
Toluene	<b>Regulation on Limit Values - MAC (Austria, 4/2021) d. Absorbed through skin.</b> TWA 8 hours: 50 ppm. TWA 8 hours: 190 mg/m <sup>3</sup> . PEAK 15 minutes: 100 ppm 4 times per shift. PEAK 15 minutes: 380 mg/m <sup>3</sup> 4 times per shift.
Ethyl acetate	<b>Regulation on Limit Values - MAC (Austria, 4/2021)</b> TWA 8 hours: 200 ppm. TWA 8 hours: 734 mg/m <sup>3</sup> . PEAK 15 minutes: 1468 mg/m <sup>3</sup> 4 times per shift. PEAK 15 minutes: 400 ppm 4 times per shift.
Ethanol	<b>Regulation on Limit Values - MAC (Austria, 4/2021)</b> TWA 8 hours: 1000 ppm. TWA 8 hours: 1900 mg/m <sup>3</sup> . CEIL 60 minutes: 2000 ppm 3 times per shift. CEIL 60 minutes: 3800 mg/m <sup>3</sup> 3 times per shift.
iso-butanol	<b>Regulation on Limit Values - MAC (Austria, 4/2021) [Butanol (alle Isomeren außer 2-Methyl-2-propanol)]</b> PEAK 15 minutes: 200 ppm 4 times per shift. TWA 8 hours: 150 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm. PEAK 15 minutes: 600 mg/m <sup>3</sup> 4 times per shift.

## SECTION 8: Exposure controls/personal protection

n-Butyl acetate	<p><b>Limit values (Belgium, 12/2023) [butylacetaat]</b>            STEL 15 minutes: 712 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            TWA 8 hours: 238 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>Limit values (Belgium, 12/2023)</b> Absorbed through skin.            TWA 8 hours: 20 ppm.            TWA 8 hours: 77 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Limit values (Belgium, 12/2023)</b>            TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            STEL 15 minutes: 400 ppm.</p>
Ethanol	<p><b>Limit values (Belgium, 12/2023)</b>            TWA 8 hours: 1000 ppm.            TWA 8 hours: 1907 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>Limit values (Belgium, 12/2023)</b>            TWA 8 hours: 50 ppm.            TWA 8 hours: 154 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b>            Limit value 8 hours: 241 mg/m<sup>3</sup>.            Limit value 15 minutes: 723 mg/m<sup>3</sup>.            Limit value 15 minutes: 150 ppm.            Limit value 8 hours: 50 ppm.</p>
Toluene	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b> Absorbed through skin.            Limit value 15 minutes: 384 mg/m<sup>3</sup>.            Limit value 8 hours: 192 mg/m<sup>3</sup>.            Limit value 15 minutes: 100 ppm.            Limit value 8 hours: 50 ppm.</p>
Ethyl acetate	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b>            Limit value 8 hours: 734 mg/m<sup>3</sup>.            Limit value 15 minutes: 400 ppm.            Limit value 15 minutes: 1468 mg/m<sup>3</sup>.            Limit value 8 hours: 200 ppm.</p>
Ethanol	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b>            Limit value 8 hours: 1000 mg/m<sup>3</sup>.</p>
Urea	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b>            Limit value 8 hours: 10 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, exposure limit values (Annex I) (Croatia, 12/2023)</b>            STELV 15 minutes: 723 mg/m<sup>3</sup>.            STELV 15 minutes: 150 ppm.            ELV 8 hours: 241 mg/m<sup>3</sup>.            ELV 8 hours: 50 ppm.</p>
Toluene	<p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, exposure limit values (Annex I) (Croatia, 12/2023)</b> Absorbed through skin.            STELV 15 minutes: 384 mg/m<sup>3</sup>.            STELV 15 minutes: 100 ppm.            ELV 8 hours: 192 mg/m<sup>3</sup>.            ELV 8 hours: 50 ppm.</p>
Ethyl acetate	<p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, exposure limit values (Annex I)</b></p>

## SECTION 8: Exposure controls/personal protection

Ethanol	<p><b>(Croatia, 12/2023)</b>            STELV 15 minutes: 400 ppm.            ELV 8 hours: 200 ppm.            STELV 15 minutes: 1468 mg/m<sup>3</sup>.            ELV 8 hours: 734 mg/m<sup>3</sup>.</p> <p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, exposure limit values (Annex I) (Croatia, 12/2023)</b>            ELV 8 hours: 1900 mg/m<sup>3</sup>.            ELV 8 hours: 1000 ppm.</p>
iso-butanol	<p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, exposure limit values (Annex I) (Croatia, 12/2023)</b> Absorbed through skin.            STELV 15 minutes: 231 mg/m<sup>3</sup>.            STELV 15 minutes: 75 ppm.            ELV 8 hours: 154 mg/m<sup>3</sup>.            ELV 8 hours: 50 ppm.</p>
n-Butyl acetate	<p><b>Department of labour inspection (Cyprus, 7/2021)</b>            STEL 15 minutes: 150 ppm.            STEL 15 minutes: 723 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.            TWA 8 hours: 241 mg/m<sup>3</sup>.</p>
Toluene	<p><b>Department of labour inspection (Cyprus, 7/2021)</b> Absorbed through skin.            STEL 15 minutes: 100 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.            TWA 8 hours: 192 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Department of labour inspection (Cyprus, 7/2021)</b>            STEL 15 minutes: 400 ppm.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Government regulation of Czech Republic PEL/NPK-P (Czech Republic, 12/2023)</b>            TWA 8 hours: 241 mg/m<sup>3</sup>.            STEL 15 minutes: 723 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>Government regulation of Czech Republic PEL/NPK-P (Czech Republic, 12/2023)</b> Absorbed through skin.            TWA 8 hours: 192 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.</p>
Ethyl acetate	<p><b>Government regulation of Czech Republic PEL/NPK-P (Czech Republic, 12/2023)</b>            TWA 8 hours: 700 mg/m<sup>3</sup>.            TWA 8 hours: 191.1 ppm.            STEL 15 minutes: 900 mg/m<sup>3</sup>.            STEL 15 minutes: 245.7 ppm.</p>
Ethanol	<p><b>Government regulation of Czech Republic PEL/NPK-P (Czech Republic, 12/2023)</b>            TWA 8 hours: 1000 mg/m<sup>3</sup>.            TWA 8 hours: 522 ppm.            STEL 15 minutes: 3000 mg/m<sup>3</sup>.            STEL 15 minutes: 1566 ppm.</p>
iso-butanol	<p><b>Government regulation of Czech Republic PEL/NPK-P (Czech Republic, 12/2023) [butanol]</b>            TWA 8 hours: 300 mg/m<sup>3</sup>.            TWA 8 hours: 97 ppm.            STEL 15 minutes: 600 mg/m<sup>3</sup>.            STEL 15 minutes: 194 ppm.</p>



## SECTION 8: Exposure controls/personal protection

n-Butyl acetate

**Working Environment Authority (Denmark, 3/2024)**

**[butylacetat, alle isomerer]**

TWA 8 hours: 50 ppm.

TWA 8 hours: 241 mg/m<sup>3</sup>.

STEL 15 minutes: 723 mg/m<sup>3</sup>.

STEL 15 minutes: 150 ppm.

Toluene

**Working Environment Authority (Denmark, 3/2024)** Absorbed through skin.

TWA 8 hours: 25 ppm.

TWA 8 hours: 94 mg/m<sup>3</sup>.

STEL 15 minutes: 384 mg/m<sup>3</sup>.

STEL 15 minutes: 100 ppm.

Ethyl acetate

**Working Environment Authority (Denmark, 3/2024)**

TWA 8 hours: 150 ppm.

TWA 8 hours: 540 mg/m<sup>3</sup>.

STEL 15 minutes: 1468 mg/m<sup>3</sup>.

STEL 15 minutes: 400 ppm.

Ethanol

**Working Environment Authority (Denmark, 3/2024)**

TWA 8 hours: 1000 ppm.

TWA 8 hours: 1900 mg/m<sup>3</sup>.

STEL 15 minutes: 3800 mg/m<sup>3</sup>.

STEL 15 minutes: 2000 ppm.

iso-butanol

**Working Environment Authority (Denmark, 3/2024) [butanol, alle isomere]** Absorbed through skin.

CEIL: 50 ppm.

CEIL: 150 mg/m<sup>3</sup>.

n-Butyl acetate

**Occupational exposure limits, Regulation No. 293 (Estonia, 4/2024)**

STEL 15 minutes: 150 ppm.

STEL 15 minutes: 723 mg/m<sup>3</sup>.

TWA 8 hours: 50 ppm.

TWA 8 hours: 241 mg/m<sup>3</sup>.

Toluene

**Occupational exposure limits, Regulation No. 293 (Estonia, 4/2024)** Absorbed through skin.

TWA 8 hours: 192 mg/m<sup>3</sup>.

TWA 8 hours: 50 ppm.

STEL 15 minutes: 384 mg/m<sup>3</sup>.

STEL 15 minutes: 100 ppm.

Ethyl acetate

**Occupational exposure limits, Regulation No. 293 (Estonia, 4/2024)**

TWA 8 hours: 500 mg/m<sup>3</sup>.

TWA 8 hours: 150 ppm.

STEL 15 minutes: 1100 mg/m<sup>3</sup>.

STEL 15 minutes: 300 ppm.

Ethanol

**Occupational exposure limits, Regulation No. 293 (Estonia, 4/2024)**

TWA 8 hours: 1000 mg/m<sup>3</sup>.

TWA 8 hours: 500 ppm.

STEL 15 minutes: 1900 mg/m<sup>3</sup>.

STEL 15 minutes: 1000 ppm.

iso-butanol

**Occupational exposure limits, Regulation No. 293 (Estonia, 4/2024)**

TWA 8 hours: 150 mg/m<sup>3</sup>.

TWA 8 hours: 50 ppm.

n-Butyl acetate

**EU OEL (Europe, 1/2022)**

STEL 15 minutes: 150 ppm.

