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

1.1 Product identifiers
   Product name: Methanol

   Product Number: 32213
   Brand: Sigma-Aldrich
   Index-No.: 603-001-00-X
   REACH No.: 01-2119433307-44-XXXX
   CAS-No.: 67-56-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
   Company: Sigma-Aldrich Chemie GmbH
   Riedstrasse 2
   D-89555 STEINHEIM

   Telephone: +49 89-6513-1444
   Fax: +49 7329-97-2319
   E-mail address: eurtechserv@sial.com

1.4 Emergency telephone number
   Emergency Phone #: +49 7329-97-2323

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification according to Regulation (EC) No 1272/2008
   Flammable liquids (Category 2), H225
   Acute toxicity, Inhalation (Category 3), H331
   Acute toxicity, Dermal (Category 3), H311
   Acute toxicity, Oral (Category 3), H301
   Specific target organ toxicity - single exposure (Category 1), H370

   For the full text of the H-Statements mentioned in this Section, see Section 16.

   Classification according to EU Directives 67/548/EEC or 1999/45/EC
   F Highly flammable R11
   T Toxic R23/24/25, R39/23/24/25

   For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Labelling elements
   Labelling according Regulation (EC) No 1272/2008
   Pictogram

   Signal word: Danger
   Hazard statement(s): H225 Highly flammable liquid and vapour.
   H301 Toxic if swallowed.
   H311 Toxic in contact with skin.
H331 Toxic if inhaled.
H370 Causes damage to organs.

Precautionary statement(s)
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P311 Call a POISON CENTER or doctor/ physician.

Supplemental Hazard Statements none

2.3 Other hazards
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on ingredients

3.1 Substances
Synonyms : Methyl alcohol

Formula : CH₄O
Molecular Weight : 32.04 g/mol
CAS-No. : 67-56-1
EC-No. : 200-659-6
Index-No. : 603-001-00-X
Registration number : 01-2119433307-44-XXXX

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td></td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>67-56-1</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-659-6</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-001-00-X</td>
<td></td>
</tr>
<tr>
<td>Registration number</td>
<td>01-2119433307-44-XXXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370</td>
<td></td>
</tr>
</tbody>
</table>

Hazardous ingredients according to Directive 1999/45/EC

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
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<tr>
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</tr>
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<td></td>
</tr>
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</tr>
<tr>
<td>Registration number</td>
<td>01-2119433307-44-XXXX</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
no data available

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)
A part from the uses mentioned in section 1.2 no other specific uses are stipulated
SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>40mg/kg BW/d</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
<td>8mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>8mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Acute local effects</td>
<td>40mg/kg BW/d</td>
</tr>
</tbody>
</table>

Predicted No Effect Concentration (PNEC)

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>23,5 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>15,4 mg/l</td>
</tr>
<tr>
<td>Fresh water</td>
<td>154 mg/l</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>570,4 mg/kg</td>
</tr>
<tr>
<td>Onsite sewage treatment plant</td>
<td>100 mg/kg</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0,3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,4 mm
Break through time: 31 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Form: liquid&lt;br&gt;Colour: colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>Pungent</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Melting point/range: -98 °C</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>64.7 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>9.7 °C - closed cup</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Upper explosion limit: 36 % (V)&lt;br&gt;Lower explosion limit: 6 % (V)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>130.3 hPa at 20.0 °C&lt;br&gt;546.6 hPa at 50.0 °C&lt;br&gt;169.27 hPa at 25.0 °C</td>
</tr>
<tr>
<td>Vapour density</td>
<td>1.11</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.791 g/mL at 25 °C</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Completely miscible</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Log Pow: -0.77</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>455.0 °C at 1.013 hPa</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
</tbody>
</table>
r) Viscosity no data available
s) Explosive properties Not explosive
t) Oxidizing properties The substance or mixture is not classified as oxidizing.

9.2 Other safety information

- Minimum ignition energy: 0.14 mJ
- Conductivity: < 1 µS/cm
- Relative vapour density: 1.11

SECTION 10: Stability and reactivity

10.1 Reactivity no data available
10.2 Chemical stability
Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions no data available
10.4 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.
10.5 Incompatible materials
Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
10.6 Hazardous decomposition products
Other decomposition products - no data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LDLO Oral - Human - 143 mg/kg
Remarks: Lungs, Thorax, or Respiration: Dyspnea. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

LD50 Oral - rat - 1.187 - 2.769 mg/kg
LC50 Inhalation - rat - 4 h - 128.2 mg/l
LC50 Inhalation - rat - 6 h - 87.6 mg/l
LD50 Dermal - rabbit - 17.100 mg/kg

Skin corrosion/irritation
Skin - rabbit
Result: No skin irritation

Serious eye damage/eye irritation
Eyes - rabbit
Result: No eye irritation

Respiratory or skin sensitisation
Maximisation Test - guinea pig
Does not cause skin sensitisation.
(OECD Test Guideline 406)

Germ cell mutagenicity
Ames test
S. typhimurium
Result: negative
in vitro assay
fibroblast
Result: negative
Mutation in mammalian somatic cells.

Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
mouse - male and female
Result: negative

**Carcinogenicity**
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**
Damage to fetus not classifiable
Fertility classification not possible from current data.

**Specific target organ toxicity - single exposure**
Causes damage to organs.

**Specific target organ toxicity - repeated exposure**
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Aspiration hazard**
No aspiration toxicity classification

**Additional Information**
RTECS: PC1400000
Methyl alcohol may be fatal or cause blindness if swallowed.
Effects due to ingestion may include; Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures.
Symptoms may be delayed., Damage of the; Liver, Kidney

---

**SECTION 12: Ecological information**

12.1 **Toxicity**
Toxicity to fish
mortality LC50 - Lepomis macrochirus (Bluegill) - 15.400,0 mg/l - 96 h
NOEC - Oryzias latipes - 7.900 mg/l - 200 h

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - > 10.000,00 mg/l - 48 h

Toxicity to algae
Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) - 22.000,0 mg/l - 96 h

12.2 **Persistence and degradability**
Biodegradability
aerobic - Exposure time 5 d
Result: 72 % - rapidly biodegradable

Biochemical Oxygen Demand (BOD)
600 - 1.120 mg/g

Chemical Oxygen Demand (COD)
1.420 mg/g

Theoretical oxygen demand
1.500 mg/g

12.3 **Bioaccumulative potential**
Bioaccumulation
Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l

Bioconcentration factor (BCF): 1.0
12.4 Mobility in soil
Will not adsorb on soil.

12.5 Results of PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects
Additional ecological information
Avoid release to the environment.
Stability in water
at 19 °C 83 - 91 % - 72 h
Remarks: Hydrolyses on contact with water. Hydrolyses readily.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1230
IMDG: 1230
IATA: 1230

14.2 UN proper shipping name
ADR/RID: METHANOL
IMDG: METHANOL
IATA: Methanol

14.3 Transport hazard class(es)
ADR/RID: 3 (6.1)
IMDG: 3 (6.1)
IATA: 3 (6.1)

14.4 Packaging group
ADR/RID: II
IMDG: II
IATA: II

14.5 Environmental hazards
ADR/RID: no
IMDG Marine pollutant: no
IATA: no

14.6 Special precautions for user
no data available

SECTION 15: Regulatory information
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
no data available

15.2 Chemical Safety Assessment
A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information
Full text of H-statements referred to under sections 2 and 3.
Acute Tox. Acute toxicity
Flam. Liq. Flammable liquids
H225 Highly flammable liquid and vapour.
H301  Toxic if swallowed.
H301 + H311 +  Toxic if swallowed, in contact with skin or if inhaled
H331  Toxic in contact with skin.
H331  Toxic if inhaled.
H370  Causes damage to organs.

Full text of R-phrases referred to under sections 2 and 3

F  Highly flammable
T  Toxic
R11  Highly flammable.
R23/24/25  Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25  Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

Further information

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### Annex: Exposure scenario

#### Identified uses:

**Use: Used as chemical intermediate**

<table>
<thead>
<tr>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU 3</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites</td>
</tr>
<tr>
<td>SU 3, SU9</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of fine chemicals</td>
</tr>
<tr>
<td>PC19</td>
<td>Intermediate</td>
</tr>
<tr>
<td>PROC1</td>
<td>Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td>PROC2</td>
<td>Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td>PROC3</td>
<td>Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td>PROC4</td>
<td>Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td>PROC8b</td>
<td>Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td>PROC15</td>
<td>Use as laboratory reagent</td>
</tr>
<tr>
<td>ERC1, ERC4, ERC6a</td>
<td>Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)</td>
</tr>
</tbody>
</table>

