Safety Data Sheet

# 59 Mix VOCs in methanol

Version：V2.0.0.1
Report No.：BWQ0436-2016-MSDS-US
Creation Date：2025/11/07
Revision Date：-

*Prepared according to American OSHA HCS-2024 (29 CFR 1910.1200)

## 1 Identification

### Product identifier

| | |
|---|---|
| Product Name | 59 Mix VOCs in methanol |
| Cat No. | BWQ0436-2016 |
| CAS No. | Not applicable |
| EC No. | Not applicable |
| Molecular Formula | Not applicable |

### Recommended use of the product and restrictions on use

| | |
|---|---|
| Relevant identified uses | Please consult manufacturer. |
| Uses advised against | Please consult manufacturer. |

### Details of the supplier of the Safety Data Sheet

| | |
|---|---|
| Name of the company | Weiyel Inc |
| Address of the company | Hedian Light Industrial Park, Chengguan Town, Shangcheng County, Xinyang City, Henan Province, China |
| Post code | 465350 |
| Telephone number | 010-58103678 |
| Fax number | 010-84840368 |
| E-mail address | info@weiyel.com |

### Emergency phone number

| | |
|---|---|
| Emergency phone number | 010-58103678 |

## 2 Hazard(s) identification

### Hazard classification according to 29 CFR 1910.1200

| | |
|---|---|
| Flammable liquids | Category 2 |
| Acute Toxicity - Oral | Category 3 |
| Acute Toxicity - Dermal | Category 3 |
| Sensitization - skin | Category 1 |
| Acute Toxicity - Inhalation | Category 3 |
| Germ Cell Mutagenicity | Category 1B |
| Carcinogenicity | Category 1 |
| Reproductive toxicity | Category 1 |
| Specific target organ toxicity - single exposure | Category 1 |

## Label elements

| | |
|---|---|
| Hazard pictograms |  |
| Signal word | **Danger** |

## Hazard statements

| | |
|---|---|
| H225 | Highly flammable liquid and vapour |
| H301 | Toxic if swallowed |
| H311 | Toxic in contact with skin |
| H317 | May cause an allergic skin reaction |
| H331 | Toxic if inhaled |
| H340 | May cause genetic defects |
| H350 | May cause cancer |
| H360 | May damage fertility |
| H370 | Causes damage to organs(central nervous system, kidneys) |

## Precautionary statements

- Prevention

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| 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 gas/mist/vapour/spray. |
| P264 | Wash hands and other parts of the body (if related) thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P271 | Use only outdoors or with adequate ventilation. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |

- Response

| | |
|---|---|
| P321 | Specific treatment (see related instructions on the label). |
| P330 | Rinse mouth. |
| P302+P352 | IF ON SKIN: Wash with plenty of water. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P361+P364 | Take off immediately all contaminated clothing and wash it before reuse. |
| P370+P378 | Small fire: dry chemical, $CO_2$ or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor |

| | |
|---|---|
| | nozzles. Cool containers with flooding quantities of water until well after fire is out. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. |

◆ Storage

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

◆ Disposal

| | |
|---|---|
| P501 | Dispose of contents/container in accordance with local/regional/national/ international regulations. |

### Other hazards

| | |
|---|---|
| | Not applicable. |

### Hazard description

◆ Physical and chemical hazards

| | |
|---|---|
| | Highly flammable liquids, its vapor and air mixture can form explosive mixture. |

◆ Health hazards

| | |
|---|---|
| Inhaled | Cough. Dizziness. Headache. Nausea. Weakness. Visual disturbance. |
| Ingestion | Abdominal pain. Shortness of breath. Vomiting. Convulsions. Unconsciousness. (Further see Inhalation). |
| Skin Contact | MAY BE ABSORBED! Dry skin. Redness. |
| Eye | Redness. Pain. |

◆ Environmental hazards

| | |
|---|---|
| | Please refer to 12th chapter of SDS. |

## 3 Composition/information on ingredients

### Substance/mixture

| | |
|---|---|
| | Mixture |

| Component | CAS No. | EC No. | Concentration (wt, %) |
|---|---|---|---|
| **1,1-dichloroethylene** | 75-35-4 | 200-864-0 | 0.25 |
| **Acetone** | 67-64-1 | 200-662-2 | 0.25 |
| **Iodomethane** | 74-88-4 | 200-819-5 | 0.25 |
| **Carbon disulphide** | 75-15-0 | 200-843-6 | 0.25 |
| **Dichloromethane** | 75-09-2 | 200-838-9 | 0.25 |
| **trans-dichloroethylene** | 156-60-5 | 205-860-2 | 0.25 |
| **1,1-dichloroethane** | 75-34-3 | 200-863-5 | 0.25 |
| **2,2-dichloropropane** | 594-20-7 | 209-832-0 | 0.25 |
| **cis-dichloroethylene** | 156-59-2 | 205-859-7 | 0.25 |
| **Butanone** | 78-93-3 | 201-159-0 | 0.25 |
| **Bromochloromethane** | 74-97-5 | 200-826-3 | 0.25 |

