

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Reference number: VL008

Issue date: 2015/10/29 Revision date: 2023/4/25 Supersedes version of: 2018/2/14 Version: 1.3

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product form : Mixture
Product name : Volumetric solution, Barium perchlorate 0.025M.
European Pharmacopoeia (Ph Eur) Ref: 3009600
Product code : VL008

1.2. Relevant identified uses of the substance or mixture and uses advised against**1.2.1. Relevant identified uses**

Main use category : Professional use
Use of the substance/mixture : Laboratory chemical
Function or use category : Laboratory chemicals

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet**Spectracer UK Ltd.**

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55 Blandford Street,
London,
W1U 7HW,
United Kingdom.

Tel: +44 (0) 207 193 9114

Fax: +44 (0) 203 432 4686

Email: contact@spectracer.co.ukWeb: www.spectracer.com**1.4. Emergency telephone number**

| Country | Organisation/Company | Address | Emergency number | Comment |
|----------------|--|---|--|---------|
| Ireland | National Poisons Information Centre Beaumont Hospital | Beaumont Hospital Beaumont Road 9 Dublin | +353 1 8379964 | |
| Malta | Medicines & Poisons Info Office | Mater Dei Hospital Msida MSD 2090 Msida | +356 2545 6508 | |
| United Kingdom | National Poisons Information Service (NHS Direct) | http://www.npis.org | 111 (England & Wales only) or 112 (EU) or 08454 24 24 24 (Scotland) | |

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Flammable liquids, Category 3 H226
Skin corrosion/irritation, Category 2 H315
Serious eye damage/eye irritation, Category 2 H319
Full text of H- and EUH-statements: see section 16

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Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. Causes skin irritation. Causes serious eye irritation.

2.2. Label elements

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

Hazard pictograms (CLP)



GHS02

GHS07

Signal word (CLP)

: Warning

Hazard statements (CLP)

: H226 - Flammable liquid and vapour.

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

Precautionary statements (CLP)

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.

P264 - Wash hands, forearms and face thoroughly after handling.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P337+P313 - If eye irritation persists: Get medical advice/attention.

2.3. Other hazards

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

| Component | |
|---------------------------------|---|
| barium perchlorate (13465-95-7) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |
| ethanol (64-17-5) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |
| acetic acid (64-19-7) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|--|---------|---|
| ethanol substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, LT, LV, NL, PL, PT, RO, SE, SI, SK, IS, NO, MK, CH) | CAS-No.: 64-17-5 EC-No.: 200-578-6 EC Index-No.: 603-002-00-5 REACH-no: 01-2119457610-43-XXXX | 50 – 80 | Flam. Liq. 2, H225 |

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| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|--|---------|--|
| acetic acid substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, PL, PT, RO, SE, SI, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit | CAS-No.: 64-19-7 EC-No.: 200-580-7 EC Index-No.: 607-002-00-6 REACH-no: 01-2119475328-30-XXXX | 10 – 15 | Flam. Liq. 3, H226 Skin Corr. 1A, H314 |
| barium perchlorate substance with national workplace exposure limit(s) (BE, FI, FR, GB, HR, NL); substance with a Community workplace exposure limit | CAS-No.: 13465-95-7 EC-No.: 236-710-4 EC Index-No.: 017-007-00-X | 0,5 – 1 | Ox. Sol. 1, H271 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 |

Specific concentration limits:

| Name | Product identifier | Specific concentration limits |
|-------------|--|--|
| acetic acid | CAS-No.: 64-19-7 EC-No.: 200-580-7 EC Index-No.: 607-002-00-6 REACH-no: 01-2119475328-30-XXXX | (10 ≤C < 25) Eye Irrit. 2, H319 (10 ≤C < 25) Skin Irrit. 2, H315 (25 ≤C < 90) Skin Corr. 1B, H314 (90 ≤C < 100) Skin Corr. 1A, H314 |

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

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures after inhalation | : Remove person to fresh air and keep comfortable for breathing. |
| First-aid measures after skin contact | : Rinse skin with water/shower. Take off immediately all contaminated clothing. If skin irritation occurs: Get medical advice/attention. |
| First-aid measures after eye contact | : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| First-aid measures after ingestion | : Call a poison center or a doctor if you feel unwell. |

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

| | |
|-------------------------------------|-------------------|
| Symptoms/effects after skin contact | : Irritation. |
| Symptoms/effects after eye contact | : Eye irritation. |

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|------------------------------|--|
| Suitable extinguishing media | : Water spray. Dry powder. Foam. Carbon dioxide. |
|------------------------------|--|

5.2. Special hazards arising from the substance or mixture

| | |
|--|--------------------------------|
| Fire hazard | : Flammable liquid and vapour. |
| Hazardous decomposition products in case of fire | : Toxic fumes may be released. |

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5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. No open flames, no sparks, and no smoking. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Avoid contact with skin and eyes.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Ground/bond container and receiving equipment.