**Use: Formulation of preparations**

<table>
<thead>
<tr>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU 3</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites</td>
</tr>
<tr>
<td>SU 10</td>
<td>Formulation [mixing] of preparations and/or re-packaging (excluding alloys)</td>
</tr>
<tr>
<td>PROC2</td>
<td>Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td>PROC3</td>
<td>Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td>PROC4</td>
<td>Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td>PROC8b</td>
<td>Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td>PROC9</td>
<td>Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</td>
</tr>
<tr>
<td>PROC15</td>
<td>Use as laboratory reagent</td>
</tr>
<tr>
<td>ERC2</td>
<td>Formulation of preparations</td>
</tr>
</tbody>
</table>

**Use: Industrial use of processing aids in processes and products, not becoming part of articles**

<table>
<thead>
<tr>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU 3</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites</td>
</tr>
<tr>
<td>SU 3, SU9</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of fine chemicals</td>
</tr>
<tr>
<td>PC20</td>
<td>Products such as pH-regulators, flocculants, pre-cipitants, neutralization agents</td>
</tr>
<tr>
<td>PC21</td>
<td>Laboratory chemicals</td>
</tr>
<tr>
<td>PROC1</td>
<td>Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td>PROC2</td>
<td>Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td>PROC3</td>
<td>Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td>PROC4</td>
<td>Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td>PROC8b</td>
<td>Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td>PROC9</td>
<td>Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</td>
</tr>
<tr>
<td>PROC10</td>
<td>Roller application or brushing</td>
</tr>
<tr>
<td>PROC15</td>
<td>Use as laboratory reagent</td>
</tr>
<tr>
<td>ERC4, ERC6b</td>
<td>Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of reactive processing aids</td>
</tr>
</tbody>
</table>

**Use: Used as laboratory reagent.**

<table>
<thead>
<tr>
<th>Use</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU 22</td>
<td>Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</td>
</tr>
<tr>
<td>SU 3, SU 22, SU24</td>
<td>Industrial uses: Uses of substances as such or in preparations at industrial sites, Professional uses: Public domain (administration, education, entertainment, services, craftsmen), Scientific research and development</td>
</tr>
<tr>
<td>PC19</td>
<td>Intermediate</td>
</tr>
<tr>
<td>PC20</td>
<td>Products such as pH-regulators, flocculants, pre-cipitants, neutralization agents</td>
</tr>
<tr>
<td>PC21</td>
<td>Laboratory chemicals</td>
</tr>
</tbody>
</table>
PROC10: Roller application or brushing
PROC15: Use as laboratory reagent

ERC4, ERC6a, ERC6b: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

1. Short title of Exposure Scenario: Used as chemical intermediate

Main User Groups: SU 3
Sectors of end-use: SU 3, SU9
Chemical product category: PC19
Process categories: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15
Environmental Release Categories: ERC1, ERC4, ERC6a

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4, ERC6a

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use): High volatile liquid

Frequency and duration of use
Application duration: > 4 h
Frequency of use: 220 days/year

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Good work practice required., Use only in area provided with appropriate exhaust ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure
Ensure operatives are trained to minimise exposures.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., For personal protection see section 8.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15, PC19

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Frequency and duration of use
Application duration: > 4 h
Frequency of use: 220 days/year

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Good work practice required., Use only in area provided with appropriate exhaust ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure
Ensure operatives are trained to minimise exposures.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., For personal protection see section 8.

3. Exposure estimation and reference to its source

Environment
A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>0,01 mg/m³</td>
<td>0</td>
</tr>
<tr>
<td>PROC1</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>0,34 mg/kg BW/d</td>
<td>0,009</td>
</tr>
<tr>
<td>Proc</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>Concentration</td>
<td>48h/24h</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>6.67 mg/m³</td>
<td>0.026</td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>13.33 mg/kg BW/d</td>
<td>0.333</td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>0.34 mg/kg BW/d</td>
<td>0.009</td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>13.33 mg/m³</td>
<td>0.051</td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>6.86 mg/kg BW/d</td>
<td>0.172</td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>13.33 mg/m³</td>
<td>0.051</td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>6 mg/m³</td>
<td>0.023</td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>6.86 mg/kg BW/d</td>
<td>0.172</td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>0.34 mg/kg BW/d</td>
<td>0.009</td>
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<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>6.67 mg/m³</td>
<td>0.026</td>
</tr>
</tbody>
</table>

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFI Guidance Specific Environmental Release Categories (SPERCs).

1. Short title of Exposure Scenario: Formulation of preparations

- Main User Groups: SU 3
- Sectors of end-use: SU 10
- Process categories: PROC2, PROC3, PROC4, PROC8b, PROC9, PROC15
- Environmental Release Categories: ERC2:

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100% (unless stated differently).