STEL 15 minutes: 723 mg/m<sup>3</sup>.

TWA 8 hours: 241 mg/m<sup>3</sup>.

TWA 8 hours: 50 ppm.

Toluene

**EU OEL (Europe, 1/2022)** Absorbed through skin.

TWA 8 hours: 192 mg/m<sup>3</sup>.

## SECTION 8: Exposure controls/personal protection

Ethyl acetate	<p>TWA 8 hours: 50 ppm.          STEL 15 minutes: 384 mg/m<sup>3</sup>.          STEL 15 minutes: 100 ppm.</p> <p><b>EU OEL (Europe, 1/2022)</b>          STEL 15 minutes: 400 ppm.          STEL 15 minutes: 1468 mg/m<sup>3</sup>.          TWA 8 hours: 200 ppm.          TWA 8 hours: 734 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Institute of Occupational Health, Ministry of Social Affairs (Finland, 10/2021)</b>          TWA 8 hours: 150 ppm.          TWA 8 hours: 720 mg/m<sup>3</sup>.          STEL 15 minutes: 200 ppm.          STEL 15 minutes: 960 mg/m<sup>3</sup>.</p>
Toluene	<p><b>Institute of Occupational Health, Ministry of Social Affairs (Finland, 10/2021)</b> Absorbed through skin , Ototoxicant.          TWA 8 hours: 25 ppm.          TWA 8 hours: 81 mg/m<sup>3</sup>.          STEL 15 minutes: 100 ppm.          STEL 15 minutes: 380 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Institute of Occupational Health, Ministry of Social Affairs (Finland, 10/2021)</b>          TWA 8 hours: 200 ppm.          TWA 8 hours: 730 mg/m<sup>3</sup>.          STEL 15 minutes: 400 ppm.          STEL 15 minutes: 1470 mg/m<sup>3</sup>.</p>
Ethanol	<p><b>Institute of Occupational Health, Ministry of Social Affairs (Finland, 10/2021)</b>          TWA 8 hours: 1000 ppm.          TWA 8 hours: 1900 mg/m<sup>3</sup>.          STEL 15 minutes: 1300 ppm.          STEL 15 minutes: 2500 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>Institute of Occupational Health, Ministry of Social Affairs (Finland, 10/2021) [Butanoli]</b> Absorbed through skin.          TWA 8 hours: 50 ppm.          TWA 8 hours: 150 mg/m<sup>3</sup>.          STEL 15 minutes: 75 ppm.          STEL 15 minutes: 230 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Ministry of Labor (France, 6/2024)</b>          TWA 8 hours: 50 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          TWA 8 hours: 241 mg/m<sup>3</sup>. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          STEL 15 minutes: 150 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          STEL 15 minutes: 723 mg/m<sup>3</sup>. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)</p>
Toluene	<p><b>Ministry of Labor (France, 6/2024)</b> Repr 2. Absorbed through skin , Ototoxicant.          TWA 8 hours: 20 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          TWA 8 hours: 76.8 mg/m<sup>3</sup>. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          STEL 15 minutes: 100 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          STEL 15 minutes: 384 mg/m<sup>3</sup>. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)</p>
Ethyl acetate	<p><b>Ministry of Labor (France, 6/2024)</b>          TWA 8 hours: 200 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          TWA 8 hours: 734 mg/m<sup>3</sup>. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)          STEL 15 minutes: 1468 mg/m<sup>3</sup>. Notes: Binding regulatory limit</p>

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Ethanol	<p>values (article R. 4412-149 of the Labor Code)            STEL 15 minutes: 400 ppm. Notes: Binding regulatory limit values (article R. 4412-149 of the Labor Code)</p> <p><b>Ministry of Labor (France, 6/2024)</b>            TWA 8 hours: 1000 ppm. Notes: Permissible limit values (circulars)            TWA 8 hours: 1900 mg/m<sup>3</sup>. Notes: Permissible limit values (circulars)            STEL 15 minutes: 5000 ppm. Notes: Permissible limit values (circulars)            STEL 15 minutes: 9500 mg/m<sup>3</sup>. Notes: Permissible limit values (circulars)</p>
iso-butanol	<p><b>Ministry of Labor (France, 6/2024)</b>            TWA 8 hours: 50 ppm. Notes: Permissible limit values (circulars)            TWA 8 hours: 150 mg/m<sup>3</sup>. Notes: Permissible limit values (circulars)</p>
n-Butyl acetate	<p><b>TRGS 900 OEL (Germany, 6/2024)</b>            TWA 8 hours: 300 mg/m<sup>3</sup>.            TWA 8 hours: 62 ppm.            PEAK 15 minutes: 600 mg/m<sup>3</sup>.            PEAK 15 minutes: 124 ppm.</p> <p><b>DFG MAC-values list (Germany, 7/2023)</b> Develop C.            TWA 8 hours: 100 ppm.            PEAK 15 minutes: 200 ppm 4 times per shift [Interval: 1 hour].            TWA 8 hours: 480 mg/m<sup>3</sup>.            PEAK 15 minutes: 960 mg/m<sup>3</sup> 4 times per shift [Interval: 1 hour].</p>
Toluene	<p><b>TRGS 900 OEL (Germany, 6/2024)</b> Absorbed through skin.            TWA 8 hours: 190 mg/m<sup>3</sup>.            PEAK 15 minutes: 380 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.            PEAK 15 minutes: 100 ppm.</p> <p><b>DFG MAC-values list (Germany, 7/2023)</b> Develop C. Absorbed through skin.            TWA 8 hours: 50 ppm.            PEAK 15 minutes: 100 ppm 4 times per shift [Interval: 1 hour].            TWA 8 hours: 190 mg/m<sup>3</sup>.            PEAK 15 minutes: 380 mg/m<sup>3</sup> 4 times per shift [Interval: 1 hour].</p>
Ethyl acetate	<p><b>TRGS 900 OEL (Germany, 6/2024)</b>            TWA 8 hours: 730 mg/m<sup>3</sup>.            PEAK 15 minutes: 1460 mg/m<sup>3</sup>.            TWA 8 hours: 200 ppm.            PEAK 15 minutes: 400 ppm.</p> <p><b>DFG MAC-values list (Germany, 7/2023)</b> Develop C.            TWA 8 hours: 200 ppm.            PEAK 15 minutes: 400 ppm 4 times per shift [Interval: 1 hour].            TWA 8 hours: 750 mg/m<sup>3</sup>.            PEAK 15 minutes: 1500 mg/m<sup>3</sup> 4 times per shift [Interval: 1 hour].</p>
Ethanol	<p><b>TRGS 900 OEL (Germany, 6/2024)</b>            TWA 8 hours: 380 mg/m<sup>3</sup>.            PEAK 15 minutes: 1520 mg/m<sup>3</sup>.            TWA 8 hours: 200 ppm.            PEAK 15 minutes: 800 ppm.</p> <p><b>DFG MAC-values list (Germany, 7/2023)</b> Carc 5, Muta 5, Develop C.            TWA 8 hours: 200 ppm.            PEAK 15 minutes: 800 ppm 4 times per shift [Interval: 1 hour].            TWA 8 hours: 380 mg/m<sup>3</sup>.            PEAK 15 minutes: 1520 mg/m<sup>3</sup> 4 times per shift [Interval: 1 hour].</p>
iso-butanol	<p><b>TRGS 900 OEL (Germany, 6/2024)</b>            TWA 8 hours: 310 mg/m<sup>3</sup>.            PEAK 15 minutes: 310 mg/m<sup>3</sup>.            TWA 8 hours: 100 ppm.</p>

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n-Butyl acetate	<p>PEAK 15 minutes: 100 ppm.  <b>DFG MAC-values list (Germany, 7/2023)</b> Develop C.  TWA 8 hours: 100 ppm.  PEAK 15 minutes: 100 ppm 4 times per shift [Interval: 1 hour].  TWA 8 hours: 310 mg/m<sup>3</sup>.  PEAK 15 minutes: 310 mg/m<sup>3</sup> 4 times per shift [Interval: 1 hour].</p> <p><b>Presidential Decree 307/1986: Occupational exposure limit values (Greece, 9/2021)</b>  TWA 8 hours: 50 ppm.  TWA 8 hours: 241 mg/m<sup>3</sup>.  STEL 15 minutes: 150 ppm.  STEL 15 minutes: 723 mg/m<sup>3</sup>.</p>
Toluene	<p><b>Presidential Decree 307/1986: Occupational exposure limit values (Greece, 9/2021)</b> Absorbed through skin.  TWA 8 hours: 50 ppm.  TWA 8 hours: 192 mg/m<sup>3</sup>.  STEL 15 minutes: 100 ppm.  STEL 15 minutes: 384 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Presidential Decree 307/1986: Occupational exposure limit values (Greece, 9/2021)</b>  TWA 8 hours: 200 ppm.  TWA 8 hours: 734 mg/m<sup>3</sup>.  STEL 15 minutes: 1468 mg/m<sup>3</sup>.  STEL 15 minutes: 400 ppm.</p>
Ethanol	<p><b>Presidential Decree 307/1986: Occupational exposure limit values (Greece, 9/2021)</b>  TWA 8 hours: 1000 ppm.  TWA 8 hours: 1900 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>Presidential Decree 307/1986: Occupational exposure limit values (Greece, 9/2021)</b>  TWA 8 hours: 100 ppm.  TWA 8 hours: 300 mg/m<sup>3</sup>.  STEL 15 minutes: 100 ppm.  STEL 15 minutes: 300 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>5/2020. (II. 6.) ITM Decree (Hungary, 12/2023)</b> Sensitiser.  TWA 8 hours: 241 mg/m<sup>3</sup>.  PEAK 15 minutes: 723 mg/m<sup>3</sup>.  PEAK 15 minutes: 150 ppm.  TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>5/2020. (II. 6.) ITM Decree (Hungary, 12/2023)</b> Absorbed through skin.  TWA 8 hours: 192 mg/m<sup>3</sup>.  PEAK 15 minutes: 384 mg/m<sup>3</sup>.  PEAK 15 minutes: 100 ppm.  TWA 8 hours: 50 ppm.</p>
Ethyl acetate	<p><b>5/2020. (II. 6.) ITM Decree (Hungary, 12/2023)</b> Sensitiser.  TWA 8 hours: 734 mg/m<sup>3</sup>.  PEAK 15 minutes: 1468 mg/m<sup>3</sup>.  PEAK 15 minutes: 400 ppm.  TWA 8 hours: 200 ppm.</p>
Ethanol	<p><b>5/2020. (II. 6.) ITM Decree (Hungary, 12/2023)</b>  TWA 8 hours: 1900 mg/m<sup>3</sup>.  PEAK 15 minutes: 3800 mg/m<sup>3</sup>.  PEAK 15 minutes: 2000 ppm.  TWA 8 hours: 1000 ppm.</p>
n-Butyl acetate	<p><b>Ministry of Welfare, List of Exposure Limits (Iceland, 11/2023) [bútýlasetat, allir ísómerar]</b>  TWA 8 hours: 241 mg/m<sup>3</sup>.  TWA 8 hours: 50 ppm.  STEL 15 minutes: 723 mg/m<sup>3</sup>.  STEL 15 minutes: 150 ppm.</p>
Toluene	<p><b>Ministry of Welfare, List of Exposure Limits (Iceland, 11/2023)</b></p>