Storage conditions : Store in a well-ventilated place. Keep cool. Keep container tightly closed.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

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| barium perchlorate (13465-95-7) | |
|---|--|
| EU - Indicative Occupational Exposure Limit (IOEL) | |
| IOEL TWA | 0,5 mg/m ³ (Barium (soluble compounds as Ba); EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value) |
| Belgium - Occupational Exposure Limits | |
| OEL TWA | 0,5 mg/m ³ (Baryum (composés solubles) (en Ba); Belgium; Time-weighted average exposure limit 8 h) |
| Croatia - Occupational Exposure Limits | |
| Local name | Barijev perklorat |
| GVI (OEL TWA) [1] | 0,5 mg/m ³ |
| Regulatory reference | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021) |
| Finland - Occupational Exposure Limits | |
| Local name | Bariumperkloraahti |
| HTP (OEL TWA) [1] | 0,5 mg/m ³ Ba |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö) |
| France - Occupational Exposure Limits | |
| VME (OEL TWA) | 0,5 mg/m ³ (Baryum (composés solubles), en Ba; France; Time-weighted average exposure limit 8 h; VRI: Valeur réglementaire indicative) |
| Netherlands - Occupational Exposure Limits | |
| TGG-8u (OEL TWA) | 0,5 mg/m ³ (Barium, oplosbare verbindingen (als Ba); Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value; als Ba) |
| United Kingdom - Occupational Exposure Limits | |
| WEL TWA (OEL TWA) [1] | 0,5 mg/m ³ Barium compounds, soluble (as Ba); United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005) |
| USA - ACGIH - Occupational Exposure Limits | |
| ACGIH OEL TWA | 0,5 mg/m ³ (Barium, soluble compounds, as Ba; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| ethanol (64-17-5) | |
| Austria - Occupational Exposure Limits | |
| Local name | Ethanol (Ethylalkohol) |
| MAK (OEL TWA) | 1900 mg/m ³ |
| MAK (OEL TWA) [ppm] | 1000 ppm |
| MAK (OEL STEL) | 3800 mg/m ³ (3x 60(Mow) min) |
| MAK (OEL STEL) [ppm] | 2000 ppm (3x 60(Mow) min) |
| Regulatory reference | BGBI. II Nr. 156/2021 |
| Belgium - Occupational Exposure Limits | |
| Local name | Alcool éthylique # Ethanol |
| OEL TWA | 1907 mg/m ³ |
| OEL TWA [ppm] | 1000 ppm |
| Regulatory reference | Koninklijk besluit/Arrêté royal 11/05/2021 |

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| ethanol (64-17-5) | |
|--|---|
| Bulgaria - Occupational Exposure Limits | |
| Local name | Етилов алкохол |
| OEL TWA | 1000 mg/m ³ |
| Regulatory reference | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.) |
| Croatia - Occupational Exposure Limits | |
| Local name | Etanol; etil-alkohol |
| GVI (OEL TWA) [1] | 1900 mg/m ³ |
| GVI (OEL TWA) [2] | 1000 ppm |
| Regulatory reference | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 1/2021) |
| Czech Republic - Occupational Exposure Limits | |
| Local name | Ethanol (Ethylalkohol) |
| PEL (OEL TWA) | 1000 mg/m ³ |
| PEL (OEL TWA) [ppm] | 522 ppm |
| NPK-P (OEL C) | 3000 mg/m ³ |
| NPK-P (OEL C) [ppm] | 1566 ppm |
| Regulatory reference | Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.) |
| Denmark - Occupational Exposure Limits | |
| Local name | Ethanol (Ethylalkohol) |
| OEL TWA [1] | 1900 mg/m ³ |
| OEL TWA [2] | 1000 ppm |
| Regulatory reference | BEK nr 2203 af 29. november 2021 |
| Estonia - Occupational Exposure Limits | |
| Local name | Etanool (etüülalkohol) |
| OEL TWA | 1000 mg/m ³ |
| OEL TWA [ppm] | 500 ppm |
| OEL STEL | 1900 mg/m ³ |
| OEL STEL [ppm] | 1000 ppm |
| Regulatory reference | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1) |
| Finland - Occupational Exposure Limits | |
| Local name | Etanoli |
| HTP (OEL TWA) [1] | 1900 mg/m ³ |
| HTP (OEL TWA) [2] | 1000 ppm |
| HTP (OEL STEL) | 2500 mg/m ³ |
| HTP (OEL STEL) [ppm] | 1300 ppm |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö) |

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| ethanol (64-17-5) | |
|--|--|
| France - Occupational Exposure Limits | |
| Local name | Alcool éthylique |
| VME (OEL TWA) | 1900 mg/m ³ |
| VME (OEL TWA) [ppm] | 1000 ppm |
| VLE (OEL C/STEL) | 9500 mg/m ³ |
| VLE (OEL C/STEL) [ppm] | 5000 ppm |
| Remark | Valeurs recommandées/admises |
| Regulatory reference | Circulaire du Ministère du travail (réf.: INRS ED 984, 2016) |
| Germany - Occupational Exposure Limits (TRGS 900) | |
| Local name | Ethanol |
| AGW (OEL TWA) [1] | 380 mg/m ³ |
| AGW (OEL TWA) [2] | 200 ppm |
| Peak exposure limitation factor | 4(II) |
| Remark | DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden |
| Regulatory reference | TRGS900 |
| Greece - Occupational Exposure Limits | |
| Local name | Αιθνόλη |
| OEL TWA | 1900 mg/m ³ |
| OEL TWA [ppm] | 1000 ppm |
| Regulatory reference | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους |
| Hungary - Occupational Exposure Limits | |
| Local name | ETIL-ALKOHOL |
| AK (OEL TWA) | 1900 mg/m ³ |
| CK (OEL STEL) | 3800 mg/m ³ |
| Remark | N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok) |
| Regulatory reference | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről |
| Ireland - Occupational Exposure Limits | |
| Local name | Ethanol [Ethyl alcohol] |
| OEL STEL [ppm] | 1000 ppm |
| Regulatory reference | Chemical Agents Code of Practice 2021 |
| Latvia - Occupational Exposure Limits | |
| Local name | Etilspirts (etanols) |
| OEL TWA | 1000 mg/m ³ |
| Regulatory reference | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 |