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC8b, PROC9, PROC15

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100% (unless stated differently).
Physical Form (at time of use): High volatile liquid
### Frequency and duration of use
- Application duration: > 4 h
- Frequency of use: 220 days/year

### Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor

### Technical conditions and measures
Use only in area provided with appropriate exhaust ventilation., Good work practice required.

### Organisational measures to prevent /limit releases, dispersion and exposure
Ensure operatives are trained to minimise exposures.

### Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., For personal protection see section 8.

### 3. Exposure estimation and reference to its source

#### Environment
A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

#### Workers

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<thead>
<tr>
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<tbody>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>6,67 mg/m³</td>
<td>0,026</td>
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<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>13,33 mg/kg BW/d</td>
<td>0,333</td>
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<tr>
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<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>13,33 mg/m³</td>
<td>0,051</td>
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<td>PROC4</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>13,33 mg/m³</td>
<td>0,051</td>
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<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>6,86 mg/kg BW/d</td>
<td>0,172</td>
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<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>6 mg/m³</td>
<td>0,023</td>
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<td>Dermal</td>
<td>6,86 mg/kg BW/d</td>
<td>0,172</td>
</tr>
<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Inhalation</td>
<td>26,67 mg/m³</td>
<td>0,103</td>
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<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>With Local Exhaust Ventilation</td>
<td>Dermal</td>
<td>6,86 mg/kg BW/d</td>
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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

1. Short title of Exposure Scenario: Industrial use of processing aids in processes and products, not becoming part of articles

   Main User Groups : SU 3
   Sectors of end-use : SU 3, SU9
   Chemical product category : PC20, PC21
   Process categories : PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9,
                       PROC10, PROC15
   Environmental Release Categories : ERC4, ERC6b:

2. Exposure scenario

   2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b

      Product characteristics
      Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

   2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, PROC10, PROC15, PC20, PC21

      Product characteristics
      Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
      Physical Form (at time of use) : High volatile liquid

      Frequency and duration of use
      Application duration : > 4 h
      Frequency of use : 220 days/year

      Other operational conditions affecting workers exposure
      Outdoor / Indoor : Indoor

      Technical conditions and measures
      Use only in area provided with appropriate exhaust ventilation., Good work practice required.

      Organisational measures to prevent /limit releases, dispersion and exposure
      Ensure operatives are trained to minimise exposures.

      Conditions and measures related to personal protection, hygiene and health evaluation
      Wear suitable gloves tested to EN374., For personal protection see section 8.

3. Exposure estimation and reference to its source

   Environment
   A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

   Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
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</table>

   *Risk characterisation ratio
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<tr>
<th>Method</th>
<th>ECETOC TRA</th>
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<th>0,009</th>
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<tr>
<td>PROC1</td>
<td></td>
<td>With Local Exhaust Ventilation</td>
<td>inhalation</td>
<td>0,01 mg/m3</td>
<td>0</td>
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<tr>
<td>PROC2</td>
<td></td>
<td>With Local Exhaust Ventilation</td>
<td>inhalation</td>
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<td>PROC10</td>
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<td>With Local Exhaust Ventilation</td>
<td>inhalation</td>
<td>53,33 mg/m3</td>
<td>0,205</td>
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<tr>
<td>PROC10</td>
<td></td>
<td>With Local Exhaust Ventilation</td>
<td>dermal</td>
<td>21,94 mg/kg BW/d</td>
<td>0,549</td>
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<tr>
<td>PROC15</td>
<td></td>
<td>With Local Exhaust Ventilation</td>
<td>inhalation</td>
<td>6,67 mg/m3</td>
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*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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1. Short title of Exposure Scenario: Used as laboratory reagent.

- Main User Groups: SU 22
- Sectors of end-use: SU 3, SU 22, SU24
- Chemical product category: PC19, PC20, PC21
- Process categories: PROC10, PROC15
- Environmental Release Categories: ERC4, ERC6a, ERC6b

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6a, ERC6b

**Product characteristics**
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15, PC19, PC20, PC21

**Product characteristics**
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
- Physical Form (at time of use): High volatile liquid

**Frequency and duration of use**
- Application duration: > 4 h
- Frequency of use: 220 days/year

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor

**Technical conditions and measures**
- Use only in area provided with appropriate exhaust ventilation., Good work practice required.

**Organisational measures to prevent /limit releases, dispersion and exposure**
- Ensure operatives are trained to minimise exposures.

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear suitable gloves tested to EN374., For personal protection see section 8.

3. Exposure estimation and reference to its source

**Environment**
- A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

**Workers**

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