

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 6.20  
Revision Date 07/14/2026  
Print Date 07/15/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : EPA 524.2 Rev 4 Update Mix

Product Number : 47427-U

Brand : Supelco

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

Identified uses : Laboratory chemicals, Synthesis of substances

Restrictions on use : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

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

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

### 1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

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## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

### Hazards for the product as supplied

Flammable liquids : Category 2

Acute toxicity (Oral) : Category 3

|                                                    |                                             |
|----------------------------------------------------|---------------------------------------------|
| Acute toxicity (Inhalation)                        | : Category 3                                |
| Acute toxicity (Dermal)                            | : Category 3                                |
| Skin sensitisation                                 | : Category 1                                |
| Carcinogenicity                                    | : Category 1B                               |
| Reproductive toxicity                              | : Category 1B                               |
| Specific target organ toxicity - single exposure   | : Category 1 (Eyes, Central nervous system) |
| Specific target organ toxicity - repeated exposure | : Category 2                                |
| Short-term (acute) aquatic hazard                  | : Category 3                                |

### Other hazards

None known.

### GHS label elements

|                   |   |                                                                                                                                                                                                                                                                                                                                              |
|-------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazard pictograms | : |     |
|-------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|             |          |
|-------------|----------|
| Signal word | : Danger |
|-------------|----------|

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazard statements | : H225 Highly flammable liquid and vapour.<br>H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.<br>H317 May cause an allergic skin reaction.<br>H350 May cause cancer.<br>H360 May damage fertility or the unborn child.<br>H370 Causes damage to organs (Eyes, Central nervous system).<br>H373 May cause damage to organs through prolonged or repeated exposure.<br>H402 Harmful to aquatic life. |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautionary statements | : <b>Prevention:</b><br>P201 Obtain special instructions before use.<br>P202 Do not handle until all safety precautions have been read and understood.<br>P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

P233 Keep container tightly closed.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
P260 Do not breathe mist or vapours.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**

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

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture  
CAS-No. : Not Assigned

## Components

| Chemical name                 | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|-------------------------------|-------------------|-----------------------|--------------|
| Methanol                      | 67-56-1*          | $\geq 80 - \leq 100$  | TSC          |
| Tetrahydrofuran               | 109-99-9*         | $\geq 0.1 - \leq 1$   | TSC          |
| Hexachloroethane              | 67-72-1*          | $\geq 0.1 - \leq 1$   | TSC          |
| Nitrobenzene                  | 98-95-3*          | $\geq 0.1 - \leq 1$   | TSC          |
| tert-butyl methyl ether       | 1634-04-4*        | $\geq 0.1 - \leq 1$   | TSC          |
| Carbon Disulfide              | 75-15-0*          | $\geq 0.1 - \leq 1$   | TSC          |
| chloroacetonitrile            | 107-14-2*         | $\geq 0.1 - \leq 1$   | TSC          |
| propionitrile                 | 107-12-0*         | $\geq 0.1 - \leq 1$   | TSC          |
| acrylonitrile                 | 107-13-1*         | $\geq 0.1 - \leq 1$   | TSC          |
| trans-1,4-Dichlorobuten-2-ene | 110-57-6*         | $\geq 0.1 - \leq 1$   | TSC          |
| 2-nitropropane                | 79-46-9*          | $\geq 0.1 - \leq 1$   | TSC          |
| methyl acrylate               | 96-33-3*          | $\geq 0.1 - \leq 1$   | TSC          |
| ethyl methacrylate            | 97-63-2*          | $\geq 0.1 - \leq 1$   | TSC          |
| 3-chloropropene               | 107-05-1*         | $\geq 0.1 - \leq 1$   | TSC          |
| Methylacrylonitrile           | 126-98-7*         | $\geq 0.1 - \leq 1$   | TSC          |
| pentachloroethane             | 76-01-7*          | $\geq 0.1 - \leq 1$   | TSC          |

\* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

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## SECTION 4. FIRST AID MEASURES

- General advice : First aiders need to protect themselves.  
Show this safety data sheet to the doctor in attendance.
- If inhaled : After inhalation: fresh air. Immediately call in physician.  
If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In case of skin contact                                     | : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.                                                                                                                                                                                                                                                                   |
| In case of eye contact                                      | : After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.                                                                                                                                                                                                                                                                                                      |
| If swallowed                                                | : After swallowing: fresh air. Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage). Call a doctor immediately (mention methanol ingestion). Only in exceptional cases, if no medical care is available within one hour, induce vomiting (only in fully conscious persons) and make victim drink ethanol again (approx. 0.3 ml of a 40% alcoholic beverage/kg body weight/hour). |
| Most important symptoms and effects, both acute and delayed | : The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11                                                                                                                                                                                                                                                                    |
| Protection of first-aiders                                  | : For personal protection see section 8.                                                                                                                                                                                                                                                                                                                                                                  |
| Notes to physician                                          | : No data available                                                                                                                                                                                                                                                                                                                                                                                       |

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## SECTION 5. FIREFIGHTING MEASURES

|                                       |                                                                                |
|---------------------------------------|--------------------------------------------------------------------------------|
| Suitable extinguishing media          | : Foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry powder                      |
| Unsuitable extinguishing media        | : For this substance/mixture no limitations of extinguishing agents are given. |
| Specific hazards during fire fighting | : Combustible.                                                                 |

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

|                                                |                                                                                                                                                                 |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazardous combustion products                  | : Carbon oxides                                                                                                                                                 |
| Specific extinguishing methods                 | : No data available                                                                                                                                             |
| Further information                            | : Remove container from danger zone and cool with water.<br>Prevent fire extinguishing water from contaminating surface water or the ground water system.       |
| Special protective equipment for fire-fighters | : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. |

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel:<br>Do not breathe vapours, aerosols.<br>Avoid substance contact.<br>Ensure adequate ventilation.<br>Keep away from heat and sources of ignition.<br>Evacuate the danger area, observe emergency procedures, consult an expert.<br>Advice for emergency responders:<br>Wear appropriate personal protective equipment, as indicated in Section 8. |
| Environmental precautions                                           | : Do not let product enter drains.<br>Risk of explosion.                                                                                                                                                                                                                                                                                                                               |
| Methods and materials for containment and cleaning up               | : Cover drains. Collect, bind, and pump off spills.<br>Observe possible material restrictions (see sections 7 and 10).<br>Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.                                                                                                                                             |

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## SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

- Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition.  
Take precautionary measures against static discharge.
- Advice on safe handling : Work under hood. Do not inhale substance/mixture.  
Avoid generation of vapours/aerosols.
- Further information on storage conditions : Keep container tightly closed in a dry and well-ventilated place.  
Keep away from heat and sources of ignition.  
Keep locked up or in an area accessible only to qualified or authorised persons.
- Storage class : 3, Flammable liquids
- Recommended storage temperature : 36 - 46 °F / 2 - 8 °C