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| ethanol (64-17-5) | |
|---|---|
| Lithuania - Occupational Exposure Limits | |
| Local name | Etanolis (etilo alkoholis) |
| IPRV (OEL TWA) | 1000 mg/m ³ |
| IPRV (OEL TWA) [ppm] | 500 ppm |
| TPRV (OEL STEL) | 1900 mg/m ³ |
| TPRV (OEL STEL) [ppm] | 1000 ppm |
| Regulatory reference | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12) |
| Netherlands - Occupational Exposure Limits | |
| Local name | Ethanol |
| TGG-8u (OEL TWA) | 260 mg/m ³ |
| TGG-8u (OEL TWA) [ppm] | 136 ppm (Ethanol; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value) |
| TGG-15min (OEL STEL) | 1900 mg/m ³ |
| TGG-15min (OEL STEL) [ppm] | 992 ppm (Ethanol; Netherlands; Short time value; Public occupational exposure limit value) |
| Remark | Kankerverwekkende stof. H (Huidopname) Stoffen die relatief gemakkelijk door de huid kunnen worden opgenomen, hetgeen een substantiële bijdrage kan betekenen aan de totale inwendige blootstelling, hebben in de lijst een H-aanduiding. Bij deze stoffen moeten naast maatregelen tegen inademing ook adequate maatregelen ter voorkoming van huidcontact worden genomen. |
| Regulatory reference | Arbeidsomstandighedenregeling 2022 |
| Poland - Occupational Exposure Limits | |
| Local name | Etanol (alkohol etylowy) |
| NDS (OEL TWA) | 1900 mg/m ³ |
| Regulatory reference | Dz. U. 2018 poz. 1286 |
| Portugal - Occupational Exposure Limits | |
| Local name | Etanol (Álcool etílico) |
| OEL STEL [ppm] | 1000 ppm |
| Remark | A3 (Agente carcinogénico confirmado nos animais de laboratorio con relevância desconhecida no Homem) |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |
| Romania - Occupational Exposure Limits | |
| Local name | Alcool etilic/Etanol |
| OEL TWA | 1900 mg/m ³ |
| OEL TWA [ppm] | 1000 ppm |
| OEL STEL | 9500 mg/m ³ |
| OEL STEL [ppm] | 5000 ppm |
| Regulatory reference | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021) |
| Slovakia - Occupational Exposure Limits | |
| Local name | Etylalkohol (etanol) |

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| ethanol (64-17-5) | |
|---|--|
| NPHV (OEL TWA) [1] | 960 mg/m ³ |
| NPHV (OEL TWA) [2] | 500 ppm |
| NPHV (OEL STEL) | 1920 mg/m ³ |
| NPHV (OEL STEL) [ppm] | 1000 ppm |
| Regulatory reference | Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.) |
| Slovenia - Occupational Exposure Limits | |
| Local name | etanol (etilalkohol) |
| OEL TWA | 960 mg/m ³ |
| OEL TWA [ppm] | 500 ppm |
| OEL STEL | 7600 mg/m ³ |
| OEL STEL [ppm] | 4000 ppm |
| Remark | Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti) |
| Regulatory reference | Uradni list RS, št. 72/2021 z dne 11.5.2021 |
| Spain - Occupational Exposure Limits | |
| Local name | Etanol (Alcohol etílico) |
| VLA-EC (OEL STEL) | 1910 mg/m ³ |
| VLA-EC (OEL STEL) [ppm] | 1000 ppm |
| Remark | s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltese: Base de datos de productos biocidas: http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf). |
| Regulatory reference | Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT |
| Sweden - Occupational Exposure Limits | |
| Local name | Etanol |
| NGV (OEL TWA) | 1000 mg/m ³ |
| NGV (OEL TWA) [ppm] | 500 ppm |
| KTV (OEL STEL) | 1900 mg/m ³ |
| KTV (OEL STEL) [ppm] | 1000 ppm |
| Remark | V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas) |
| Regulatory reference | Hygieniska gränsvärden (AFS 2018:1) |
| United Kingdom - Occupational Exposure Limits | |
| Local name | Ethanol |
| WEL TWA (OEL TWA) [1] | 1920 mg/m ³ |
| WEL TWA (OEL TWA) [2] | 1000 ppm |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |

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| ethanol (64-17-5) | |
|---|--|
| Iceland - Occupational Exposure Limits | |
| Local name | Etanól (etýlalkóhól) |
| OEL TWA | 1900 mg/m ³ |
| OEL TWA [ppm] | 1000 ppm |
| Regulatory reference | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009) |
| Norway - Occupational Exposure Limits | |
| Local name | Etanol |
| Grenseverdi (OEL TWA) [1] | 950 mg/m ³ |
| Grenseverdi (OEL TWA) [2] | 500 ppm |
| Regulatory reference | FOR-2021-06-28-2248 |
| North Macedonia - Occupational Exposure Limits | |
| Local name | етанол (етилалкохол) |
| OEL TWA | 1900 mg/m ³ |
| OEL TWA [ppm] | 1000 ppm |
| KTV | 4 |
| Short time value [mg/m ³] | 7600 mg/m ³ |
| Short time value [ppm] | 4000 ppm |
| Remark | (KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m ³ или во ml/m ³ (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (Y) |
| Regulatory reference | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10) |
| Switzerland - Occupational Exposure Limits | |
| Local name | Ethanol |
| MAK (OEL TWA) [1] | 960 mg/m ³ 960 mg/m ³ |
| MAK (OEL TWA) [2] | 500 ppm 500 ppm |
| KZGW (OEL STEL) | 1920 mg/m ³ 1920 mg/m ³ |
| KZGW (OEL STEL) [ppm] | 1000 ppm 1000 ppm |
| Critical toxicity | Formel / Formal |
| Notation | SS _c / SS _c |
| Remark | SS _c - OAW, Formal ^{KT HU} - INRS, NIOSH |
| Regulatory reference | www.suva.ch, 28.03.2022 |