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Ethyl acetate	<p>Absorbed through skin.            STEL 15 minutes: 188 mg/m<sup>3</sup>.            STEL 15 minutes: 50 ppm.            TWA 8 hours: 94 mg/m<sup>3</sup>.            TWA 8 hours: 25 ppm.</p> <p><b>Ministry of Welfare, List of Exposure Limits (Iceland, 11/2023)</b>            TWA 8 hours: 540 mg/m<sup>3</sup>.            TWA 8 hours: 150 ppm.</p>
Ethanol	<p><b>Ministry of Welfare, List of Exposure Limits (Iceland, 11/2023)</b>            TWA 8 hours: 1900 mg/m<sup>3</sup>.            TWA 8 hours: 1000 ppm.</p>
iso-butanol	<p><b>Ministry of Welfare, List of Exposure Limits (Iceland, 11/2023)</b>  <b>[Bútanól, allir isomerar nema n-bútanól]</b> Absorbed through skin.            STEL 15 minutes: 150 mg/m<sup>3</sup>.            STEL 15 minutes: 50 ppm.</p>
n-Butyl acetate	<p><b>NAOSH (Ireland, 4/2024)</b> Notes: EU derived Occupational Exposure Limit Values            OELV 8 hours: 50 ppm.            OELV 8 hours: 241 mg/m<sup>3</sup>.            OELV 15 minutes: 150 ppm.            OELV 15 minutes: 723 mg/m<sup>3</sup>.</p>
Toluene	<p><b>NAOSH (Ireland, 4/2024)</b> Absorbed through skin. Notes: EU derived Occupational Exposure Limit Values            OELV 8 hours: 50 ppm.            OELV 8 hours: 192 mg/m<sup>3</sup>.            OELV 15 minutes: 100 ppm.            OELV 15 minutes: 384 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>NAOSH (Ireland, 4/2024)</b> Notes: EU derived Occupational Exposure Limit Values            OELV 8 hours: 200 ppm.            OELV 15 minutes: 400 ppm.            OELV 15 minutes: 1468 mg/m<sup>3</sup>.            OELV 8 hours: 734 mg/m<sup>3</sup>.</p>
Ethanol	<p><b>NAOSH (Ireland, 4/2024)</b> Notes: Advisory Occupational Exposure Limit Values (OELVs)            OELV 15 minutes: 1000 ppm.</p>
iso-butanol	<p><b>NAOSH (Ireland, 4/2024)</b> Notes: Advisory Occupational Exposure Limit Values (OELVs)            OELV 8 hours: 150 ppm.            OELV 8 hours: 700 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>EU OEL (Europe, 1/2022)</b>            STEL 15 minutes: 150 ppm.            STEL 15 minutes: 723 mg/m<sup>3</sup>.            TWA 8 hours: 241 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>Legislative Decree No. 81/2008. Title IX. Protection from chemical agents, carcinogens and mutagens (Italy, 6/2020)</b>            Absorbed through skin.            Limit value 8 hours: 50 ppm.            Limit value 8 hours: 192 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Legislative Decree No. 81/2008. Title IX. Protection from chemical agents, carcinogens and mutagens (Italy, 6/2020)</b>            Short Term 15 minutes: 400 ppm.            Short Term 15 minutes: 1468 mg/m<sup>3</sup>.            Limit value 8 hours: 200 ppm.            Limit value 8 hours: 734 mg/m<sup>3</sup>.</p>

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n-Butyl acetate	<b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> TWA 8 hours: 241 mg/m <sup>3</sup> . STEL 15 minutes: 150 ppm. STEL 15 minutes: 723 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm.
Toluene	<b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> Absorbed through skin. TWA 8 hours: 50 mg/m <sup>3</sup> . STEL 15 minutes: 150 mg/m <sup>3</sup> . TWA 8 hours: 14 ppm. STEL 15 minutes: 40 ppm.
Ethyl acetate	<b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> TWA 8 hours: 200 mg/m <sup>3</sup> . STEL 15 minutes: 400 ppm. STEL 15 minutes: 1468 mg/m <sup>3</sup> . TWA 8 hours: 54 ppm.
Ethanol	<b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> TWA 8 hours: 1000 mg/m <sup>3</sup> .
iso-butanol	<b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> <b>[Butilspirti]</b>
Urea	TWA 8 hours: 10 mg/m <sup>3</sup> . <b>Ministers Cabinet Regulations Nr.325 - AER (Latvia, 3/2024)</b> TWA 8 hours: 10 mg/m <sup>3</sup> .
n-Butyl acetate	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024)</b> TWA 8 hours: 241 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm. STEL 15 minutes: 723 mg/m <sup>3</sup> . STEL 15 minutes: 150 ppm.
Toluene	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024) Repr.</b> Absorbed through skin. TWA 8 hours: 192 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm. STEL 15 minutes: 384 mg/m <sup>3</sup> . STEL 15 minutes: 100 ppm.
Ethyl acetate	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024)</b> TWA 8 hours: 500 mg/m <sup>3</sup> . TWA 8 hours: 150 ppm. CEIL: 1100 mg/m <sup>3</sup> . CEIL: 300 ppm.
Ethanol	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024)</b> TWA 8 hours: 1000 mg/m <sup>3</sup> . TWA 8 hours: 500 ppm. STEL 15 minutes: 1900 mg/m <sup>3</sup> . STEL 15 minutes: 1000 ppm.
iso-butanol	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024)</b> Absorbed through skin. TWA 8 hours: 10 mg/m <sup>3</sup> .
Urea	<b>Lithuanian Hygiene Standard HN 23 (Lithuania, 1/2024)</b> TWA 8 hours: 10 mg/m <sup>3</sup> .
n-Butyl acetate	<b>Grand-Duchy Regulation 2016. Chemical agents. Annex I (Luxembourg, 3/2021)</b> STEL 15 minutes: 150 ppm. STEL 15 minutes: 723 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm. TWA 8 hours: 241 mg/m <sup>3</sup> .
Toluene	<b>Grand-Duchy Regulation 2016. Chemical agents. Annex I (Luxembourg, 3/2021)</b> Absorbed through skin. STEL 15 minutes: 100 ppm. STEL 15 minutes: 384 mg/m <sup>3</sup> . TWA 8 hours: 50 ppm. TWA 8 hours: 192 mg/m <sup>3</sup> .
Ethyl acetate	<b>Grand-Duchy Regulation 2016. Chemical agents. Annex I</b>

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n-Butyl acetate	<p><b>(Luxembourg, 3/2021)</b>            STEL 15 minutes: 400 ppm.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.</p> <p><b>EU OEL (Europe, 1/2022)</b>            STEL 15 minutes: 150 ppm.            STEL 15 minutes: 723 mg/m<sup>3</sup>.            TWA 8 hours: 241 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>EU OEL (Europe, 1/2022)</b> Absorbed through skin.            TWA 8 hours: 192 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.</p>
Ethyl acetate	<p><b>EU OEL (Europe, 1/2022)</b>            STEL 15 minutes: 400 ppm.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024)</b>            TWA 8 hours: 241 mg/m<sup>3</sup>.            STEL 15 minutes: 723 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024)</b>            TWA 8 hours: 150 mg/m<sup>3</sup>.            STEL 15 minutes: 384 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.            TWA 8 hours: 39 ppm.</p>
Ethyl acetate	<p><b>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024)</b>            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            TWA 8 hours: 734 mg/m<sup>3</sup>.            STEL 15 minutes: 400 ppm.            TWA 8 hours: 200 ppm.</p>
Ethanol	<p><b>Ministry of Social Affairs and Employment, Legal limit values (Netherlands, 5/2024)</b> Carc B2. Absorbed through skin.            TWA 8 hours: 260 mg/m<sup>3</sup>.            STEL 15 minutes: 1900 mg/m<sup>3</sup>.            STEL 15 minutes: 1000 ppm.            TWA 8 hours: 137 ppm.</p>
n-Butyl acetate	<p><b>FOR-2011-12-06-1358 (Norway, 12/2022)</b>            STEL 15 minutes: 723 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            TWA 8 hours: 241 mg/m<sup>3</sup>.            TWA 8 hours: 50 ppm.</p>
Toluene	<p><b>FOR-2011-12-06-1358 (Norway, 12/2022)</b> Absorbed through skin.            TWA 8 hours: 25 ppm.            TWA 8 hours: 94 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>FOR-2011-12-06-1358 (Norway, 12/2022)</b>            TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            STEL 15 minutes: 400 ppm.</p>
Ethanol	<p><b>FOR-2011-12-06-1358 (Norway, 12/2022)</b>            TWA 8 hours: 500 ppm.            TWA 8 hours: 950 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>FOR-2011-12-06-1358 (Norway, 12/2022)</b> Absorbed through skin.            CEIL: 75 mg/m<sup>3</sup>.</p>