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components       | CAS-No.  | Value type<br>(Form of exposure) | Control parameters /<br>Permissible concentration | Basis     |
|------------------|----------|----------------------------------|---------------------------------------------------|-----------|
| Methanol         | 67-56-1  | TWA                              | 200 ppm                                           | ACGIH     |
|                  |          | STEL                             | 250 ppm                                           | ACGIH     |
|                  |          | ST                               | 250 ppm<br>325 mg/m <sup>3</sup>                  | NIOSH REL |
|                  |          | TWA                              | 200 ppm<br>260 mg/m <sup>3</sup>                  | NIOSH REL |
|                  |          | TWA                              | 200 ppm<br>260 mg/m <sup>3</sup>                  | OSHA Z-1  |
| Tetrahydrofuran  | 109-99-9 | TWA                              | 50 ppm                                            | ACGIH     |
|                  |          | STEL                             | 100 ppm                                           | ACGIH     |
|                  |          | ST                               | 250 ppm<br>735 mg/m <sup>3</sup>                  | NIOSH REL |
|                  |          | TWA                              | 200 ppm<br>590 mg/m <sup>3</sup>                  | NIOSH REL |
|                  |          | TWA                              | 200 ppm<br>590 mg/m <sup>3</sup>                  | OSHA Z-1  |
| Hexachloroethane | 67-72-1  | TWA                              | 1 ppm                                             | ACGIH     |
|                  |          | TWA                              | 1 ppm<br>10 mg/m <sup>3</sup>                     | NIOSH REL |
|                  |          | TWA                              | 1 ppm<br>10 mg/m <sup>3</sup>                     | OSHA Z-1  |
| Nitrobenzene     | 98-95-3  | TWA                              | 1 ppm                                             | ACGIH     |
|                  |          | TWA                              | 1 ppm                                             | NIOSH REL |

|                         |           |      |                         |           |
|-------------------------|-----------|------|-------------------------|-----------|
|                         |           |      | 5 mg/m3                 |           |
|                         |           | TWA  | 1 ppm<br>5 mg/m3        | OSHA Z-1  |
| tert-butyl methyl ether | 1634-04-4 | TWA  | 50 ppm                  | ACGIH     |
| Carbon Disulfide        | 75-15-0   | TWA  | 1 ppm                   | ACGIH     |
|                         |           | TWA  | 1 ppm<br>3 mg/m3        | NIOSH REL |
|                         |           | ST   | 10 ppm<br>30 mg/m3      | NIOSH REL |
|                         |           | TWA  | 20 ppm                  | OSHA Z-2  |
|                         |           | CEIL | 30 ppm                  | OSHA Z-2  |
|                         |           | Peak | 100 ppm<br>(30 minutes) | OSHA Z-2  |
| chloroacetonitrile      | 107-14-2  | TWA  | 2 ppm                   | US WEEL   |
|                         |           | STEL | 5 ppm                   | US WEEL   |
| propiononitrile         | 107-12-0  | TWA  | 6 ppm<br>14 mg/m3       | NIOSH REL |
|                         |           | C    | 10 ppm                  | ACGIH     |
| acrylonitrile           | 107-13-1  | TWA  | 2 ppm                   | ACGIH     |
|                         |           | TWA  | 1 ppm                   | NIOSH REL |
|                         |           | C    | 10 ppm                  | NIOSH REL |
| 2-nitropropane          | 79-46-9   | TWA  | 10 ppm                  | ACGIH     |
|                         |           | TWA  | 25 ppm<br>90 mg/m3      | OSHA Z-1  |
|                         |           | TWA  | 2 ppm                   | US WEEL   |
|                         |           | STEL | 5 ppm                   | US WEEL   |
| methyl acrylate         | 96-33-3   | TWA  | 2 ppm                   | ACGIH     |
|                         |           | TWA  | 10 ppm<br>35 mg/m3      | NIOSH REL |
|                         |           | TWA  | 10 ppm<br>35 mg/m3      | OSHA Z-1  |
| 3-chloropropene         | 107-05-1  | TWA  | 1 ppm                   | ACGIH     |
|                         |           | STEL | 2 ppm                   | ACGIH     |
|                         |           | ST   | 2 ppm<br>6 mg/m3        | NIOSH REL |
|                         |           | TWA  | 1 ppm<br>3 mg/m3        | NIOSH REL |
|                         |           | TWA  | 1 ppm<br>3 mg/m3        | OSHA Z-1  |
| Methylacrylonitrile     | 126-98-7  | TWA  | 1 ppm                   | ACGIH     |
|                         |           | TWA  | 1 ppm<br>3 mg/m3        | NIOSH REL |

#### Biological occupational exposure limits

| Components | CAS-No. | Control parameters | Biological specimen | Sampling time | Permissible concentration | Basis        |
|------------|---------|--------------------|---------------------|---------------|---------------------------|--------------|
| Methanol   | 67-56-1 | Methanol           | Urine               | End of shift  | 15 mg/l                   | ACGIH<br>BEI |

|                  |          |                                             |          |                                                          |                     |           |
|------------------|----------|---------------------------------------------|----------|----------------------------------------------------------|---------------------|-----------|
|                  |          |                                             |          | (As soon as possible after exposure ceases)              |                     |           |
| Tetrahydrofuran  | 109-99-9 | Tetrahydrofuran                             | Urine    | End of shift (As soon as possible after exposure ceases) | 2 mg/l              | ACGIH BEI |
| Nitrobenzene     | 98-95-3  | Methemoglobin                               | In blood | During or at the end of the shift                        | 1.5 % Hb            | ACGIH BEI |
| Carbon Disulfide | 75-15-0  | 2-Thiothiazolidine-4-carboxylic acid (TTCA) | Urine    | End of shift (As soon as possible after exposure ceases) | 0.5 mg/g creatinine | ACGIH BEI |

**Engineering measures** : No data available

### Personal protective equipment

Respiratory protection : required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

## Hand protection

Material : butyl-rubber  
Break through time : 480 min  
Glove thickness : 0.3 mm  
Protective index : Full contact  
Manufacturer : Butoject® (KCL 897 / Aldrich Z677647, Size M)

Material : Nitrile rubber  
Break through time : 30 min  
Glove thickness : 0.4 mm  
Protective index : Splash contact  
Manufacturer : Camatril® (KCL 730 / Aldrich Z677442, Size M)

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

Remarks : 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.  
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. required

Eye protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).  
Safety glasses

Skin and body protection : Flame retardant antistatic protective clothing.