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| ethanol (64-17-5) | |
|---|--|
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Ethanol |
| ACGIH OEL STEL [ppm] | 1000 ppm |
| Remark (ACGIH) | TLV® Basis: URT irr. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans) |
| Regulatory reference | ACGIH 2022 |
| acetic acid (64-19-7) | |
| EU - Indicative Occupational Exposure Limit (IOEL) | |
| Local name | Acetic acid |
| IOEL TWA | 25 mg/m ³ 25 mg/m ³ |
| IOEL TWA [ppm] | 10 ppm 10 ppm |
| IOEL STEL | 50 mg/m ³ 50 mg/m ³ |
| IOEL STEL [ppm] | 20 ppm 20 ppm |
| Regulatory reference | COMMISSION DIRECTIVE (EU) 2017/164 COMMISSION DIRECTIVE (EU) 2017/164 |
| Albania - Occupational Exposure Limits | |
| Local name | Acid acetik |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| Regulatory reference | VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDËTIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË" |
| Austria - Occupational Exposure Limits | |
| Local name | Essigsäure |
| MAK (OEL TWA) | 25 mg/m ³ 25 mg/m ³ |
| MAK (OEL TWA) [ppm] | 10 ppm 10 ppm |
| MAK (OEL STEL) | 50 mg/m ³ (8x 5(Mow) min) 50 mg/m ³ (8x 5(Mow) min) |
| MAK (OEL STEL) [ppm] | 20 ppm (8x 5(Mow) min) 20 ppm (8x 5(Mow) min) |
| Regulatory reference | BGBI. II Nr. 156/2021 BGBI. II Nr. 156/2021 |
| Belgium - Occupational Exposure Limits | |
| Local name | Acide acétique # Azijnzuur |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |

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| acetic acid (64-19-7) | |
|---|---|
| OEL STEL | 38 mg/m ³ |
| OEL STEL [ppm] | 15 ppm |
| Regulatory reference | Koninklijk besluit/Arrêté royal 11/05/2021 |
| Bulgaria - Occupational Exposure Limits | |
| Local name | Оцетна киселина |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Remark | • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност) |
| Regulatory reference | Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.) |
| Croatia - Occupational Exposure Limits | |
| Local name | Octena kiselina |
| GVI (OEL TWA) [1] | 25 mg/m ³ |
| GVI (OEL TWA) [2] | 10 ppm |
| KGVI (OEL STEL) | 50 mg/m ³ |
| KGVI (OEL STEL) [ppm] | 20 ppm |
| Remark | Direktiva: 2017/164/EU |
| Regulatory reference | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021) |
| Cyprus - Occupational Exposure Limits | |
| Local name | Οξικό οξύ |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Κανονισμοί του 2019 (Κ.Δ.Π. 16/2019) |
| Czech Republic - Occupational Exposure Limits | |
| Local name | Kyselina octová (Kyselina ethanová) |
| PEL (OEL TWA) | 25 mg/m ³ |
| PEL (OEL TWA) [ppm] | 10 ppm |
| NPK-P (OEL C) | 50 mg/m ³ |
| NPK-P (OEL C) [ppm] | 20 ppm |
| Regulatory reference | Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.) |
| Denmark - Occupational Exposure Limits | |
| Local name | Eddikesyre (Ethansyre) |

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| acetic acid (64-19-7) | |
|---|--|
| OEL TWA [1] | 25 mg/m ³ |
| OEL TWA [2] | 10 ppm |
| Remark | E (betyder, at stoffet har en EF-grænseværdi) |
| Regulatory reference | BEK nr 2203 af 29. november 2021 |
| Estonia - Occupational Exposure Limits | |
| Local name | Etaanhape (äädikhape) |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 25 mg/m ³ |
| OEL STEL [ppm] | 10 ppm |
| Regulatory reference | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1) |
| Finland - Occupational Exposure Limits | |
| Local name | Etikkahappo |
| HTP (OEL TWA) [1] | 13 mg/m ³ |
| HTP (OEL TWA) [2] | 5 ppm |
| HTP (OEL STEL) | 25 mg/m ³ |
| HTP (OEL STEL) [ppm] | 10 ppm |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö) |
| France - Occupational Exposure Limits | |
| Local name | Acide acétique |
| VME (OEL TWA) | 25 mg/m ³ |
| VME (OEL TWA) [ppm] | 10 ppm |
| VLE (OEL C/STEL) | 50 mg/m ³ |
| VLE (OEL C/STEL) [ppm] | 20 ppm |
| Remark | Valeurs réglementaires indicatives |
| Regulatory reference | Circulaire du Ministère du travail (réf.: Arrête du 27 septembre 2019) |
| Germany - Occupational Exposure Limits (TRGS 900) | |
| Local name | Essigsäure |
| AGW (OEL TWA) [1] | 25 mg/m ³ |
| AGW (OEL TWA) [2] | 10 ppm |
| Peak exposure limitation factor | 2(l) |
| Remark | DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden |
| Regulatory reference | TRGS900 |
| Gibraltar - Occupational Exposure Limits | |
| Local name | Acetic acid |

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| acetic acid (64-19-7) | |
|--|--|
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181) |
| Greece - Occupational Exposure Limits | |
| Local name | Οξικό οξύ |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 37 mg/m ³ |
| OEL STEL [ppm] | 15 ppm |
| Regulatory reference | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους |
| Hungary - Occupational Exposure Limits | |
| Local name | ECETSAV |
| AK (OEL TWA) | 25 mg/m ³ |
| CK (OEL STEL) | 50 mg/m ³ |
| Remark | m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármat); EU4 (2017/164 EU irányelvben közölt érték); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok) |
| Regulatory reference | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről |
| Ireland - Occupational Exposure Limits | |
| Local name | Acetic acid |
| OEL TWA [1] | 25 mg/m ³ |
| OEL TWA [2] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Remark | IOELV (Indicative Occupational Exposure Limit Values) |
| Regulatory reference | Chemical Agents Code of Practice 2021 |
| Italy - Occupational Exposure Limits | |
| Local name | Acido acetico |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i. |
| Latvia - Occupational Exposure Limits | |
| Local name | Etiķskābe (etānskābe) |