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n-Butyl acetate	CEIL: 25 ppm. <b>Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2018, item 1286) (Poland, 8/2023)</b> TWA 8 hours: 240 mg/m <sup>3</sup> . STEL 15 minutes: 720 mg/m <sup>3</sup> .
Toluene	<b>Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2018, item 1286) (Poland, 8/2023)</b> Absorbed through skin. TWA 8 hours: 100 mg/m <sup>3</sup> . STEL 15 minutes: 200 mg/m <sup>3</sup> .
Ethyl acetate	<b>Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2018, item 1286) (Poland, 8/2023)</b> TWA 8 hours: 734 mg/m <sup>3</sup> . STEL 15 minutes: 1468 mg/m <sup>3</sup> .
Ethanol	<b>Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2018, item 1286) (Poland, 8/2023)</b> TWA 8 hours: 1900 mg/m <sup>3</sup> .
iso-butanol	<b>Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws of 2018, item 1286) (Poland, 8/2023)</b> Absorbed through skin. TWA 8 hours: 100 mg/m <sup>3</sup> . STEL 15 minutes: 200 mg/m <sup>3</sup> .
n-Butyl acetate	<b>Portuguese Institute of Quality (Portugal, 11/2014)</b> TWA 8 hours: 150 ppm. STEL 15 minutes: 200 ppm.
Toluene	<b>Portuguese Institute of Quality (Portugal, 11/2014)</b> A4. TWA 8 hours: 20 ppm.
Ethyl acetate	<b>Portuguese Institute of Quality (Portugal, 11/2014)</b> TWA 8 hours: 400 ppm.
Ethanol	<b>Portuguese Institute of Quality (Portugal, 11/2014)</b> A3. STEL 15 minutes: 1000 ppm.
iso-butanol	<b>Portuguese Institute of Quality (Portugal, 11/2014)</b> TWA 8 hours: 50 ppm.
n-Butyl acetate	<b>HG 1218/2006, Annex 1, with subsequent modifications and additions (Romania, 3/2024)</b> VLA 8 hours: 241 mg/m <sup>3</sup> . VLA 8 hours: 50 ppm. Short term 15 minutes: 723 mg/m <sup>3</sup> . Short term 15 minutes: 150 ppm.
Toluene	<b>HG 1218/2006, Annex 1, with subsequent modifications and additions (Romania, 3/2024)</b> R2. Absorbed through skin. VLA 8 hours: 192 mg/m <sup>3</sup> . VLA 8 hours: 50 ppm. Short term 15 minutes: 384 mg/m <sup>3</sup> . Short term 15 minutes: 100 ppm.
Ethyl acetate	<b>HG 1218/2006, Annex 1, with subsequent modifications and additions (Romania, 3/2024)</b> VLA 8 hours: 734 mg/m <sup>3</sup> . VLA 8 hours: 200 ppm.



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Ethanol	<p>Short term 15 minutes: 1468 mg/m<sup>3</sup>.  Short term 15 minutes: 400 ppm.</p> <p><b>HG 1218/2006, Annex 1, with subsequent modifications and additions (Romania, 3/2024)</b></p> <p>VLA 8 hours: 1900 mg/m<sup>3</sup>.  VLA 8 hours: 1000 ppm.  Short term 15 minutes: 9500 mg/m<sup>3</sup>.  Short term 15 minutes: 5000 ppm.</p>
iso-butanol	<p><b>HG 1218/2006, Annex 1, with subsequent modifications and additions (Romania, 3/2024)</b></p> <p>VLA 8 hours: 100 mg/m<sup>3</sup>.  VLA 8 hours: 33 ppm.  Short term 15 minutes: 200 mg/m<sup>3</sup>.  Short term 15 minutes: 66 ppm.</p>
n-Butyl acetate	<p><b>Government regulation SR c. 355/2006 (Slovakia, 7/2024)</b>  <b>[butylacetáty]</b> Inhalation sensitiser.</p> <p>TWA 8 hours: 241 mg/m<sup>3</sup> (Butyl acetates).  TWA 8 hours: 50 ppm (Butyl acetates).  STEL 15 minutes: 723 mg/m<sup>3</sup> (Butyl acetates).  STEL 15 minutes: 150 ppm (Butyl acetates).</p>
Toluene	<p><b>Government regulation SR c. 355/2006 (Slovakia, 7/2024)</b>  Absorbed through skin , Inhalation sensitiser.</p> <p>TWA 8 hours: 192 mg/m<sup>3</sup>.  TWA 8 hours: 50 ppm.  STEL 15 minutes: 384 mg/m<sup>3</sup>.  STEL 15 minutes: 100 ppm.</p>
Ethyl acetate	<p><b>Government regulation SR c. 355/2006 (Slovakia, 7/2024)</b>  Inhalation sensitiser.</p> <p>TWA 8 hours: 734 mg/m<sup>3</sup>.  TWA 8 hours: 200 ppm.  STEL 15 minutes: 1468 mg/m<sup>3</sup>.  STEL 15 minutes: 400 ppm.</p>
Ethanol	<p><b>Government regulation SR c. 355/2006 (Slovakia, 7/2024)</b>  Inhalation sensitiser.</p> <p>TWA 8 hours: 960 mg/m<sup>3</sup>.  TWA 8 hours: 500 ppm.  STEL 15 minutes: 1920 mg/m<sup>3</sup>.  STEL 15 minutes: 1000 ppm.</p>
iso-butanol	<p><b>Government regulation SR c. 355/2006 (Slovakia, 7/2024)</b>  <b>[butylalkoholy]</b> Inhalation sensitiser.</p> <p>TWA 8 hours: 310 mg/m<sup>3</sup> (Butyl alcohols).  TWA 8 hours: 100 ppm (Butyl alcohols).</p>
n-Butyl acetate	<p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b></p> <p>TWA 8 hours: 241 mg/m<sup>3</sup>.  TWA 8 hours: 50 ppm.  KTV 15 minutes: 723 mg/m<sup>3</sup> 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].  KTV 15 minutes: 150 ppm 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].</p>
Toluene	<p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b>  Repr Dev 2. Absorbed through skin.</p> <p>TWA 8 hours: 192 mg/m<sup>3</sup>.  TWA 8 hours: 50 ppm.  KTV 15 minutes: 384 mg/m<sup>3</sup> 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].  KTV 15 minutes: 100 ppm 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].</p>
Ethyl acetate	<p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b></p> <p>TWA 8 hours: 734 mg/m<sup>3</sup>.</p>

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Ethanol	<p>TWA 8 hours: 200 ppm.            KTV 15 minutes: 1468 mg/m<sup>3</sup> 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].            KTV 15 minutes: 400 ppm 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].</p> <p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b></p> <p>TWA 8 hours: 960 mg/m<sup>3</sup>.            TWA 8 hours: 500 ppm.            KTV 15 minutes: 1920 mg/m<sup>3</sup> 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].            KTV 15 minutes: 1000 ppm 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].</p>
iso-butanol	<p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b></p> <p>TWA 8 hours: 310 mg/m<sup>3</sup>.            TWA 8 hours: 100 ppm.            KTV 15 minutes: 310 mg/m<sup>3</sup> 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].            KTV 15 minutes: 100 ppm 4 times per shift [time between two exposure events at this concentration must be at least 60 minutes].</p>
n-Butyl acetate	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b></p> <p>TWA 8 hours: 50 ppm.            TWA 8 hours: 241 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            STEL 15 minutes: 723 mg/m<sup>3</sup>.</p>
Toluene	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b> Absorbed through skin.</p> <p>TWA 8 hours: 50 ppm.            TWA 8 hours: 192 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b></p> <p>TWA 8 hours: 200 ppm.            TWA 8 hours: 734 mg/m<sup>3</sup>.            STEL 15 minutes: 1468 mg/m<sup>3</sup>.            STEL 15 minutes: 400 ppm.</p>
Ethanol	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b></p> <p>STEL 15 minutes: 1000 ppm.            STEL 15 minutes: 1910 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b></p> <p>TWA 8 hours: 50 ppm.            TWA 8 hours: 154 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>Work environment authority Regulation 2018:1 (Sweden, 11/2022) [butyl acetate]</b></p> <p>TWA 8 hours: 50 ppm.            TWA 8 hours: 241 mg/m<sup>3</sup>.            STEL 15 minutes: 150 ppm.            STEL 15 minutes: 723 mg/m<sup>3</sup>.</p>
Toluene	<p><b>Work environment authority Regulation 2018:1 (Sweden, 11/2022)</b> Absorbed through skin , Ototoxicant.</p> <p>TWA 8 hours: 50 ppm.            TWA 8 hours: 192 mg/m<sup>3</sup>.            STEL 15 minutes: 100 ppm.            STEL 15 minutes: 384 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>Work environment authority Regulation 2018:1 (Sweden, 11/2022)</b></p> <p>TWA 8 hours: 150 ppm.</p>