Hygiene measures : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

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|                                                     |                     |
|-----------------------------------------------------|---------------------|
| Colour                                              | : No data available |
| Odour                                               | : No data available |
| Odour Threshold                                     | : No data available |
| pH                                                  | : No data available |
| Melting point                                       | : No data available |
| Boiling point/boiling range                         | : No data available |
| Flash point                                         | : 50 °F / 10 °C     |
|                                                     | Method: closed cup  |
| Evaporation rate                                    | : No data available |
| Flammability (solid, gas)                           | : No data available |
| Flammability (liquids)                              | : No data available |
| Burning rate                                        | : No data available |
| Upper explosion limit /<br>Upper flammability limit | : No data available |
| Lower explosion limit /<br>Lower flammability limit | : No data available |
| Vapour pressure                                     | : No data available |
| Relative vapour density                             | : No data available |
| Relative density                                    | : No data available |
| Density                                             | : No data available |
| Water solubility                                    | : No data available |
| Partition coefficient: n-<br>octanol/water          | : No data available |
| Autoignition temperature                            | : No data available |
| Decomposition<br>temperature                        | : No data available |
| Viscosity, dynamic                                  | : No data available |
| Viscosity, kinematic                                | : No data available |

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|                          |                                |
|--------------------------|--------------------------------|
| Flow time                | : No data available            |
| Explosive properties     | : Not classified as explosive. |
| Oxidizing properties     | : none                         |
| Particle characteristics |                                |
| Particle size            | : No data available            |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : Vapours may form explosive mixture with air.                                                                                                                                                                                                                                                                                                                                                                                         |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .                                                                                                                                                                                                                                                                                                                                              |
| Possibility of hazardous reactions | : No data available                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Conditions to avoid                | : Warming.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Incompatible materials             | : Water<br>Zinc<br>Strong bases<br>Acids<br>Bases<br>Oxidizing agents<br>Alkali metals<br>Strong oxidizing agents<br>Potassium<br>Copper<br>Amines<br>Strong acids<br>Acid chlorides<br>Acid anhydrides<br>Reducing agents<br>Nitric acid<br>Oxygen<br>Peroxides<br>acids<br>Copper<br>Reacts violently with:<br>Halogens<br>Strong reducing agents<br>Lithium<br>Boron trifluoride<br>Sodium/sodium oxides<br>Sulfuric acid<br>Azides |

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Mixture

##### Acute toxicity

Oral: No data available

Acute toxicity estimate Oral - 98.63 mg/kg  
(Calculation method)

Inhalation: No data available

Acute toxicity estimate Inhalation - 4 h - 2.87 mg/l - vapour (Calculation method)

Dermal: No data available

Acute toxicity estimate Dermal - 293.06 mg/kg  
(Calculation method)

##### Skin corrosion/irritation

No data available

##### Serious eye damage/eye irritation

No data available

##### Respiratory or skin sensitization

Mixture may cause an allergic skin reaction.

##### Germ cell mutagenicity

No data available

##### Carcinogenicity

Possible carcinogen.

IARC: 1 - Group 1: Carcinogenic to humans (acrylonitrile)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Tetrahydrofuran)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Hexachloroethane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Nitrobenzene)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (tert-butyl methyl ether)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (2-nitropropane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (methyl acrylate)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (Hexachloroethane)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (Nitrobenzene)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (acrylonitrile)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (2-nitropropane)

OSHA: OSHA specifically regulated carcinogen (acrylonitrile)

**Reproductive toxicity**

May harm the unborn child.

May impair fertility.

**Specific target organ toxicity - single exposure**

Mixture causes damage to organs. - Eyes, Central nervous system

**Specific target organ toxicity - repeated exposure**

Mixture may cause damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

No data available

**11.2 Additional Information**

Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

**Components****Methanol****Acute toxicity**

Acute toxicity estimate Oral - 100.1 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Nausea, Vomiting

Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapour

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Symptoms: Irritation symptoms in the respiratory tract.

Acute toxicity estimate Dermal - 300.1 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation

Remarks: (ECHA)

Remarks: Drying-out effect resulting in rough and chapped skin.

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

Remarks: (ECHA)

**Respiratory or skin sensitization**

Sensitisation test: - Guinea pig

Result: negative

(OECD Test Guideline 406)

**Germ cell mutagenicity**

Based on available data the classification criteria are not met.

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female - Bone marrow

Result: negative

**Carcinogenicity**

Did not show carcinogenic effects in animal experiments.

**Reproductive toxicity**

Based on available data the classification criteria are not met.

**Specific target organ toxicity - single exposure**

Causes damage to organs. - Eyes, Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute oral toxicity - Nausea, Vomiting

Acute inhalation toxicity - Irritation symptoms in the respiratory tract.

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**Tetrahydrofuran****Acute toxicity**

LD50 Oral - Rat - male and female - 1,650 mg/kg

Remarks: (ECHA)

Symptoms: Irritation of mucous membranes

LC50 Inhalation - Rat - male and female - 6 h - > 14.7 mg/l - vapour (US-EPA)

LD50 Dermal - Rat - male and female - > 2,000 mg/kg (OECD Test Guideline 402)

**Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 72 h

(Draize Test)

Remarks: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

**Serious eye damage/eye irritation**

Eyes - Rabbit

(Evaluated according F.H.S.A.= Federal Hazardous Substance Act.)

Remarks: Causes serious eye damage.

(ECHA)

Eyes - Rabbit

(Tested according to Annex V of Directive 67/548/EEC.)

Remarks: Causes serious eye damage.

(ECHA)

**Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Ames test

Test system: *S. typhimurium*

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female - Red blood cells (erythrocytes)

Result: negative

**Carcinogenicity**

Suspected of causing cancer.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

Inhalation - May cause respiratory irritation. - Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

May cause drowsiness or dizziness.

Acute oral toxicity - Irritation of mucous membranes

**Specific target organ toxicity - repeated exposure**

**Aspiration hazard**

No data available

## Hexachloroethane

### Acute toxicity

LD50 Oral - Rat - 4,460 mg/kg

Remarks: (RTECS)

Inhalation: No data available

LD50 Dermal - Rabbit - 32,000 mg/kg

Remarks: (RTECS)

### Skin corrosion/irritation

Skin - reconstructed human epidermis (RhE)

Result: No skin irritation - 1 h

(OECD Test Guideline 439)

### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Irritating to eyes. - 24 h

Remarks: (ECHA)

### Respiratory or skin sensitization

No data available

### Germ cell mutagenicity

No data available

### Carcinogenicity

Suspected of causing cancer.

### Reproductive toxicity

No data available

### Specific target organ toxicity - single exposure

No data available

### Specific target organ toxicity - repeated exposure

No data available

### Aspiration hazard

No data available

## Nitrobenzene

### Acute toxicity

Acute toxicity estimate Oral - 100 mg/kg

(Expert judgement)

Remarks: Blood: Methemoglobinemia-Carboxyhemoglobin.

(Regulation (EC) No 1272/2008, Annex VI)

LC50 Inhalation - Rat - 4 h - 2.81 mg/l - vapour

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and

Taste): Eye: Lacrimation.

Behavioral: Tremor.

(RTECS)

LD50 Dermal - Rabbit - 760 mg/kg

Remarks: (ECHA)

**Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 24 h

Remarks: (ECHA)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

Remarks: (ECHA)

**Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Remarks: (ECHA)

Method: OECD Test Guideline 474

Species: Mouse - male and female - Bone marrow

Result: negative

Method: OECD Test Guideline 486

Species: Rat - male - Liver cells

Result: negative

**Carcinogenicity**

Suspected of causing cancer.

**Reproductive toxicity**

May damage fertility.

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Causes damage to organs through prolonged or repeated exposure.

- Blood

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Aspiration hazard**

No data available

**tert-butyl methyl ether****Acute toxicity**

LD50 Oral - Rat - male and female - > 2,000 mg/kg

(OECD Test Guideline 401)

Symptoms: Nausea, Vomiting, Pulmonary failure possible after aspiration of vomit.,

Aspiration may cause pulmonary oedema and pneumonitis.