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| acetic acid (64-19-7) | |
|--|---|
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2018. gada 10. jūlijā noteikumiem Nr. 407) |
| Lithuania - Occupational Exposure Limits | |
| Local name | Acto rūgštis |
| IPRV (OEL TWA) | 25 mg/m ³ |
| IPRV (OEL TWA) [ppm] | 10 ppm |
| TPRV (OEL STEL) | 50 mg/m ³ |
| TPRV (OEL STEL) [ppm] | 20 ppm |
| Regulatory reference | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12) |
| Luxembourg - Occupational Exposure Limits | |
| Local name | Acide acétique |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Mémorial A N° 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail |
| Malta - Occupational Exposure Limits | |
| Local name | Acetic acid |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | S.L.424.24 - Chemical Agents at Work Regulations (L.N.356 of 2021) |
| Poland - Occupational Exposure Limits | |
| Local name | Kwas octowy |
| NDS (OEL TWA) | 25 mg/m ³ |
| NDSCh (OEL STEL) | 50 mg/m ³ |
| Regulatory reference | Dz. U. 2018 poz. 1286 |
| Portugal - Occupational Exposure Limits | |
| Local name | Ácido acético |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL [ppm] | 15 ppm |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |

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| acetic acid (64-19-7) | |
|--|--|
| Romania - Occupational Exposure Limits | |
| Local name | Acid acetic |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021) |
| Serbia - Occupational Exposure Limits | |
| Local name | сирћетна киселина |
| OEL TWA | 25 mg/m ³ 20 mg/m ³ 50 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| Remark | ЕУ**** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2017/164/ЕУ (четврта листа) |
| Regulatory reference | ПРАВИЛНИК о превентивним мерама за безбедан и здрав рад при излагању хемијским материјама („Службени гласник РС”, бр. 106/09, 117/17 и 107/21) |
| Slovakia - Occupational Exposure Limits | |
| Local name | Kyselina octová (kyselina etánová) |
| NPHV (OEL TWA) [1] | 25 mg/m ³ |
| NPHV (OEL TWA) [2] | 10 ppm |
| NPHV (OEL STEL) | 50 mg/m ³ |
| NPHV (OEL STEL) [ppm] | 20 ppm |
| Regulatory reference | Nariadenie vlády č. 355/2006 Z. z. (236/2020 Z. z.) |
| Slovenia - Occupational Exposure Limits | |
| Local name | očetna kislina |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Remark | Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU |
| Regulatory reference | Uradni list RS, št. 72/2021 z dne 11.5.2021 |
| Spain - Occupational Exposure Limits | |
| Local name | Ácido acético |
| VLA-ED (OEL TWA) [1] | 25 mg/m ³ |
| VLA-ED (OEL TWA) [2] | 10 ppm |
| VLA-EC (OEL STEL) | 50 mg/m ³ |
| VLA-EC (OEL STEL) [ppm] | 20 ppm |

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| acetic acid (64-19-7) | |
|--|--|
| Remark | VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo). |
| Regulatory reference | Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT |
| Sweden - Occupational Exposure Limits | |
| Local name | Ättiksyra |
| NGV (OEL TWA) | 13 mg/m ³ |
| NGV (OEL TWA) [ppm] | 5 ppm |
| KTV (OEL STEL) | 25 mg/m ³ |
| KTV (OEL STEL) [ppm] | 10 ppm |
| Regulatory reference | Hygieniska gränsvärden (AFS 2018:1) |
| United Kingdom - Occupational Exposure Limits | |
| Local name | Acetic acid |
| WEL TWA (OEL TWA) [1] | 25 mg/m ³ |
| WEL TWA (OEL TWA) [2] | 10 ppm |
| WEL STEL (OEL STEL) | 50 mg/m ³ |
| WEL STEL (OEL STEL) [ppm] | 20 ppm |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |
| Iceland - Occupational Exposure Limits | |
| Local name | Ediksýra |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| OEL STEL | 50 mg/m ³ |
| OEL STEL [ppm] | 20 ppm |
| Regulatory reference | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 1069/2018) |
| Norway - Occupational Exposure Limits | |
| Local name | Eddiksyre |
| Grenseverdi (OEL TWA) [1] | 25 mg/m ³ |
| Grenseverdi (OEL TWA) [2] | 10 ppm |
| Korttidsverdi (OEL STEL) | 50 mg/m ³ |
| Korttidsverdi (OEL STEL) [ppm] | 20 ppm |
| Remark | A: Kjemikalier som skal betraktes som at de fremkaller allergi eller annen overfølsomhet i øynene eller luftveier, eller som skal betraktes som at de fremkaller allergi ved hudkontakt; E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet. |
| Regulatory reference | FOR-2021-06-28-2248 |
| North Macedonia - Occupational Exposure Limits | |
| Local name | Оцетна киселина |
| OEL TWA | 25 mg/m ³ |
| OEL TWA [ppm] | 10 ppm |
| Remark | (EU) European Union – гранична вредност, определена на ниво на Европската унија |

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| acetic acid (64-19-7) | |
|---|--|
| Regulatory reference | Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10) |
| Switzerland - Occupational Exposure Limits | |
| Local name | Acide acétique / Essigsäure |
| MAK (OEL TWA) [1] | 25 mg/m ³ |
| MAK (OEL TWA) [2] | 10 ppm |
| KZGW (OEL STEL) | 50 mg/m ³ |
| KZGW (OEL STEL) [ppm] | 20 ppm |
| Critical toxicity | VRS, Yeux / OAW, Auge |
| Notation | SS _c / SS _c |
| Remark | NIOSH, OSHA |
| Regulatory reference | www.suva.ch, 28.03.2022 |
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Acetic acid |
| ACGIH OEL TWA [ppm] | 10 ppm |
| ACGIH OEL STEL [ppm] | 15 ppm |
| Remark (ACGIH) | TLV® Basis: URT & eye irr; pulm func |
| Regulatory reference | ACGIH 2022 |

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment:

Avoid all unnecessary exposure. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the protective equipment.