## SECTION 8: Exposure controls/personal protection

Ethanol	<p>TWA 8 hours: 550 mg/m<sup>3</sup>.                      STEL 15 minutes: 300 ppm.                      STEL 15 minutes: 1100 mg/m<sup>3</sup>.</p> <p><b>Work environment authority Regulation 2018:1 (Sweden, 11/2022)</b></p> <p>TWA 8 hours: 500 ppm.                      TWA 8 hours: 1000 mg/m<sup>3</sup>.                      STEL 15 minutes: 1000 ppm.                      STEL 15 minutes: 1900 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>Work environment authority Regulation 2018:1 (Sweden, 11/2022)</b> Absorbed through skin.</p> <p>TWA 8 hours: 50 ppm.                      TWA 8 hours: 150 mg/m<sup>3</sup>.                      STEL 15 minutes: 75 ppm.                      STEL 15 minutes: 250 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>SUVA (Switzerland, 1/2024)</b></p> <p>TWA 8 hours: 50 ppm.                      TWA 8 hours: 240 mg/m<sup>3</sup>.                      STEL 15 minutes: 150 ppm.                      STEL 15 minutes: 720 mg/m<sup>3</sup>.</p>
Toluene	<p><b>SUVA (Switzerland, 1/2024)</b> Develop 2. Absorbed through skin ,                      Ototoxicant.</p> <p>TWA 8 hours: 50 ppm.                      TWA 8 hours: 190 mg/m<sup>3</sup>.                      STEL 15 minutes: 200 ppm.                      STEL 15 minutes: 760 mg/m<sup>3</sup>.</p>
Ethyl acetate	<p><b>SUVA (Switzerland, 1/2024)</b></p> <p>STEL 15 minutes: 400 ppm.                      STEL 15 minutes: 1460 mg/m<sup>3</sup>.                      TWA 8 hours: 200 ppm.                      TWA 8 hours: 730 mg/m<sup>3</sup>.</p>
Ethanol	<p><b>SUVA (Switzerland, 1/2024)</b></p> <p>TWA 8 hours: 500 ppm.                      TWA 8 hours: 960 mg/m<sup>3</sup>.                      STEL 15 minutes: 1000 ppm.                      STEL 15 minutes: 1920 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>SUVA (Switzerland, 1/2024)</b></p> <p>TWA 8 hours: 50 ppm.                      TWA 8 hours: 150 mg/m<sup>3</sup>.                      STEL 15 minutes: 50 ppm.                      STEL 15 minutes: 150 mg/m<sup>3</sup>.</p>
n-Butyl acetate	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b></p> <p>STEL 15 minutes: 966 mg/m<sup>3</sup>.                      STEL 15 minutes: 200 ppm.                      TWA 8 hours: 724 mg/m<sup>3</sup>.                      TWA 8 hours: 150 ppm.</p>
Toluene	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b> Absorbed                      through skin.</p> <p>STEL 15 minutes: 384 mg/m<sup>3</sup>.                      TWA 8 hours: 191 mg/m<sup>3</sup>.                      TWA 8 hours: 50 ppm.                      STEL 15 minutes: 100 ppm.</p>
Ethyl acetate	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b></p> <p>STEL 15 minutes: 400 ppm.                      TWA 8 hours: 200 ppm.                      STEL 15 minutes: 1468 mg/m<sup>3</sup>.                      TWA 8 hours: 734 mg/m<sup>3</sup>.</p>
Ethanol	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b></p> <p>TWA 8 hours: 1000 ppm.                      TWA 8 hours: 1920 mg/m<sup>3</sup>.</p>
iso-butanol	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b></p> <p>STEL 15 minutes: 231 mg/m<sup>3</sup>.                      STEL 15 minutes: 75 ppm.</p>

## SECTION 8: Exposure controls/personal protection

TWA 8 hours: 154 mg/m<sup>3</sup>.  
TWA 8 hours: 50 ppm.

### Biological exposure indices

Product/ingredient name	Exposure indices
Toluene	<p><b>VGU BEI (Austria, 9/2020)</b></p> <p>BEI Fitness: 250 µg/l, toluene [in blood]. Sampling time: one year.                      BEI Fitness: 0.8 mg/l, o-cresol [in urine]. Sampling time: one year.                      BEI Fitness: 130000 /µl, platelets (non-pathological differential blood count) [in blood]. Sampling time: one year.                      BEI Fitness: 150000 /µl, platelets [in blood]. Sampling time: one year.                      BEI Fitness: 3700 to 13000 /µl, leukocytes (non-pathological differential blood count) [in blood]. Sampling time: one year.                      BEI Fitness: 4000 to 13000 /µl, leukocytes [in blood]. Sampling time: one year.                      BEI Fitness - men: 3.8 million/µl, erythrocytes [in blood]. Sampling time: one year.                      BEI Fitness - women: 3.2 million/µl, erythrocytes [in blood]. Sampling time: one year.                      BEI Fitness - men: 12 g/dl, hemoglobin [in blood]. Sampling time: one year.                      BEI Fitness - women: 10 g/dl, hemoglobin [in blood]. Sampling time: one year.</p>
No exposure indices known.	
Toluene	<p><b>Ministry of Labour and Social Policy and the Ministry of Health - Ordinance No 13/2003. (Bulgaria, 4/2024)</b></p> <p>BLV: 1.6 mmol/mmol creatinine, hippuric acid [in urine]. Sampling time: at the end of the exposure or at the end of the work shift.</p>
Toluene	<p><b>Ordinance on the protection of workers from exposure to hazardous chemicals at work, biological limit values (Annex IV) (Croatia, 12/2023)</b></p> <p>BEI: 20 ppm, toluene [in end exhaled air]. Sampling time: during exposure.                      BEI: 0.83 µmol/l, toluene [in end exhaled air]. Sampling time: during exposure.                      BEI: 1 mg/l, toluene [in blood]. Sampling time: at the end of the work shift.                      BEI: 10.85 µmol/l, toluene [in blood]. Sampling time: at the end of the work shift.                      BEI: 1.05 mmol/mol creatinine, o-cresol [in urine]. Sampling time: at the end of the work shift.                      BEI: 1 mg/g creatinine, o-cresol [in urine]. Sampling time: at the end of the work shift.                      BEI: 1.58 mol/mol creatinine, hippuric acid [in urine]. Sampling time: at the end of the work shift.                      BEI: 2.5 g/g creatinine, hippuric acid [in urine]. Sampling time: at the end of the work shift.</p>
No exposure indices known.	
Toluene	<p><b>Government regulation of Czech Republic Limit Values of Biological Exposure Tests (Czech Republic, 9/2015)</b></p> <p>Biological limit values: 1000 µmol/mmol creatinine, hippuric acid [in urine]. Sampling time: end of the shift.                      Biological limit values: 1600 mg/g, hippuric acid [in urine]. Sampling time: end of the shift.                      Biological limit values: 1.6 µmol/mmol creatinine, o-kresol (after hydrolysis) [in urine]. Sampling time: end of the shift.                      Biological limit values: 1.5 mg/g creatinine, o-kresol (after hydrolysis) [in urine]. Sampling time: end of the shift.</p>

## SECTION 8: Exposure controls/personal protection

No exposure indices known.

No exposure indices known.

No exposure indices known.

Toluene

### **Institute of Occupational Health, Ministry of Social Affairs (Finland, 9/2020)**

BEI: 500 nmol/l, toluene [in blood]. Sampling time: the morning after the working day.

Toluene

### **Biological limit values (BLV) - Labour Code / ANSES (France, 4/2023)**

BLV: 30 µg/l, toluene [in urine]. Sampling time: at the end of the shift.

BLV: 20 µg/l, toluene [in blood]. Sampling time: at the beginning of the shift and at the end of the week.

BLV: 300 µg/g Cr, ortho-cresol [in urine]. Sampling time: end of shift and weekend.

Toluene

### **DFG BEI-values list (Germany, 7/2023)** Notes: danger from percutaneous absorption (see p. 211 and p. 228).

BEI: 600 µg/l, toluene [in blood]. Sampling time: immediately after exposure.

BEI: 1.5 mg/l, o-cresol (after hydrolysis) [in urine]. Sampling time: end of exposure or end of shift / for long-term exposures: at the end of the shift after several shifts.

BEI: 75 µg/l, toluene [in urine]. Sampling time: end of exposure or end of shift.

### **TRGS 903 - BEI Values (Germany, 2/2024)**

BEI: 600 µg/l, toluene [in whole blood]. Sampling time: immediately after exposure.

BEI: 1.5 mg/l, o-cresol (after hydrolysis) [in urine]. Sampling time: end of exposure or end of shift; for long-term exposures: at the end of shift after several shifts.

BEI: 75 µg/l, toluene [in urine]. Sampling time: end of exposure or end of shift.

No exposure indices known.

Toluene

### **5/2020. (II. 6.) ITM Decree (Hungary, 12/2023)**

BEI: 1 mg/g creatinine, o-cresol [in urine]. Sampling time: at the end of the shift.

BEI: 1 µmol/mmol creatinine, o-cresol [in urine]. Sampling time: at the end of the shift.

No exposure indices known.

Toluene

### **NAOSH (Ireland, 1/2011)**

BMGV: 0.3 mg/g creatinine, o-cresol [in urine]. Sampling time: end of shift - As soon as possible after exposure ceases.

BMGV: 0.03 mg/l, toluene [in urine]. Sampling time: end of shift - As soon as possible after exposure ceases.

BMGV: 0.02 mg/l, toluene [in blood]. Sampling time: prior to last shift of workweek.

No exposure indices known.

Toluene

### **Minister Cabinet Regulations No.325 - BEI (Latvia, 3/2024)**

BEI: 600 µg/l, toluene [in blood]. Sampling time: at the end of the exposure.

BEI: 75 µg/l, toluene [in urine]. Sampling time: end of the shift.

BEI: 1.5 mg/l, o-cresol (after hydrolysis) [in urine]. Sampling time: at the end of the exposure or at the end of the shift.

No exposure indices known.

No exposure indices known.

No exposure indices known.

No exposure indices known.