LC50 Inhalation - Rat - male and female - 4 h - 85 mg/l - vapour

(OECD Test Guideline 403)

Symptoms: Possible damages:, mucosal irritations

LD50 Dermal - Rat - male and female - > 2,000 mg/kg  
(OECD Test Guideline 402)

**Skin corrosion/irritation**

Skin - Rabbit

Result: Skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: Drying-out effect resulting in rough and chapped skin.

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

**Respiratory or skin sensitization**

Maximisation Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

**Germ cell mutagenicity**

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Result: negative

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: Mutagenicity (mammal cell test): micronucleus.

Test system: mouse lymphoma cells

Result: negative

Method: OECD Test Guideline 486

Species: Mouse - male and female - Liver cells

Result: negative

Method: US-EPA

Species: Mouse - male and female - Bone marrow

Result: negative

Method: US-EPA

Species: Rat - male and female - Bone marrow

Result: negative

Method: OECD Test Guideline 488

Species: Rat - male - Bone marrow

Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

Acute oral toxicity - Nausea, Vomiting, Pulmonary failure possible after aspiration of vomit., Aspiration may cause pulmonary oedema and pneumonitis.

Acute inhalation toxicity - Possible damages:, mucosal irritations

## **Specific target organ toxicity - repeated exposure**

### **Aspiration hazard**

No data available

## **Carbon Disulfide**

### **Acute toxicity**

LD50 Oral - Rat - female - > 2,000 mg/kg

(OECD Test Guideline 423)

LC50 Inhalation - Rat - male and female - 4 h - 10.35 mg/l - vapour

(OECD Test Guideline 403)

Dermal: No data available

### **Skin corrosion/irritation**

Skin - Rabbit

Result: Severe irritations

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

(IUCLID)

### **Serious eye damage/eye irritation**

Eyes - Human

Result: Severe irritations

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

(IUCLID)

### **Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

### **Germ cell mutagenicity**

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female - Red blood cells (erythrocytes)

Result: negative

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

Suspected of damaging the unborn child. Suspected of damaging fertility.

## **Specific target organ toxicity - single exposure**

No data available

## **Specific target organ toxicity - repeated exposure**

Causes damage to organs through prolonged or repeated exposure.

- Peripheral nervous system, Central nervous system, Cardio-vascular system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

### **Aspiration hazard**

No data available

## **chloroacetonitrile**

### **Acute toxicity**

LD50 Oral - Rat - 220 mg/kg

Remarks: (RTECS)

Symptoms: Nausea, Vomiting

Oral: absorption

Acute toxicity estimate Inhalation - 3.1 mg/l - vapour

(Expert judgement)

Symptoms: mucosal irritations, Cough, Shortness of breath

Inhalation: absorption

LD50 Dermal - Rabbit - 85 mg/kg

Remarks: (RTECS)

Dermal: absorption

### **Skin corrosion/irritation**

Remarks: slight irritation

### **Serious eye damage/eye irritation**

No data available

### **Respiratory or skin sensitization**

No data available

### **Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Remarks: (Lit.)

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **Specific target organ toxicity - single exposure**

Acute oral toxicity - Nausea, Vomiting

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath

### **Specific target organ toxicity - repeated exposure**

No data available

### **Aspiration hazard**

No data available

## **propiononitrile**

### **Acute toxicity**

LD50 Oral - Rat - 39 mg/kg

LC50 Inhalation - 4 h - 11 mg/l - vapour

LD50 Dermal - 51 mg/kg

No data available

**Skin corrosion/irritation**

Skin - Rabbit

Result: Mild skin irritation - 24 h

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Moderate eye irritation - 24 h

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**acrylonitrile****Acute toxicity**

LD50 Oral - Rat - female - 95.1 mg/kg

Remarks: (ECHA)

LC50 Inhalation - Rat - female - 4 h - 2.05 mg/l - vapour

(OECD Test Guideline 403)

Inhalation: Irritating to respiratory system.

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

LD50 Dermal - Rabbit - 250 mg/kg

Remarks: (IUCLID)

**Skin corrosion/irritation**

Skin - Rabbit

Result: Skin irritation - 24 h

(OECD Test Guideline 404)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Risk of serious damage to eyes.

(OECD Test Guideline 405)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Respiratory or skin sensitization**

Maximisation Test - Guinea pig

Result: positive

(OECD Test Guideline 406)

**Germ cell mutagenicity**

Test Type: Ames test

Test system: *S. typhimurium*

Result: positive

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster lung cells

Result: positive

Remarks: (ECHA)

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: positive

**Carcinogenicity**

Presumed to have carcinogenic potential for humans

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

May cause respiratory irritation.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**trans-1,4-Dichlorobuten-2-ene****Acute toxicity**

Acute toxicity estimate Oral - 100 mg/kg

(Expert judgement)

Acute toxicity estimate Inhalation - 4 h - 0.1 mg/l - vapour

(Expert judgement)

Acute toxicity estimate Dermal - 1,500 mg/kg

(Expert judgement)

**Skin corrosion/irritation**

Remarks: Causes skin burns.

**Serious eye damage/eye irritation**

No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**2-nitropropane****Acute toxicity**

LD50 Oral - Rat - 565 - 885 mg/kg

LC50 Inhalation - Rat - female - 4 h - 3.21 mg/l - vapour

LD50 Dermal - Rabbit - male and female - > 2,000 mg/kg

No data available

**Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 24 h

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Mild eye irritation

**Respiratory or skin sensitization**

- Guinea pig

Result: Does not cause skin sensitisation.

**Germ cell mutagenicity**

In vitro tests showed mutagenic effects

Test Type: Ames test

Test system: *S. typhimurium*

Result: positive

**Carcinogenicity**

This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen

**Reproductive toxicity**

No data available

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**methyl acrylate****Acute toxicity**

Acute toxicity estimate Oral - 500 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Inhalation - 3 mg/l - vapour

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Dermal - 1,100 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

No data available

**Skin corrosion/irritation**

Skin - Rabbit

Result: irritating - 4 h

(OECD Test Guideline 404)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Eye irritation

Remarks: (IUCLID)

**Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: positive

(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Ames test

Result: Not mutagenic in Ames Test

Remarks: (IUCLID)

Species: Mouse - male - Bone marrow

Result: negative

Remarks: (ECHA)

**Carcinogenicity**

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

Inhalation - May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**ethyl methacrylate****Acute toxicity**

LD50 Oral - Rat - 13,424 mg/kg

LC50 Inhalation - Rat - 4 h - 8300 ppm

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Other changes.

Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other.

Lungs, Thorax, or Respiration:Dyspnea.

Dermal: No data available

No data available

**Skin corrosion/irritation**

Remarks: No data available

**Serious eye damage/eye irritation**

Remarks: No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

Test Type: Hamster

Test system: fibroblast

Result: negative

Method: Mutagenicity (micronucleus test)

Species: Mouse - male and female

Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

No data available

**Specific target organ toxicity - single exposure**

May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

### **3-chloropropene**

#### **Acute toxicity**

LD50 Oral - Rat - female - 419 mg/kg

(OECD Test Guideline 401)

Acute toxicity estimate Inhalation - 4 h - 10.1 mg/l - vapour

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Inhalation: Irritating to respiratory system.

Acute toxicity estimate Dermal - 1,100.1 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### **Skin corrosion/irritation**

Remarks: Causes skin irritation.

Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### **Serious eye damage/eye irritation**

Remarks: Causes serious eye irritation.

Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Remarks: Lacrimal irritation due to vapours.

#### **Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

#### **Germ cell mutagenicity**

Suspected of causing genetic defects.

Method: OECD Test Guideline 477

Species: *Drosophila melanogaster* - male

Result: negative

#### **Carcinogenicity**

Suspected of causing cancer.

#### **Reproductive toxicity**

No data available

#### **Specific target organ toxicity - single exposure**

May cause respiratory irritation. - Respiratory Tract

#### **Specific target organ toxicity - repeated exposure**

May cause damage to organs through prolonged or repeated exposure.

- Nervous system, Liver, Kidney

#### **Aspiration hazard**

No data available

## **Methylacrylonitrile**

### **Acute toxicity**

LD50 Oral - Rat - female - 73 mg/kg  
(OECD Test Guideline 401)  
LC50 Inhalation - Rat - male - 4 h - 0.9 mg/l - vapour  
Remarks: (ECHA)  
Dermal: No data available

### **Skin corrosion/irritation**

Remarks: No data available

### **Serious eye damage/eye irritation**

Eyes - In vitro study  
Result: No eye irritation  
Remarks: (ECHA)

### **Respiratory or skin sensitization**

May cause allergic skin reaction. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

### **Germ cell mutagenicity**

Test Type: In vitro mammalian cell gene mutation test  
Test system: mouse lymphoma cells  
Result: negative  
Test Type: Ames test  
Test system: Escherichia coli/Salmonella typhimurium  
Result: negative  
Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Result: negative  
Method: OECD Test Guideline 474  
Species: Rat - male - Red blood cells (erythrocytes)  
Result: negative

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **Specific target organ toxicity - single exposure**

Causes damage to organs. - Central nervous system

### **Specific target organ toxicity - repeated exposure**

### **Aspiration hazard**

No data available

## **pentachloroethane**

### **Acute toxicity**

LD50 Oral - Rat - 920 mg/kg  
Remarks: Behavioral: Altered sleep time (including change in righting reflex).  
Behavioral: Ataxia.

Liver: Other changes.  
LC50 Inhalation - Rat - 2 h - 4238 ppm  
Dermal: No data available  
No data available

**Skin corrosion/irritation**

Remarks: No data available

**Serious eye damage/eye irritation**

Remarks: No data available

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

Limited evidence of carcinogenicity in animal studies

**Reproductive toxicity**

No data available

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

No data available

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

##### **Methanol:**

Toxicity to fish : LC50 (*Lepomis macrochirus* (Bluegill)): 15,400.0 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: US-EPA

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 18,260 mg/l  
End point: Immobilization  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 202

|                                     |                                                                                                                                                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to algae/aquatic plants    | : ErC50 (Pseudokirchneriella subcapitata (green algae)): ca. 22,000.0 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Method: OECD Test Guideline 201 |
| Toxicity to fish (Chronic toxicity) | : NOEC (Oryzias latipes (Orange-red killifish)): 7,900 mg/l<br>Exposure time: 200 h<br>Remarks: (External MSDS)                                                |
| Toxicity to microorganisms          | : IC50 (activated sludge): > 1,000 mg/l<br>Exposure time: 3 h<br>Test Type: static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 209       |

#### **Tetrahydrofuran:**

|                                                     |                                                                                                                                                                                                           |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | : LC50 (Pimephales promelas (fathead minnow)): 2,160 mg/l<br>End point: mortality<br>Exposure time: 96 h<br>Test Type: flow-through test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 3,485 mg/l<br>End point: mortality<br>Exposure time: 48 h<br>Test Type: static test<br>Method: OECD Test Guideline 202                                               |
| Toxicity to fish (Chronic toxicity)                 | : NOEC (Pimephales promelas (fathead minnow)): 216 mg/l<br>End point: Growth inhibition<br>Exposure time: 33 d<br>Test Type: flow-through test<br>Analytical monitoring: yes<br>Remarks: (ECHA)           |

#### **Hexachloroethane:**

|                                                     |                                                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.84 mg/l<br>Exposure time: 96 h<br>Remarks: (ECOTOX Database) |
| Toxicity to daphnia and other aquatic invertebrates | : LC50 (Daphnia magna (Water flea)): 1.36 mg/l<br>Exposure time: 48 h<br>Remarks: (ECOTOX Database)          |

Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata*): 0.88 mg/l  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

#### **Nitrobenzene:**

Toxicity to fish : LC50 (*Danio rerio* (zebra fish)): 92 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 35 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Remarks: (ECHA)

Toxicity to algae/aquatic plants : ErC50 (*Chlorella pyrenoidosa*): 18 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 0.002 mg/l  
End point: mortality  
Exposure time: 23 d  
Test Type: flow-through test  
Analytical monitoring: yes  
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 2.6 mg/l  
End point: reproduction rate  
Exposure time: 21 d  
Test Type: semi-static test  
Analytical monitoring: yes

Toxicity to microorganisms : EC20 (activated sludge): 1,000 mg/l  
Exposure time: 30 min  
Test Type: static test  
Method: OECD Test Guideline 209

#### **Ecotoxicology Assessment**

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Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

**tert-butyl methyl ether:**

Toxicity to fish : LC50 (*Menidia beryllina*): 574 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: semi-static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Americamysis bahia* (Mysid)): 187 mg/l  
End point: Swimming behavior  
Exposure time: 96 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: US-EPA OPPTS 850.1035  
GLP: yes

Toxicity to algae/aquatic plants : IC50 (*Pseudokirchneriella subcapitata* (green algae)): 491 mg/l  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: yes  
GLP: yes

Toxicity to fish (Chronic toxicity) : NOEC (*Pimephales promelas* (fathead minnow)): 299 mg/l  
End point: Growth inhibition  
Exposure time: 31 d  
Test Type: flow-through test  
Analytical monitoring: yes  
GLP: yes  
Remarks: (ECHA)

NOEC (*Pimephales promelas* (fathead minnow)): 450 mg/l  
End point: mortality  
Exposure time: 31 d  
Test Type: flow-through test  
Analytical monitoring: yes  
GLP: yes  
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 51 mg/l  
Exposure time: 21 d  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: OPPTS 850.1300  
GLP: yes

Toxicity to : EC10 (*Pseudomonas putida*): 710 mg/l

microorganisms  
End point: Growth rate  
Exposure time: 18 h  
Test Type: static test  
GLP: yes  
Remarks: (ECHA)

**Carbon Disulfide:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 3 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.1 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Chlorella pyrenoidosa): 21 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Bacteria): 13 mg/l  
Exposure time: 24 h  
Test Type: static test  
Remarks: (ECHA)

**chloroacetonitrile:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 1.35 mg/l  
Exposure time: 96 h  
Remarks: (External MSDS)

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (algae)): 19.34 mg/l  
Exposure time: 48 h  
Test Type: static test  
Remarks: (ECHA)

**propiononitrile:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 1,520 mg/l  
Exposure time: 96 h

**acrylonitrile:**

Toxicity to fish : LC50 (Oryzias latipes): 5.1 mg/l  
End point: mortality  
Exposure time: 96 h