Personal protective equipment symbol(s):



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8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

8.2.2.3. Respiratory protection

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|----------------------------------|
| Physical state | : Liquid |
| Colour | : Not available |
| Odour | : Alcohol odour. Pleasant odour. |
| Odour threshold | : Not available |
| Melting point | : Not applicable |
| Freezing point | : Not available |
| Boiling point | : > 78 °C |
| Flammability | : Flammable liquid and vapour. |
| Explosive limits | : Not available |
| Lower explosion limit | : Not available |
| Upper explosion limit | : Not available |
| Flash point | : ≈ 29 °C |
| Auto-ignition temperature | : Not available |
| Decomposition temperature | : Not available |
| pH | : 3 – 4 |
| Viscosity, kinematic | : Not available |
| Solubility | : Miscible with water. |
| Partition coefficient n-octanol/water (Log Kow) | : Not available |
| Vapour pressure | : Not available |
| Vapour pressure at 50°C | : Not available |
| Density | : Not available |
| Relative density | : ≈ 0,9 |
| Relative vapour density at 20°C | : Not available |
| Particle characteristics | : Not applicable |

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapour.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

No additional information available

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 (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

ethanol (64-17-5)

| | |
|--------------------|-------------------------------|
| LD50 oral rat | 15010 mg/kg bodyweight |
| LD50 oral | 8300 mg/kg bodyweight (mouse) |
| LD50 dermal rabbit | > 16000 mg/kg |

acetic acid (64-19-7)

| | |
|---------------|-----------------------|
| LD50 oral rat | 3310 mg/kg bodyweight |
|---------------|-----------------------|

Skin corrosion/irritation : Causes skin irritation.
pH: 3 – 4

barium perchlorate (13465-95-7)

| | |
|----|-----|
| pH | 5,6 |
|----|-----|

acetic acid (64-19-7)

| | |
|----|-----|
| pH | 2,4 |
|----|-----|

Serious eye damage/irritation : Causes serious eye irritation.
pH: 3 – 4

barium perchlorate (13465-95-7)

| | |
|----|-----|
| pH | 5,6 |
|----|-----|

acetic acid (64-19-7)

| | |
|----|-----|
| pH | 2,4 |
|----|-----|

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified

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Carcinogenicity : Not classified

ethanol (64-17-5)

| | |
|------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |
|------------|----------------------------|

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

ethanol (64-17-5)

| | |
|--|---------------------------------|
| NOAEL (subchronic, oral, animal/male, 90 days) | < 9700 mg/kg bodyweight (mouse) |
|--|---------------------------------|

| | |
|--|---------------------------------|
| NOAEL (subchronic, oral, animal/female, 90 days) | > 9400 mg/kg bodyweight (mouse) |
|--|---------------------------------|

acetic acid (64-19-7)

| | |
|----------------------------|----------------------|
| NOAEL (oral, rat, 90 days) | 290 mg/kg bodyweight |
|----------------------------|----------------------|

Aspiration hazard : Not classified

ethanol (64-17-5)

| | |
|----------------------|--------------------------|
| Viscosity, kinematic | 1,481 mm ² /s |
|----------------------|--------------------------|

acetic acid (64-19-7)

| | |
|----------------------|-----------------------------|
| Viscosity, kinematic | 1015,385 mm ² /s |
|----------------------|-----------------------------|

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

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

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

ethanol (64-17-5)

| | |
|-----------------|---|
| LC50 - Fish [1] | 14,2 g/l Pimephales promelas (Fathead minnow) |
|-----------------|---|

| | |
|----------------|----------|
| NOEC (chronic) | 9,6 mg/l |
|----------------|----------|

acetic acid (64-19-7)

| | |
|-----------------|---|
| LC50 - Fish [1] | > 1000 mg/l Oncorhynchus mykiss (Rainbow trout) |
|-----------------|---|

| | |
|----------------------|--|
| EC50 - Crustacea [1] | > 1000 mg/l Daphnia magna (Water flea) |
|----------------------|--|

| | |
|----------------------|--|
| EC50 72h - Algae [1] | > 1000 mg/l Skeletonema costatum (marine diatom) |
|----------------------|--|

12.2. Persistence and degradability

ethanol (64-17-5)

| | |
|-------------------------------|--|
| Persistence and degradability | Readily biodegradable in water. Biodegradable in soil. |
|-------------------------------|--|

| | |
|---------------------------------|---|
| Biochemical oxygen demand (BOD) | 0,8 – 0,967 g O ₂ /g substance |
|---------------------------------|---|

| | |
|------------------------------|-----------------------------------|
| Chemical oxygen demand (COD) | 1,7 g O ₂ /g substance |
|------------------------------|-----------------------------------|

| | |
|------|-----------------------------------|
| ThOD | 2,1 g O ₂ /g substance |
|------|-----------------------------------|