## SECTION 8: Exposure controls/personal protection

<p>No exposure indices known. No exposure indices known.</p>	
<p>Toluene</p>	<p><b>Portuguese Institute of Quality (Portugal, 11/2014)</b> BEI: 0.3 mg/g creatinine, o-cresol [in urine]. Sampling time: end of shift. BEI: 0.03 mg/l, toluene [in urine]. Sampling time: end of shift. BEI: 0.02 mg/l, toluene [in blood]. Sampling time: end of shift at the end of the workweek.</p>
<p>Toluene</p>	<p><b>HG 1218/2006, Annex 2, with subsequent modifications and additions (Romania, 3/2024)</b> OBLV: 3 mg/l, o-cresol [in urine]. Sampling time: end of shift. OBLV: 2 g/l, hippuric acid [in urine]. Sampling time: end of shift.</p>
<p>Toluene</p>	<p><b>Government regulation SR c. 355/2006 (Slovakia, 5/2024)</b> BLV: 1010 µmol/mmol creatinine, as hippuric acid [in urine]. Sampling time: at the end of exposure or work shift. BLV: 1.08 µmol/mmol creatinine, as o-cresol [in urine]. Sampling time: at the end of exposure or work shift; long-term exposure: after several work shifts. BLV: 1600 mg/g creatinine, as hippuric acid [in urine]. Sampling time: at the end of exposure or work shift. BLV: 1.03 mg/g creatinine, as o-cresol [in urine]. Sampling time: at the end of exposure or work shift; long-term exposure: after several work shifts. BLV: 13399 µmol/l, as hippuric acid [in urine]. Sampling time: at the end of exposure or work shift. BLV: 14.3 µmol/l, as o-cresol [in urine]. Sampling time: at the end of exposure or work shift; long-term exposure: after several work shifts. BLV: 6517 nmol/l, as toluene [in blood]. Sampling time: at the end of exposure or work shift. BLV: 2401 mg/l, as hippuric acid [in urine]. Sampling time: at the end of exposure or work shift. BLV: 1.5 mg/l, as o-cresol [in urine]. Sampling time: at the end of exposure or work shift; long-term exposure: after several work shifts. BLV: 600 µg/l, as toluene [in blood]. Sampling time: at the end of exposure or work shift.</p>
<p>Toluene</p>	<p><b>Regulation on protection of workers from the risks related to exposure to chemical substances at work (Slovenia, 4/2024)</b> BAT: 1.5 mg/l, o-cresol (after hydrolysis) [in urine]. Sampling time: at the end of the work shift, at long-term exposure: at the end of the work shift after several consecutive workdays. BAT: 600 µg/l, toluene [in blood]. Sampling time: immediately after exposure. BAT: 75 µg/l, toluene [in urine]. Sampling time: at the end of the work shift.</p>
<p>Toluene</p>	<p><b>National institute of occupational safety and health (Spain, 1/2024)</b> VLB: 0.05 mg/l, toluene [in blood]. Sampling time: prior to last shift of workweek. VLB: 0.6 mg/g creatinine, o-cresol [in urine]. Sampling time: end of shift. VLB: 0.08 mg/l, toluene [in urine]. Sampling time: end of shift.</p>
<p>No exposure indices known.</p>	

## SECTION 8: Exposure controls/personal protection

Toluene	<p><b>SUVA (Switzerland, 1/2024)</b></p> <p>BEI: 2 g/g creatinine, hippuric acid [in urine]. Sampling time: immediately after exposure or after working hours. In case of long-term exposure: after more than one shift.</p> <p>BEI: 1.26 mmol/mmol creatinine, hippuric acid [in urine]. Sampling time: immediately after exposure or after working hours. In case of long-term exposure: after more than one shift.</p> <p>BEI: 0.5 mg/l, o-cresol [in urine]. Sampling time: immediately after exposure or after working hours. In case of long-term exposure: after more than one shift.</p> <p>BEI: 4.62 µmol/l, o-cresol [in urine]. Sampling time: immediately after exposure or after working hours. In case of long-term exposure: after more than one shift.</p> <p>BEI: 600 µg/l, toluene [in blood]. Sampling time: immediately after exposure or after working hours.</p> <p>BEI: 6.48 µmol/l, toluene [in blood]. Sampling time: immediately after exposure or after working hours.</p> <p>BEI: 75 µg/l, toluene [in urine]. Sampling time: immediately after exposure or after working hours.</p>
No exposure indices known.	

**Recommended monitoring procedures** : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

### DNELs/DMELs

#### Product/ingredient name

n-Butyl acetate

#### Result

##### **DNEL - General population - Long term - Oral**

2 mg/kg bw/day

Effects: Systemic

##### **DNEL - General population - Short term - Oral**

2 mg/kg bw/day

Effects: Systemic

##### **DNEL - General population - Long term - Dermal**

3.4 mg/kg bw/day

Effects: Systemic

##### **DNEL - General population - Short term - Dermal**

6 mg/kg bw/day

Effects: Systemic

##### **DNEL - Workers - Long term - Dermal**

7 mg/kg bw/day

Effects: Systemic

##### **DNEL - Workers - Short term - Dermal**

11 mg/kg bw/day

Effects: Systemic

##### **DNEL - General population - Long term - Inhalation**

12 mg/m<sup>3</sup>

Effects: Systemic

##### **DNEL - General population - Long term - Inhalation**

35.7 mg/m<sup>3</sup>

Effects: Local

## SECTION 8: Exposure controls/personal protection

### **DNEL - Workers - Long term - Inhalation**

48 mg/m<sup>3</sup>

Effects: Systemic

### **DNEL - General population - Short term - Inhalation**

300 mg/m<sup>3</sup>

Effects: Local

### **DNEL - General population - Short term - Inhalation**

300 mg/m<sup>3</sup>

Effects: Systemic

### **DNEL - Workers - Long term - Inhalation**

300 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Short term - Inhalation**

600 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Short term - Inhalation**

600 mg/m<sup>3</sup>

Effects: Systemic

Toluene

### **DNEL - General population - Long term - Oral**

8.13 mg/kg bw/day

Effects: Systemic

### **DNEL - General population - Long term - Inhalation**

56.5 mg/m<sup>3</sup>

Effects: Local

### **DNEL - General population - Long term - Inhalation**

56.5 mg/m<sup>3</sup>

Effects: Systemic

### **DNEL - Workers - Long term - Inhalation**

192 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Long term - Inhalation**

192 mg/m<sup>3</sup>

Effects: Systemic

### **DNEL - General population - Long term - Dermal**

226 mg/kg bw/day

Effects: Systemic

### **DNEL - General population - Short term - Inhalation**

226 mg/m<sup>3</sup>

Effects: Local

### **DNEL - General population - Short term - Inhalation**

226 mg/m<sup>3</sup>

Effects: Systemic

### **DNEL - Workers - Long term - Dermal**

384 mg/kg bw/day

Effects: Systemic

### **DNEL - Workers - Short term - Inhalation**

384 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Short term - Inhalation**



## SECTION 8: Exposure controls/personal protection

Ethyl acetate

384 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - General population - Long term - Oral**  
4.5 mg/kg bw/day  
Effects: Systemic

**DNEL - General population - Long term - Dermal**  
37 mg/kg bw/day  
Effects: Systemic

**DNEL - Workers - Long term - Dermal**  
63 mg/kg bw/day  
Effects: Systemic

**DNEL - General population - Long term - Inhalation**  
367 mg/m<sup>3</sup>  
Effects: Local

**DNEL - General population - Long term - Inhalation**  
367 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - General population - Short term - Inhalation**  
734 mg/m<sup>3</sup>  
Effects: Local

**DNEL - General population - Short term - Inhalation**  
734 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - Workers - Long term - Inhalation**  
734 mg/m<sup>3</sup>  
Effects: Local

**DNEL - Workers - Long term - Inhalation**  
734 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - Workers - Short term - Inhalation**  
1468 mg/m<sup>3</sup>  
Effects: Local

**DNEL - Workers - Short term - Inhalation**  
1468 mg/m<sup>3</sup>  
Effects: Systemic

Ethanol

**DNEL - Workers - Long term - Inhalation**  
380 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - General population - Long term - Oral**  
87 mg/kg bw/day  
Effects: Systemic

**DNEL - General population - Long term - Inhalation**  
114 mg/m<sup>3</sup>  
Effects: Systemic

**DNEL - General population - Long term - Dermal**  
206 mg/kg bw/day  
Effects: Systemic

**DNEL - Workers - Long term - Dermal**  
343 mg/kg bw/day  
Effects: Systemic

## SECTION 8: Exposure controls/personal protection

### **DNEL - General population - Short term - Inhalation**

950 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Short term - Inhalation**

1900 mg/m<sup>3</sup>

Effects: Local

iso-butanol

### **DNEL - General population - Long term - Inhalation**

55 mg/m<sup>3</sup>

Effects: Local

### **DNEL - Workers - Long term - Inhalation**

310 mg/m<sup>3</sup>

Effects: Local

### **PNECs**

Not available.

## **8.2 Exposure controls**

### **Appropriate engineering controls**

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### **Individual protection measures**

#### **Hygiene measures**

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### **Eye/face protection**

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

#### **Skin protection**

##### **Hand protection**

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Recommendations : Wear suitable gloves tested to EN374.

< 1 hour (breakthrough time): Nitrile gloves. thickness > 0.3 mm

1 - 4 hours (breakthrough time): 4H / Silver Shield® gloves.

##### **Body protection**

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.

##### **Other skin protection**

- : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

## SECTION 8: Exposure controls/personal protection

- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.  
Filter type: A  
Filter type (spray application): A P
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### 9.1 Information on basic physical and chemical properties

#### Appearance

- Physical state** : Liquid.  
**Colour** : Colourless.  
**Odour** : Slight  
**Odour threshold** : Not available.  
**Melting point/freezing point** : Not available.  
**Initial boiling point and boiling range** :

Ingredient name	°C	°F	Method
Ethyl acetate	77.1	170.8	
Ethanol	78.29	172.9	

- Flammability** : Not available.  
**Lower and upper explosion limit** : Lower: 1.1% (toluene)  
Upper: 19% (ethanol)  
**Flash point** : Closed cup: -1°C (30.2°F)  
**Auto-ignition temperature** :

Ingredient name	°C	°F	Method
n-Butyl acetate	415	779	EU A.15
iso-butanol	415	779	

- Decomposition temperature** : Not available.  
**pH** : Not applicable.  
**Viscosity** : Not available.  
**Solubility(ies)** :  
Not available.

- Solubility in water** : Not available.  
**Partition coefficient: n-octanol/ water** : Not applicable.

- Vapour pressure** :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
Ethyl acetate	81.59163	10.9				
Ethanol	42.94865	5.7				

- Relative density** : Not available.  
**Density** : 0.9 g/cm<sup>3</sup>  
**Vapour density** : Not available.