Test Type: semi-static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 203  
GLP: yes

- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 2.5 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes
- Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata*): 10 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 201  
GLP: yes
- Toxicity to fish (Chronic toxicity) : NOEC (*Pimephales promelas* (fathead minnow)): 0.17 mg/l  
End point: Growth inhibition  
Exposure time: 30 d  
Test Type: flow-through test  
Analytical monitoring: yes  
Remarks: (ECHA)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 2 mg/l  
End point: mortality  
Exposure time: 21 d  
Remarks: (ECOTOX Database)
- Toxicity to microorganisms : EC5 (*Pseudomonas putida*): 53 mg/l  
Exposure time: 16 h  
Remarks: (Lit.)  
(maximum permissible toxic concentration)

## **2-nitropropane:**

- Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): > 612.5 mg/l  
Exposure time: 96 h  
Test Type: static test
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 19 mg/l  
Exposure time: 48 h  
Test Type: flow-through test  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : EC50 (*Pseudokirchneriella subcapitata* (green algae)): > 887 mg/l

Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Sludge Treatment): 310 mg/l  
Exposure time: 30 min  
Test Type: Respiration inhibition  
Method: OECD Test Guideline 209

**methyl acrylate:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 3.4 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: OECD Test Guideline 203  
GLP: yes

LC50 (Cyprinodon variegatus (sheepshead minnow)): 1.1 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: OECD Test Guideline 203  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.6 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 3.55 mg/l  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 201  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.46 mg/l  
End point: Growth inhibition  
Exposure time: 21 d  
Test Type: semi-static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 211  
GLP: yes

Remarks: (in analogy to similar products)  
The value is given in analogy to the following  
substances: n-butyl acrylate

NOEC (Daphnia magna (Water flea)): 0.19 mg/l  
End point: reproduction rate  
Exposure time: 21 d  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: US-EPA  
GLP: yes  
Remarks: (in analogy to similar products)  
The value is given in analogy to the following  
substances: Ethyl acrylate

EC50 (Daphnia magna (Water flea)): 0.5 mg/l  
End point: Immobilization  
Exposure time: 21 d  
Test Type: flow-through test  
Analytical monitoring: yes  
Method: US-EPA  
GLP: yes  
Remarks: (in analogy to similar products)  
The value is given in analogy to the following  
substances: Ethyl acrylate

Toxicity to microorganisms : EC10 (activated sludge): > 100 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
GLP: yes  
Remarks: (ECHA)

#### **ethyl methacrylate:**

Toxicity to fish : LC50 (Salmo gairdneri): 100 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): > 66 mg/l  
Exposure time: 48 h  
Test Type: flow-through test

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 110 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

#### **3-chloropropene:**

Toxicity to algae/aquatic : NOEC (Scenedesmus quadricauda (Green algae)): 6.3

|                                     |                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| plants                              | mg/l<br>Exposure time: 8 d<br>Test Type: static test<br>Method: DIN 38412                                                                                       |
| Toxicity to fish (Chronic toxicity) | : NOEC (Poecilia reticulata (guppy)): 1.2 mg/l<br>End point: mortality<br>Exposure time: 14 d<br>Test Type: semi-static test<br>Method: OECD Test Guideline 204 |
| Toxicity to microorganisms          | : NOEC (activated sludge): 120 mg/l<br>Exposure time: 2.5 h<br>Remarks: (ECHA)                                                                                  |

### Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

### Methylacrylonitrile:

|                                                                        |                                                                                                                                                                                                                   |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                                       | : LC50 (Danio rerio (zebra fish)): 354 mg/l<br>End point: mortality<br>Exposure time: 96 h<br>Test Type: flow-through test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 203<br>GLP: yes           |
| Toxicity to daphnia and other aquatic invertebrates                    | : EC50 (Daphnia magna (Water flea)): 250 mg/l<br>End point: Immobilization<br>Exposure time: 48 h<br>Test Type: static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 202<br>GLP: yes          |
| Toxicity to algae/aquatic plants                                       | : ErC50 (Pseudokirchneriella subcapitata (green algae)): 25.3 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 201<br>GLP: yes                  |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : EC50 (Daphnia magna (Water flea)): 6.33 mg/l<br>End point: reproduction rate<br>Exposure time: 21 d<br>Test Type: semi-static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 211<br>GLP: yes |

**pentachloroethane:**

|                                                     |                                                                                   |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|
| Toxicity to fish                                    | : LC50 (Pimephales promelas (fathead minnow)): 7.34 mg/l<br>Exposure time: 96.0 h |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 4.7 mg/l<br>Exposure time: 48 h              |

**Persistence and degradability****Components:****Methanol:**

|                                 |                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Biodegradability                | : Result: Readily biodegradable.<br>Biodegradation: 99 %<br>Exposure time: 30 d<br>Method: OECD Test Guideline 301D                                                                                   |
| Biochemical Oxygen Demand (BOD) | : 600 - 1,120 mg/g<br>Incubation time: 5 d<br>Remarks: (IUCLID)                                                                                                                                       |
| Chemical Oxygen Demand (COD)    | : 1,420 mg/g<br>Remarks: (IUCLID)                                                                                                                                                                     |
| ThOD                            | : 1,500 mg/g<br>Remarks: (Lit.)                                                                                                                                                                       |
| BOD/ThOD                        | : 76 %<br>Remarks: Closed Bottle test (IUCLID)                                                                                                                                                        |
| Stability in water              | : Hydrolysis: 83 - 91 % at 19 °C(72 h)<br>Remarks: Hydrolyses on contact with water.<br>Hydrolyses readily.<br><br>Degradation half life: 2.2 yr<br>Remarks: reaction with hydroxyl radicals (IUCLID) |
| Photodegradation                | : Degradation (direct photolysis): 50 % Degradation half life: 17.2 d                                                                                                                                 |

**Tetrahydrofuran:**

|                  |                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Biodegradability | : aerobic<br>Inoculum: activated sludge<br>Concentration: 2 mg/l<br>Biochemical oxygen demand<br>Result: Not readily biodegradable. |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------|

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Biodegradation: 39 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

**Hexachloroethane:**

Biodegradability : Result: Not biodegradable  
Method: OECD Test Guideline 301

**Nitrobenzene:**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 100 mg/l  
Result: Readily biodegradable.  
Biodegradation: 50 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**tert-butyl methyl ether:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 2 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D  
GLP: yes

**Carbon Disulfide:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 5 mg/l  
Result: Readily biodegradable.  
Biodegradation: > 80 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D  
GLP: yes

Chemical Oxygen Demand (COD) : 1.47 mg/g  
Remarks: (IUCLID)

Stability in water : Degradation half life: > 1 yr  
Remarks: (IUCLID)

**propionitrile:**

Biodegradability : Remarks: No data available

**acrylonitrile:**

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Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 30 mg/l  
Result: Inherently biodegradable.  
Biodegradation: 100 %  
Exposure time: 14 d  
Method: OECD Test Guideline 302C  
GLP: yes

BOD/COD : BOD/COD: 0.52 %

BOD/ThOD : 70 %  
Remarks: (Lit.)