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| acetic acid (64-19-7) | |
|---------------------------------|---|
| Persistence and degradability | Readily biodegradable in water. Biodegradable in soil. Very mobile in soil. |
| Biochemical oxygen demand (BOD) | 0,6 – 0,74 g O ₂ /g substance |
| Chemical oxygen demand (COD) | 1,03 g O ₂ /g substance |
| ThOD | 1,07 g O ₂ /g substance |

12.3. Bioaccumulative potential

| barium perchlorate (13465-95-7) | |
|---------------------------------|----------------------|
| Bioaccumulative potential | Not bioaccumulative. |

| ethanol (64-17-5) | |
|---|-------|
| Partition coefficient n-octanol/water (Log Pow) | -0,31 |

| acetic acid (64-19-7) | |
|---|--|
| Partition coefficient n-octanol/water (Log Pow) | -0,17 (25 °C) |
| Bioaccumulative potential | Low bioaccumulation potential (Log Kow < 4). |

12.4. Mobility in soil

| ethanol (64-17-5) | |
|-------------------|--------------------|
| Surface tension | 0,0245 N/m (20 °C) |

| acetic acid (64-19-7) | |
|-----------------------|---|
| Surface tension | 0,028 N/m (20 °C) |
| Ecology - soil | May be harmful to plant growth, blooming and fruit formation. |

12.5. Results of PBT and vPvB assessment

| Component | |
|---------------------------------|---|
| barium perchlorate (13465-95-7) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |
| ethanol (64-17-5) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |
| acetic acid (64-19-7) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|--|--|
| Waste treatment methods | : Dispose of contents/container in accordance with licensed collector's sorting instructions. |
| Product/Packaging disposal recommendations | : Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. |
| Additional information | : Flammable vapours may accumulate in the container. |

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Ecology - waste materials : Avoid release to the environment.
European List of Waste (LoW) code : 16 05 06* - laboratory chemicals consisting of or containing dangerous substances including mixtures of laboratory chemicals

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

| ADR | IMDG | IATA | ADN | RID |
|---|---|---|---|---|
| 14.1. UN number or ID number | | | | |
| UN 1170 | UN 1170 | UN 1170 | UN 1170 | UN 1170 |
| 14.2. UN proper shipping name | | | | |
| ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | Ethanol solution | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) |
| Transport document description | | | | |
| UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III, (D/E) | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 Ethanol solution, 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III |
| 14.3. Transport hazard class(es) | | | | |
| 3 | 3 | 3 | 3 | 3 |
|  |  |  |  |  |
| 14.4. Packing group | | | | |
| III | III | III | III | III |
| 14.5. Environmental hazards | | | | |
| Dangerous for the environment: No | Dangerous for the environment: No Marine pollutant: No | Dangerous for the environment: No | Dangerous for the environment: No | Dangerous for the environment: No |
| No supplementary information available | | | | |

14.6. Special precautions for user

Overland transport

Classification code (ADR) : F1
Special provisions (ADR) : 144, 601
Limited quantities (ADR) : 5I
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P001, IBC03, LP01, R001
Mixed packing provisions (ADR) : MP19
Portable tank and bulk container instructions (ADR) : T2
Portable tank and bulk container special provisions (ADR) : TP1
Tank code (ADR) : LGBF
Vehicle for tank carriage : FL
Transport category (ADR) : 3
Special provisions for carriage - Packages (ADR) : V12
Special provisions for carriage - Operation (ADR) : S2
Hazard identification number (Kemler No.) : 30

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Orange plates : 

Tunnel restriction code (ADR) : D/E
EAC code : •2YE

Transport by sea

Special provisions (IMDG) : 144, 223
Limited quantities (IMDG) : 5 L
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P001, LP01
IBC packing instructions (IMDG) : IBC03
Tank instructions (IMDG) : T2
Tank special provisions (IMDG) : TP1
EmS-No. (Fire) : F-E
EmS-No. (Spillage) : S-D
Stowage category (IMDG) : A
Properties and observations (IMDG) : Colourless, volatile liquids. Pure ETHANOL: flashpoint 13°C c.c. Explosive limits: 3.3% to 19% Miscible with water.

Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Y344
PCA limited quantity max net quantity (IATA) : 10L
PCA packing instructions (IATA) : 355
PCA max net quantity (IATA) : 60L
CAO packing instructions (IATA) : 366
CAO max net quantity (IATA) : 220L
Special provisions (IATA) : A3, A58, A180
ERG code (IATA) : 3L

Inland waterway transport

Classification code (ADN) : F1
Special provisions (ADN) : 144, 601
Limited quantities (ADN) : 5 L
Excepted quantities (ADN) : E1
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EX, A
Ventilation (ADN) : VE01
Number of blue cones/lights (ADN) : 0

Rail transport

Classification code (RID) : F1
Special provisions (RID) : 144, 601
Limited quantities (RID) : 5L
Excepted quantities (RID) : E1
Packing instructions (RID) : P001, IBC03, LP01, R001
Mixed packing provisions (RID) : MP19
Portable tank and bulk container instructions (RID) : T2
Portable tank and bulk container special provisions (RID) : TP1
Tank codes for RID tanks (RID) : LGBF
Transport category (RID) : 3
Special provisions for carriage – Packages (RID) : W12
Colis express (express parcels) (RID) : CE4
Hazard identification number (RID) : 30

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

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SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

| EU restriction list (REACH Annex XVII) | | |
|--|---|--|
| Reference code | Applicable on | Entry title or description |
| 3(a) | Volumetric solution, Barium perchlorate 0.025M. European Pharmacopoeia (Ph Eur) Ref: 3009600 ; ethanol ; acetic acid | Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F |
| 3(b) | Volumetric solution, Barium perchlorate 0.025M. European Pharmacopoeia (Ph Eur) Ref: 3009600 ; acetic acid | Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10 |
| 40. | ethanol ; acetic acid | Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not. |

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

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15.1.2. National regulations

France

| Occupational diseases | |
|-----------------------|---|
| Code | Description |
| RG 84 | Conditions caused by liquid organic solvents for professional use: saturated or unsaturated aliphatic or cyclic liquid hydrocarbons and mixtures thereof; liquid halogenated hydrocarbons; nitrated derivatives of aliphatic hydrocarbons; alcohols; glycols, glycol ethers; ketones; aldehydes; aliphatic and cyclic ethers, including tetrahydrofuran; esters; dimethylformamide and dimethylacetamine; acetonitrile and propionitrile; pyridine; dimethylsulfone and dimethylsulfoxide |

Germany

Water hazard class (WGK)

: WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).