## SECTION 9: Physical and chemical properties

### Particle characteristics

**Median particle size** : Not applicable.

### 9.2 Other information

#### 9.2.1 Information with regard to physical hazard classes

**Explosive properties** : Not available.

**Oxidising properties** : Not available.

#### 9.2.2 Other safety characteristics

Not applicable.

## SECTION 10: Stability and reactivity

**10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

**10.2 Chemical stability** : The product is stable.

**10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

**10.5 Incompatible materials** : Reactive or incompatible with the following materials:  
oxidising materials

**10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

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

#### Acute toxicity

##### **Product/ingredient name**

n-Butyl acetate

##### **Result**

**Rat - Oral - LD50**

10760 mg/kg

EU

**Rabbit - Dermal - LD50**

14112 mg/kg

**Rat - Inhalation - LC50 Vapour**

0.74 mg/l [4 hours]

Toluene

**Rat - Oral - LD50**

636 mg/kg

**Rat - Inhalation - LC50 Vapour**

49 g/m<sup>3</sup> [4 hours]

Ethyl acetate

**Rat - Oral - LD50**

5620 mg/kg

Ethanol

**Rat - Oral - LD50**

7 g/kg

**Rat - Inhalation - LC50 Vapour**

124700 mg/m<sup>3</sup> [4 hours]

iso-butanol

**Rat - Oral - LD50**

2460 mg/kg

## SECTION 11: Toxicological information

### Rabbit - Dermal - LD50

3400 mg/kg

### Rat - Inhalation - LC50 Vapour

19200 mg/m<sup>3</sup> [4 hours]

**Conclusion/Summary [Product]** : Not available.

### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
n-Butyl acetate	10760	14112	N/A	N/A	N/A
Toluene	N/A	N/A	N/A	49	N/A
Ethyl acetate	5620	N/A	N/A	N/A	N/A
Ethanol	7000	N/A	N/A	124.7	N/A
iso-butanol	2460	3400	N/A	N/A	N/A

### Skin corrosion/irritation

#### Product/ingredient name

n-Butyl acetate

#### Result

**Rabbit - Skin - Moderate irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

Toluene

**Pig - Skin - Mild irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 250 uL

**Rabbit - Skin - Mild irritant**

Amount/concentration applied: 435 mg

**Rabbit - Skin - Moderate irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 20 mg

Ethanol

**Rabbit - Skin - Moderate irritant**

Amount/concentration applied: 500 mg

**Rabbit - Skin - Mild irritant**

Amount/concentration applied: 400 mg

**Rabbit - Skin - Moderate irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 20 mg

**Conclusion/Summary [Product]** : Not available.

### Serious eye damage/eye irritation

#### Product/ingredient name

n-Butyl acetate

#### Result

**Rabbit - Eyes - Moderate irritant**

Amount/concentration applied: 100 mg

Toluene

**Rabbit - Eyes - Mild irritant**

Duration of treatment/exposure: 0.5 minutes

Amount/concentration applied: 100 mg

**Rabbit - Eyes - Mild irritant**

Amount/concentration applied: 870 ug

**Rabbit - Eyes - Severe irritant**

## SECTION 11: Toxicological information

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 2 mg

**Rabbit - Eyes - Severe irritant**

Amount/concentration applied: 0.1 ml

Ethanol

**Rabbit - Eyes - Mild irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

**Rabbit - Eyes - Moderate irritant**

Duration of treatment/exposure: 0.066666667 minutes

Amount/concentration applied: 100 mg

**Rabbit - Eyes - Moderate irritant**

Amount/concentration applied: 100 µL

**Rabbit - Eyes - Severe irritant**

Amount/concentration applied: 500 mg

**Conclusion/Summary [Product]** : Not available.

### Respiratory corrosion/irritation

Not available.

**Conclusion/Summary [Product]** : Not available.

### Respiratory or skin sensitization

Not available.

### Skin

**Conclusion/Summary [Product]** : Not available.

### Respiratory

**Conclusion/Summary [Product]** : Not available.

### Germ cell mutagenicity

Not available.

**Conclusion/Summary [Product]** : Not available.

### Carcinogenicity

Not available.

**Conclusion/Summary [Product]** : Not available.

### Reproductive toxicity

Not available.

**Conclusion/Summary [Product]** : Not available.

### Specific target organ toxicity (single exposure)

**Product/ingredient name**

**Result**

## SECTION 11: Toxicological information

n-Butyl acetate	STOT SE 3, H336 (Narcotic effects)
Toluene	STOT SE 3, H336 (Narcotic effects)
Ethyl acetate	STOT SE 3, H336 (Narcotic effects)
iso-butanol	STOT SE 3, H335 (Respiratory tract irritation)
	STOT SE 3, H336 (Narcotic effects)

### Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
Toluene	STOT RE 2, H373

### Aspiration hazard

Product/ingredient name	Result
Toluene	ASPIRATION HAZARD - Category 1

### Information on likely routes of exposure

Not available.

### Potential acute health effects

<b>Eye contact</b>	: Causes serious eye damage.
<b>Inhalation</b>	: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
<b>Skin contact</b>	: Causes skin irritation.
<b>Ingestion</b>	: Can cause central nervous system (CNS) depression.

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	: Adverse symptoms may include the following: pain watering redness
<b>Inhalation</b>	: Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness reduced foetal weight increase in foetal deaths skeletal malformations
<b>Skin contact</b>	: Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced foetal weight increase in foetal deaths skeletal malformations
<b>Ingestion</b>	: Adverse symptoms may include the following: stomach pains reduced foetal weight increase in foetal deaths skeletal malformations

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

#### Short term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Long term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

### Potential chronic health effects

## SECTION 11: Toxicological information

Not available.

**Conclusion/Summary [Product]** : Not available.

**General** : May cause damage to organs through prolonged or repeated exposure.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Reproductive toxicity** : Suspected of damaging the unborn child.

### 11.2 Information on other hazards

#### 11.2.1 Endocrine disrupting properties

Not available.

**Conclusion/Summary [Product]** : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

#### 11.2.2 Other information

Not available.

## SECTION 12: Ecological information

### 12.1 Toxicity

#### Product/ingredient name

n-Butyl acetate

#### Result

##### Acute - LC50 - Fresh water

Fish - Fathead minnow - *Pimephales promelas*  
Age: 31 to 32 days; Size: 21.6 mm; Weight: 0.175 g  
18000 µg/l [96 hours]  
Effect: Mortality

##### Acute - LC50 - Marine water

Crustaceans - Brine shrimp - *Artemia salina*  
32 mg/l [48 hours]  
Effect: Mortality

Toluene

##### Acute - LC50 - Fresh water

Fish - Coho salmon, silver salmon - *Oncorhynchus kisutch* - Fry  
Weight: 1 g  
5500 µg/l [96 hours]  
Effect: Mortality

##### Acute - EC50 - Fresh water

Algae - Green algae - *Pseudokirchneriella subcapitata*  
12500 µg/l [72 hours]  
Effect: Growth

##### Chronic - NOEC - Fresh water

Daphnia - Water flea - *Daphnia magna*  
Age: ≤24 hours  
1000 µg/l [21 days]  
Effect: Reproduction

##### Acute - EC50 - Fresh water

Daphnia - Water flea - *Daphnia magna* - Neonate  
Age: ≤24 hours  
5.56 mg/l [48 hours]  
Effect: Intoxication

Ethyl acetate

##### Acute - LC50 - Fresh water

Daphnia - Water flea - *Daphnia cucullata*  
Age: 11 days  
154000 µg/l [48 hours]  
Effect: Mortality

##### Acute - LC50 - Fresh water

Fish - Indian catfish - *Heteropneustes fossilis*



## SECTION 12: Ecological information

Size: 14.16 cm; Weight: 25.54 g  
212500 µg/l [96 hours]  
Effect: Mortality

### Acute - EC50 - Fresh water

Algae - Green algae - *Selenastrum sp.*  
2500000 µg/l [96 hours]

### Chronic - NOEC - Fresh water

Daphnia - Water flea - *Daphnia magna*  
12 mg/l [21 days]  
Effect: Behavior

### Chronic - NOEC - Fresh water

Fish - Fathead minnow - *Pimephales promelas* - Embryo  
Age: <24 hours  
75.6 mg/l [32 days]  
Effect: Mortality

Ethanol

### Acute - EC50 - Fresh water

Daphnia - Water flea - *Daphnia magna*  
2000 µg/l [48 hours]  
Effect: Physiology

### Acute - LC50 - Fresh water

Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss*  
42000 µg/l [4 days]  
Effect: Mortality

### Acute - EC50 - Marine water

Algae - Green algae - *Ulva pertusa*  
17.921 mg/l [96 hours]  
Effect: Reproduction

### Chronic - NOEC - Marine water

Algae - Green algae - *Ulva pertusa*  
4.995 mg/l [96 hours]  
Effect: Reproduction

### Chronic - NOEC - Fresh water

Fish - Eastern mosquitofish - *Gambusia holbrooki* - Larvae  
Age: 3 days  
0.375 µl/l [12 weeks]  
Effect: Morphology

### Chronic - NOEC - Fresh water

Daphnia - Water flea - *Daphnia magna* - Neonate  
Age: <24 hours  
100 µl/l [21 days]  
Effect: Mortality

iso-butanol

### Acute - LC50 - Fresh water

Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss*  
Weight: 1.67 g  
1330000 µg/l [96 hours]  
Effect: Mortality

### Acute - LC50 - Marine water

Crustaceans - Brine shrimp - *Artemia salina*  
600 mg/l [48 hours]  
Effect: Mortality

**Conclusion/Summary [Product]** : Not available.

## 12.2 Persistence and degradability

**Date of issue/Date of revision**

: 13/01/2025

**Date of previous issue**

: No previous validation

**Version** : 1

33/41

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## SECTION 12: Ecological information

### Product/ingredient name

iso-butanol

### Result

74% [28 days] - Readily

**Conclusion/Summary [Product]** : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
iso-butanol	-	-	Readily

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
n-Butyl acetate	2.3	-	Low
Toluene	2.73	90	Low
Ethyl acetate	0.68	30	Low
Ethanol	-0.35	-	Low
iso-butanol	1	-	Low