**2-nitropropane:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 8 - 14 %  
Exposure time: 28 d

**methyl acrylate:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 35 mg/l  
Result: Readily biodegradable.  
Biodegradation: 90 - 100 %  
Exposure time: 28 d  
Method: OECD Test Guideline 310  
GLP: yes

**ethyl methacrylate:**

Biodegradability : Biotic/Aerobic  
Result: Readily biodegradable.  
Biodegradation: 79.10 %

**3-chloropropene:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 100 mg/l  
Result: Readily biodegradable.  
Biodegradation: 95 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C

BOD/COD : BOD/COD: 0.27 %

BOD/ThOD : 25 %  
Remarks: (External MSDS)

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**Methylacrylonitrile:**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 100 mg/l  
Result: Readily biodegradable.  
Biodegradation: 83 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C  
GLP: yes

**pentachloroethane:**

Biodegradability : Remarks: No data available

**Bioaccumulative potential****Components:****Methanol:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 1.0  
Exposure time: 72 d  
Temperature: 68 °F / 20 °C  
Concentration: 5 mg/l

Partition coefficient: n-octanol/water : log Pow: -0.77 (77 °F / 25 °C)  
Method: (experimental)  
Remarks: (HSDB)  
Bioaccumulation is not expected.

**Tetrahydrofuran:**

Partition coefficient: n-octanol/water : log Pow: 0.45 (77 °F / 25 °C)  
Method: OECD Test Guideline 107  
Remarks: Bioaccumulation is not expected.

**Hexachloroethane:**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill)  
Bioconcentration factor (BCF): 139  
Exposure time: 28 d  
Concentration: 0.00617 mg/l

**Nitrobenzene:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 3.1 - 4.8  
Exposure time: 42 d  
Temperature: 77 °F / 25 °C  
Concentration: ca. 0.125 mg/l  
Method: OECD Test Guideline 305C

Partition coefficient: n-octanol/water : log Pow: 1.86 (76.1 °F / 24.5 °C)  
pH: 7.9  
Method: Regulation (EC) No. 440/2008, Annex, A.8  
GLP: yes  
Remarks: Bioaccumulation is not expected.

**tert-butyl methyl ether:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 1.5  
Exposure time: 28 d  
Temperature: 77 °F / 25 °C

Partition coefficient: n-octanol/water : log Pow: 1.06 (68 °F / 20 °C)  
pH: 7  
Method: OECD Test Guideline 107  
Remarks: Bioaccumulation is not expected.

**Carbon Disulfide:**

Partition coefficient: n-octanol/water : log Pow: 2.7 (77 °F / 25 °C)  
pH: 6.6  
Method: OECD Test Guideline 117  
GLP: yes  
Remarks: Bioaccumulation is not expected.

**propiononitrile:**

Bioaccumulation : Remarks: No data available

**acrylonitrile:**

Bioaccumulation : Species: Lepomis macrochirus  
Bioconcentration factor (BCF): 48  
Exposure time: 14 d  
Concentration: 9.94 µg/l

Partition coefficient: n-octanol/water : log Pow: 0.016 (70 °F / 21 °C)  
pH: 7.6 - 8.5  
Method: Regulation (EC) No. 440/2008, Annex, A.8  
GLP: yes  
Remarks: Bioaccumulation is not expected.

**2-nitropropane:**

Bioaccumulation : Species: Leuciscus idus melanotus  
Bioconcentration factor (BCF): <= 1  
Exposure time: 3 d

Partition coefficient: n-octanol/water : log Pow: 1.35 (68 °F / 20 °C)  
Method: OECD Test Guideline 107

**methyl acrylate:**

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : log Pow: 0.74 (77 °F / 25 °C)  
Method: OECD Test Guideline 107  
Remarks: Bioaccumulation is not expected.

**ethyl methacrylate:**

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : log Pow: 1.87 (68 °F / 20 °C)  
Method: OECD Test Guideline 107

**3-chloropropene:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): < 5.6  
Exposure time: 42 d  
Temperature: 77 °F / 25 °C  
Concentration: 0.05 mg/l  
Method: OECD Test Guideline 305C

Partition coefficient: n-octanol/water : log Pow: 2.1 (77 °F / 25 °C)  
pH: 0 - 14  
Method: OECD Test Guideline 117  
Remarks: Bioaccumulation is not expected.

**pentachloroethane:**

Bioaccumulation : Species: Lepomis macrochirus  
Bioconcentration factor (BCF): 67  
Exposure time: 7.5 d  
Concentration: 7.93 µg/l

Partition coefficient: n-octanol/water : log Pow: 3.22 (68 °F / 20 °C)

**Mobility in soil****Components:****Methanol:**

Stability in soil : Remarks: Will not adsorb on soil.

**propiononitrile:**

Stability in soil : Remarks: No data available

**methyl acrylate:**

Stability in soil : Remarks: No data available

**ethyl methacrylate:**

Stability in soil : Remarks: No data available

**pentachloroethane:**

Stability in soil : Remarks: No data available

**Other adverse effects****Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

**Components:****Methanol:**

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT).

Additional ecological information : Avoid release to the environment.

**Tetrahydrofuran:**

Results of PBT and vPvB assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

**tert-butyl methyl ether:**

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT). Not very persistent and very bioaccumulative (vPvB).

: Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

**Carbon Disulfide:**

Additional ecological information : Hazard for drinking water supplies.

Discharge into the environment must be avoided.

**chloroacetonitrile:**

Additional ecological information : Discharge into the environment must be avoided.

information

**propiononitrile:**

Additional ecological information : No data available

**methyl acrylate:**

Additional ecological information : No data available

**ethyl methacrylate:**

Additional ecological information : No data available

**Methylacrylonitrile:**

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life.

Discharge into the environment must be avoided.

**Endocrine disrupting properties**

No data available

---

**SECTION 13. DISPOSAL CONSIDERATIONS**

**Disposal methods**

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

---

**SECTION 14. TRANSPORT INFORMATION**

**International Regulations**

**IATA-DGR**

UN/ID No. : UN 1230  
Proper shipping name : Methanol solution  
Class : 3  
Subsidiary risk : 6.1  
Packing group : II  
Labels : Class 3 - Flammable liquids, Division 6.1 - Toxic substances  
Packing instruction (cargo aircraft) : 364

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Packing instruction : 352  
(passenger aircraft)

**IMDG-Code**

UN number : UN 1230  
Proper shipping name : METHANOL SOLUTION

Class : 3  
Subsidiary risk : 6.1  
Packing group : II  
Labels : 3 (6.1)  
EmS Code : F-E, S-D  
Marine pollutant : no

**Transport in bulk according to IMO instruments**

Not applicable for product as supplied.