Storage class (LGK, TRGS 510)

: LGK 3 - Flammable liquids.

Joint storage table

| | | | | |
|----------|---------|----------|----------|-----------|
| LGK 1 | LGK 2A | LGK 2B | LGK 3 | LGK 4.1A |
| LGK 4.1B | LGK 4.2 | LGK 4.3 | LGK 5.1A | LGK 5.1B |
| LGK 5.1C | LGK 5.2 | LGK 6.1A | LGK 6.1B | LGK 6.1C |
| LGK 6.1D | LGK 6.2 | LGK 7 | LGK 8A | LGK 8B |
| LGK 10 | LGK 11 | LGK 12 | LGK 13 | LGK 10-13 |

Joint storage not permitted for

: LGK 1, LGK 2A, LGK 4.1A, LGK 4.1B, LGK 4.2, LGK 4.3, LGK 5.1A, LGK 5.1C, LGK 5.2, LGK 6.1B, LGK 6.2, LGK 7.

Joint storage with restrictions permitted for

: LGK 5.1B, LGK 6.1D, LGK 11, LGK 10-13.

Joint storage permitted for

: LGK 2B, LGK 3, LGK 6.1A, LGK 6.1C, LGK 8A, LGK 8B, LGK 10, LGK 12, LGK 13.

Hazardous Incident Ordinance (12. BImSchV)

: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

ABM category

: A(4) - low hazard for aquatic organisms, may have longterm hazardous effects in aquatic environment

SZW-lijst van kankerverwekkende stoffen

: ethanol is listed

SZW-lijst van mutagene stoffen

: None of the components are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding

: ethanol is listed

SZW-lijst van reprotoxische stoffen –

: ethanol is listed

Vruchtbaarheid

SZW-lijst van reprotoxische stoffen – Ontwikkeling

: ethanol is listed

Denmark

Classification remarks

: Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations

: Young people below the age of 18 years are not allowed to use the product

Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

| Indication of changes | | | |
|-----------------------|--------------------------|----------|----------|
| Section | Changed item | Change | Comments |
| | Supersedes version of | Added | |
| | Revision date | Modified | |
| | Flammability | Modified | |
| | Limited quantities (RID) | Added | |

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| Indication of changes | | | |
|-----------------------|--------------------------------|----------|----------|
| Section | Changed item | Change | Comments |
| 1.1 | Name | Modified | |
| 1.2 | Main use category | Modified | |
| 2.2 | Precautionary statements (CLP) | Modified | |
| 8.2 | Personal protective equipment | Added | |
| 9.1 | Odour | Added | |
| 9.1 | pH | Added | |
| 9.1 | Relative density | Added | |
| 15.1 | REACH Annex XVII | Modified | |
| 16 | Abbreviations and acronyms | Added | |

| Abbreviations and acronyms: | |
|-----------------------------|---|
| ADN | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| ATE | Acute Toxicity Estimate |
| BCF | Bioconcentration factor |
| BLV | Biological limit value |
| BOD | Biochemical oxygen demand (BOD) |
| COD | Chemical oxygen demand (COD) |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |
| EC-No. | European Community number |
| EC50 | Median effective concentration |
| EN | European Standard |
| IARC | International Agency for Research on Cancer |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| NOAEC | No-Observed Adverse Effect Concentration |
| NOAEL | No-Observed Adverse Effect Level |
| NOEC | No-Observed Effect Concentration |
| OECD | Organisation for Economic Co-operation and Development |
| OEL | Occupational Exposure Limit |
| PBT | Persistent Bioaccumulative Toxic |
| PNEC | Predicted No-Effect Concentration |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |

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| Abbreviations and acronyms: | |
|-----------------------------|--|
| SDS | Safety Data Sheet |
| STP | Sewage treatment plant |
| ThOD | Theoretical oxygen demand (ThOD) |
| TLM | Median Tolerance Limit |
| VOC | Volatile Organic Compounds |
| CAS-No. | Chemical Abstract Service number |
| N.O.S. | Not Otherwise Specified |
| vPvB | Very Persistent and Very Bioaccumulative |
| ED | Endocrine disrupting properties |

| Full text of H- and EUH-statements: | |
|-------------------------------------|--|
| Acute Tox. 4 (Inhalation) | Acute toxicity (inhal.), Category 4 |
| Acute Tox. 4 (Oral) | Acute toxicity (oral), Category 4 |
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Flam. Liq. 2 | Flammable liquids, Category 2 |
| Flam. Liq. 3 | Flammable liquids, Category 3 |
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |
| H271 | May cause fire or explosion; strong oxidiser. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| Ox. Sol. 1 | Oxidising Solids, Category 1 |
| Skin Corr. 1A | Skin corrosion/irritation, Category 1, Sub-Category 1A |
| Skin Corr. 1B | Skin corrosion/irritation, Category 1, Sub-Category 1B |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |

| Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]: | | |
|---|------|-----------------------|
| Flam. Liq. 3 | H226 | On basis of test data |
| Skin Irrit. 2 | H315 | Calculation method |
| Eye Irrit. 2 | H319 | Calculation method |

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.