### 12.4 Mobility in soil

#### Soil/water partition coefficient

Product/ingredient name	logKoc	Koc
n-Butyl acetate	1.52	33.2139
Toluene	2.07	117.115
Ethyl acetate	1.26	18.1744
Ethanol	0.2	1.59008
iso-butanol	1.08	12.0246

#### Results of PMT and vPvM assessment

Product/ingredient name	PMT	P	M	T	vPvM	vP	vM
n-Butyl acetate	No	No	No	No	No	No	No
Toluene	No	No	No	No	No	No	No
Ethyl acetate	No	No	No	No	No	No	No
Ethanol	No	No	No	No	No	No	No
iso-butanol	No	No	No	No	No	No	No

**Mobility** : Not available.

**Conclusion/Summary** : The product does not meet the criteria to be considered as a PMT or vPvM.

### 12.5 Results of PBT and vPvB assessment

#### Regulation (EC) No. 1907/2006 [REACH]

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
n-Butyl acetate	No	No	No	No	No	No	No
Toluene	No	No	No	No	No	No	No
Ethyl acetate	No	No	No	No	No	No	No
Ethanol	No	No	No	No	No	No	No
iso-butanol	No	No	No	No	No	No	No

#### Regulation (EC) No. 1272/2008 [CLP]

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
n-Butyl acetate	No	No	No	No	No	No	No
Toluene	No	No	No	No	No	No	No
Ethyl acetate	No	No	No	No	No	No	No
Ethanol	No	No	No	No	No	No	No
iso-butanol	No	No	No	No	No	No	No

**Conclusion/Summary** : The product does not meet the criteria to be considered as a PBT or vPvB.

**Regulation (EC) No. 1272/2008 [CLP]**

### 12.6 Endocrine disrupting properties

Date of issue/Date of revision

: 13/01/2025

Date of previous issue

: No previous validation

Version : 1

34/41

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Label No : 51871

## SECTION 12: Ecological information

Not available.

**Conclusion/Summary [Product]** : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

### 12.7 Other adverse effects

No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.





**European waste catalogue (EWC)** : 08.01.11

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number or ID number	UN1263	UN1263	UN1263	UN1263
14.2 UN proper shipping name	PAINT	PAINT	PAINT	PAINT
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	No.	No.	No.

### Additional information

**ADR/RID** : **Special provisions** 640 (C)  
**Tunnel code** (D/E)

**ADN** : **Special provisions** 640 (C)

**IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.

## SECTION 14: Transport information

**14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**14.7 Maritime transport in bulk according to IMO instruments** : Not relevant/applicable due to nature of the product.

## SECTION 15: Regulatory information

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

### EU Regulation (EC) No. 1907/2006 (REACH)

#### Annex XIV - List of substances subject to authorisation

##### Annex XIV

None of the components are listed.

##### Substances of very high concern

None of the components are listed.

#### Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Product/ingredient name	%	Designation [Usage]
SCAN FINISH 0849-25	≥90	3
Toluene	≥10 - ≤25	48

**Labelling** :

#### Other EU regulations

**Industrial emissions (integrated pollution prevention and control) - Air** : Not listed

**Industrial emissions (integrated pollution prevention and control) - Water** : Not listed

**Explosive precursors** : Not applicable.

#### Ozone depleting substances (EU 2024/590)

Not listed.

#### Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

#### Persistent Organic Pollutants

Not listed.

#### Seveso Directive

This product is controlled under the Seveso Directive.

##### Danger criteria

##### Category

P5c

#### National regulations

##### Austria

**VbF class** : Category 2

**Limitation of the use of organic solvents** : Permitted.

##### Belgium

## SECTION 15: Regulatory information

### [Book VI carcinogenic agents annex VI.2-1 - VI.2-3](#)

Ingredient name	Status
Silice	Listed

#### [Czech Republic](#)

**Storage code** : I

#### [Denmark](#)

**Fire class** : I-1

**MAL-code** : 4-3

**Protection based on MAL** : **According to the regulations on work involving coded products, the following stipulations apply to the use of personal protective equipment:**

**General:** Gloves must be worn for all work that may result in soiling. Apron/coveralls/protective clothing must be worn when soiling is so great that regular work clothes do not adequately protect skin against contact with the product. A face shield must be worn in work involving spattering if a full mask is not required. In this case, other recommended use of eye protection is not required.

In all spraying operations in which there is return spray, respiratory protection with air supply and arm protectors/apron/coveralls/protective clothing must be worn as appropriate or as instructed.

MAL-code: 4-3

**Application:** When spraying in new\* booths if the operator is outside the spray zone. When using scraper or knife, brush, roller, etc. for pre- and post-treatments outside a closed facility, spray booth or spray cabin.

- Air-supplied half mask and eye protection must be worn.

When using scraper or knife, brush, roller, etc. for pre- and post-treatments in cabins or booths of the existing\* facility type, if the operator is inside the spray zone.

- Air-supplied half mask, coveralls and eye protection must be worn.

During downtimes, cleaning and repair in closed facilities, spray booths or cabins, if there is a risk of contact with wet paint or organic solvents.

- Air-supplied full mask and coveralls must be worn.

When spraying in existing\* spray booths, if the operator is outside the spray zone.

- Air-supplied full mask, arm protectors and apron must be worn.

During non-atomising spraying in existing\* facilities of the combined-cabin, spray-cabin and spray-booth type where the operator is working inside the spray zone.

- Air-supplied full mask must be worn.

During all spraying where atomisation occurs in cabins or spray booths where the operator is inside the spray zone and during spraying outside a closed facility, cabin or booth.

- Air-supplied full mask, coveralls and hood must be worn.

## SECTION 15: Regulatory information

**Drying:** Items for drying/drying ovens that are temporarily placed on such things as rack trolleys, etc, must be equipped with a mechanical exhaust system to prevent fumes from wet items from passing through workers' inhalation zone.

**Polishing:** When polishing treated surfaces, a mask with dust filter must be worn. When machine grinding, eye protection must be worn. Work gloves must always be worn.

**Caution** The regulations contain other stipulations in addition to the above.

\*See Regulations.

- Low-boiling liquids** : This product contains low-boiling point liquids. Any respiratory protective equipment should be air-fed.
- Restrictions on use** : Not to be used by professional users below 18 years of age. See the National Working Environment Authorities Executive Order regarding Young People At Work.
- List of undesirable substances** : Listed

### Finland

### France

- Social Security Code, Articles L 461-1 to L 461-7** : n-Butyl acetate RG 84  
Toluene RG 4bis, RG 84  
Ethyl acetate RG 84  
Ethanol RG 84  
iso-butanol RG 84

- Reinforced medical surveillance** : Act of July 11, 1977 determining the list of activities which require reinforced medical surveillance: not applicable

### Germany

- Storage class (TRGS 510)** : 3

### Hazardous incident ordinance

This product is controlled under the Germany Hazardous Incident Ordinance.

### Danger criteria

Category	Reference number
P5c	1.2.5.3

- Hazard class for water** : 3

### Technical instruction on air quality control (TA Luft)

Number [Class]	Description	%
5.2.1	Total dust	19.6
5.2.5	Organic substances	80.4
5.2.5 [I]	Organic substances	73.3
5.2.7.1.1 [Formaldehyde]	Carcinogenic substances	0.017

### Italy

- D.Lgs. 152/06** : Not determined.

### Netherlands

**Ministry of Social Affairs and Employment (SZW) - Carcinogenic substances and processes, mutagenic or reprotoxic substances**

Ingredient name	Carcinogen	Mutagen	Reproductive toxicity - Fertility	Reproductive toxicity - Development	Harmful via breastfeeding
tolueen ethanol	- Listed	- -	- Fertility 1A	Development 2 Development 1A	- Listed

- Water Discharge Policy (ABM)** : Z(1) Non biodegradable substances with hazardous properties for humans and the environment (carcinogenicity/ mutagenicity/ reprotoxicity/ bioacumulative potential/ toxicity or persistence). Decontamination effort: Z

## SECTION 15: Regulatory information

### Norway

### Sweden

Flammable liquid class : 1  
(SRVFS 2005:10)

### Switzerland

VOC content : VOC (w/w): 73.4%

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

**15.2 Chemical safety assessment** : This product contains substances for which Chemical Safety Assessments are still required.

## SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

### **Abbreviations and acronyms**

: ATE = Acute Toxicity Estimate  
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]  
DMEL = Derived Minimal Effect Level  
DNEL = Derived No Effect Level  
EUH statement = CLP-specific Hazard statement  
N/A = Not available  
PBT = Persistent, Bioaccumulative and Toxic  
PNEC = Predicted No Effect Concentration  
RRN = REACH Registration Number  
SGG = Segregation Group  
vPvB = Very Persistent and Very Bioaccumulative

### **Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Dam. 1, H318 Repr. 2, H361d STOT SE 3, H336 STOT RE 2, H373	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method

### **Full text of abbreviated H statements**

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
EUH066	Repeated exposure may cause skin dryness or cracking.

**Date of issue/Date of revision** : 13/01/2025 **Date of previous issue** : No previous validation **Version** : 1 **39/41**

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## SECTION 16: Other information

### [Full text of classifications \[CLP/GHS\]](#)

Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Eye Dam. 1	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Flam. Liq. 2	FLAMMABLE LIQUIDS - Category 2
Flam. Liq. 3	FLAMMABLE LIQUIDS - Category 3
Repr. 2	REPRODUCTIVE TOXICITY - Category 2
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3

**Date of issue/ Date of revision** : 13/01/2025

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**Version** : 1

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All variants

### [Notice to reader](#)

The information in this SDS is based on the present state of our knowledge and on current laws. The product is not to be used for purposes other than those specified under section 1 without first obtaining written handling instructions. It is always the responsibility of the user to take all necessary steps to fulfil the demands set out in the local rules and legislation. The information in this SDS is meant to be a description of the safety requirements for our product. It is not to be considered a guarantee of the product's properties.