**National Regulations**

**49 CFR**

UN/ID/NA number : UN 1230  
Proper shipping name : Methanol SOLUTION

Class : 3

Packing group : II  
Labels : Class 3 - Flammable liquids  
ERG Code : 131  
Marine pollutant : no  
Poison Inhalation Hazard : No

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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**SECTION 15. REGULATORY INFORMATION**

**CERCLA Reportable Quantity**

| Components        | CAS-No.  | Component RQ (lbs) | Calculated product RQ (lbs) |
|-------------------|----------|--------------------|-----------------------------|
| Methanol          | 67-56-1  | 5000               | 5000                        |
| propiononitrile   | 107-12-0 | 10                 | 5000                        |
| 2-nitropropane    | 79-46-9  | 10                 | 5000                        |
| pentachloroethane | 76-01-7  | 10                 | 5000                        |
| Hexachloroethane  | 67-72-1  | 100                | 100 (D034)                  |
| Nitrobenzene      | 98-95-3  | 1000               | 1000 (D036)                 |
| Nitrobenzene      | 98-95-3  | 100                | 100 (F004)                  |
| Diethyl ether     | 60-29-7  | 100                | 100 (F003)                  |
| Carbon Disulfide  | 75-15-0  | 100                | 100 (F005)                  |

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

| Components    | CAS-No.  | Component RQ (lbs) | Calculated product RQ (lbs) |
|---------------|----------|--------------------|-----------------------------|
| propionitrile | 107-12-0 | 10                 | 5000                        |

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Fire Hazard  
Chronic Health Hazard

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

|                  |          |                  |
|------------------|----------|------------------|
| Methanol         | 67-56-1  | >= 90 - <= 100 % |
| Hexachloroethane | 67-72-1  | >= 0.1 - < 1 %   |
| Nitrobenzene     | 98-95-3  | >= 0.1 - < 1 %   |
| acrylonitrile    | 107-13-1 | >= 0.1 - < 1 %   |
| 2-nitropropane   | 79-46-9  | >= 0.1 - < 1 %   |

**Clean Air Act**

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

|          |         |                  |
|----------|---------|------------------|
| Methanol | 67-56-1 | >= 90 - <= 100 % |
|----------|---------|------------------|

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

|          |         |                  |
|----------|---------|------------------|
| Methanol | 67-56-1 | >= 90 - <= 100 % |
|----------|---------|------------------|

**Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

|                     |          |                |
|---------------------|----------|----------------|
| Nitrobenzene        | 98-95-3  | >= 0.1 - < 1 % |
| Carbon Disulfide    | 75-15-0  | >= 0.1 - < 1 % |
| methyl methacrylate | 80-62-6  | >= 0.1 - < 1 % |
| acrylonitrile       | 107-13-1 | >= 0.1 - < 1 % |
| 3-chloropropene     | 107-05-1 | >= 0.1 - < 1 % |

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

|                     |          |                |
|---------------------|----------|----------------|
| Nitrobenzene        | 98-95-3  | >= 0.1 - < 1 % |
| Carbon Disulfide    | 75-15-0  | >= 0.1 - < 1 % |
| methyl methacrylate | 80-62-6  | >= 0.1 - < 1 % |
| acrylonitrile       | 107-13-1 | >= 0.1 - < 1 % |

3-chloropropene 107-05-1  $\geq 0.1 - < 1 \%$   
 This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307  
 This product does not contain any priority pollutants related to the U.S. Clean Water Act

## US State Regulations

### Massachusetts Right To Know

|                               |          |
|-------------------------------|----------|
| Methanol                      | 67-56-1  |
| Hexachloroethane              | 67-72-1  |
| Nitrobenzene                  | 98-95-3  |
| Carbon Disulfide              | 75-15-0  |
| propionitrile                 | 107-12-0 |
| acrylonitrile                 | 107-13-1 |
| trans-1,4-Dichlorobuten-2-ene | 110-57-6 |
| 2-nitropropane                | 79-46-9  |
| 3-chloropropene               | 107-05-1 |
| Methylacrylonitrile           | 126-98-7 |

### Pennsylvania Right To Know

|                               |           |
|-------------------------------|-----------|
| Methanol                      | 67-56-1   |
| Tetrahydrofuran               | 109-99-9  |
| Hexachloroethane              | 67-72-1   |
| Nitrobenzene                  | 98-95-3   |
| tert-butyl methyl ether       | 1634-04-4 |
| Diethyl ether                 | 60-29-7   |
| Carbon Disulfide              | 75-15-0   |
| methyl methacrylate           | 80-62-6   |
| chloroacetonitrile            | 107-14-2  |
| propionitrile                 | 107-12-0  |
| acrylonitrile                 | 107-13-1  |
| trans-1,4-Dichlorobuten-2-ene | 110-57-6  |
| 2-nitropropane                | 79-46-9   |
| methyl acrylate               | 96-33-3   |
| ethyl methacrylate            | 97-63-2   |
| 3-chloropropene               | 107-05-1  |
| Methylacrylonitrile           | 126-98-7  |
| pentachloroethane             | 76-01-7   |

### Maine Chemicals of High Concern

|                         |           |
|-------------------------|-----------|
| tert-butyl methyl ether | 1634-04-4 |
|-------------------------|-----------|

### Vermont Chemicals of High Concern

|                  |          |
|------------------|----------|
| Carbon Disulfide | 75-15-0  |
| acrylonitrile    | 107-13-1 |

### Washington Chemicals of High Concern

|                  |          |
|------------------|----------|
| Carbon Disulfide | 75-15-0  |
| acrylonitrile    | 107-13-1 |

### California Prop. 65

WARNING: This product can expose you to chemicals including Tetrahydrofuran, Hexachloroethane, Nitrobenzene, acrylonitrile, 2-nitropropane, methyl acrylate, which is/are known to the State of California to cause cancer, and Methanol, Nitrobenzene, Carbon

Disulfide, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov). **The components of this product are reported in the following inventories:**

US TSCA : All substances listed as active on the TSCA inventory

#### **TSCA list**

The following substance(s) is/are subject to a Significant New Use Rule:

pentachloroethane 76-01-7 See 40 CFR § 721.3220; Final Rule

No substances are subject to TSCA 12(b) export notification requirements.

---

## **SECTION 16. OTHER INFORMATION**

### **Full text of other abbreviations**

|                 |   |                                                                                           |
|-----------------|---|-------------------------------------------------------------------------------------------|
| ACGIH           | : | USA. ACGIH Threshold Limit Values (TLV)                                                   |
| ACGIH BEI       | : | ACGIH - Biological Exposure Indices (BEI)                                                 |
| NIOSH REL       | : | USA. NIOSH Recommended Exposure Limits                                                    |
| OSHA Z-1        | : | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants          |
| OSHA Z-2        | : | USA. Occupational Exposure Limits (OSHA) - Table Z-2                                      |
| US WEEL         | : | USA. Workplace Environmental Exposure Levels (WEEL)                                       |
| ACGIH / TWA     | : | 8-hour, time-weighted average                                                             |
| ACGIH / STEL    | : | Short-term exposure limit                                                                 |
| ACGIH / C       | : | Ceiling limit                                                                             |
| NIOSH REL / TWA | : | Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek |
| NIOSH REL / ST  | : | STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday    |
| NIOSH REL / C   | : | Ceiling value not be exceeded at any time.                                                |
| OSHA Z-1 / TWA  | : | 8-hour time weighted average                                                              |
| OSHA Z-2 / TWA  | : | 8-hour time weighted average                                                              |
| OSHA Z-2 / CEIL | : | Acceptable ceiling concentration                                                          |
| OSHA Z-2 / Peak | : | Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift      |
| US WEEL / TWA   | : | 8-hr TWA                                                                                  |
| US WEEL / STEL  | : | Short-Term TWA                                                                            |

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide;

GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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