| | | | |
|---|---|---|---|
| **Chloroform** | 67-66-3 | 200-663-8 | 0.25 |
| **1,1,1-trichloroethane** | 71-55-6 | 200-756-3 | 0.25 |
| **Carbon tetrachloride** | 56-23-5 | 200-262-8 | 0.25 |
| **1,1-dichloropropene** | 563-58-6 | 209-253-3 | 0.25 |
| **Benzene** | 71-43-2 | 200-753-7 | 0.25 |
| **1,2-DICHLOROETHANE-D4** | 17060-07-0 | 627-507-5 | 0.25 |
| **Trichloroethylene** | 79-01-6 | 201-167-4 | 0.25 |
| **1,2-dichloropropane** | 78-87-5 | 201-152-2 | 0.25 |
| **Dibromomethane** | 74-95-3 | 200-824-2 | 0.25 |
| **bromodichloromethane** | 75-27-4 | 200-856-7 | 0.25 |
| **4-methylpentan-2-one** | 108-10-1 | 203-550-1 | 0.25 |
| **Toluene** | 108-88-3 | 203-625-9 | 0.25 |
| **1,1,2-trichloroethane** | 79-00-5 | 201-166-9 | 0.25 |
| **Tetrachloroethylene** | 127-18-4 | 204-825-9 | 0.25 |
| **1,3-dichloropropane** | 142-28-9 | 205-531-3 | 0.25 |
| **Hexan-2-one** | 591-78-6 | 209-731-1 | 0.25 |
| **Dibromochloromethane** | 124-48-1 | 204-704-0 | 0.25 |
| **1,2-dibromoethane** | 106-93-4 | 203-444-5 | 0.25 |
| **Chlorobenzene** | 108-90-7 | 203-628-5 | 0.25 |
| **1,1,1,2-tetrachloroethane** | 630-20-6 | 211-135-1 | 0.25 |
| **Ethylbenzene** | 100-41-4 | 202-849-4 | 0.25 |
| **1,1,2-trichloropropane** | 598-77-6 | 209-951-8 | 0.25 |
| **m-xylene** | 108-38-3 | 203-576-3 | 0.25 |
| **p-xylene** | 106-42-3 | 203-396-5 | 0.25 |
| **o-xylene** | 95-47-6 | 202-422-2 | 0.25 |
| **Styrene** | 100-42-5 | 202-851-5 | 0.25 |
| **Bromoform** | 75-25-2 | 200-854-6 | 0.25 |
| **Cumene** | 98-82-8 | 202-704-5 | 0.25 |
| **Bromobenzene** | 108-86-1 | 203-623-8 | 0.25 |
| **1,1,2,2-tetrachloroethane** | 79-34-5 | 201-197-8 | 0.25 |
| **1,2,3-trichloropropane** | 96-18-4 | 202-486-1 | 0.25 |
| **Propylbenzene** | 103-65-1 | 203-132-9 | 0.25 |
| **2-chlorotoluene** | 95-49-8 | 202-424-3 | 0.25 |
| **Mesitylene** | 108-67-8 | 203-604-4 | 0.25 |
| **4-chlorotoluene** | 106-43-4 | 203-397-0 | 0.25 |
| **tert-butylbenzene** | 98-06-6 | 202-632-4 | 0.25 |
| **1,2,4-trimethylbenzene** | 95-63-6 | 202-436-9 | 0.25 |

| | | | |
|---|---|---|---|
| **sec-butylbenzene** | 135-98-8 | 205-227-0 | 0.25 |
| **1,3-dichlorobenzene** | 541-73-1 | 208-792-1 | 0.25 |
| **p-cymene** | 99-87-6 | 202-796-7 | 0.25 |
| **1,4-dichlorobenzene** | 106-46-7 | 203-400-5 | 0.25 |
| **n-Butylbenzene** | 104-51-8 | 203-209-7 | 0.25 |
| **1,2-dichlorobenzene** | 95-50-1 | 202-425-9 | 0.25 |
| **1,2-dibromo-3-chloropropane** | 96-12-8 | 202-479-3 | 0.25 |
| **1,2,4-trichlorobenzene** | 120-82-1 | 204-428-0 | 0.25 |
| **Naphthalene** | 91-20-3 | 202-049-5 | 0.25 |
| **1,2,3-trichlorobenzene** | 87-61-6 | 201-757-1 | 0.25 |
| **Hexachlorobuta-1,3-diene** | 87-68-3 | 201-765-5 | 0.25 |
| **Methanol** | 67-56-1 | 200-659-6 | 85.25 |

## 4 First-aid measures

### Description of first aid measures

| | |
|---|---|
| **General advice** | Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance. |
| **Eye contact** | First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. |
| **Skin contact** | Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention. |
| **Ingestion** | Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention. |
| **Inhalation** | Fresh air, rest. Refer for medical attention. |
| **Protecting of first-aiders** | Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. |

### Most important symptoms/effects, acute and delayed

| | |
|---|---|
| 1 | Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. |

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

| | |
|---|---|
| 1 | Treat symptomatically. |
| 2 | Symptoms may be delayed. |

## 5 Fire-fighting measures

### Extinguishing media

| | |
|---|---|
| **Suitable extinguishing media** | Small fire: dry chemical, $CO_2$ or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. |
| **Unsuitable extinguishing media** | Use of water spray when fighting fire may be inefficient. |

### Specific hazards arising from the substance or mixture

| | |
|---|---|
| 1 | Will form explosive mixtures with air. |

| | |
|---|---|
| 2 | Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration. |
| 3 | Vapours may travel to source of ignition and flash back. |
| 4 | Liquid and vapour are flammable. |
| 5 | May emit poisonous fumes on fire. |
| 6 | Development of hazardous combustion gases or vapor possible in the event of fire. |
| 7 | May expansion or decompose explosively when heated or involved in fire. |

### Special protective equipment and precautions for fire-fighters

| | |
|---|---|
| 1 | As in any fire, wear self-contained breathing apparatus ( MSHA/NIOSH approved or equivalent) and full protective gear. |
| 2 | Fight fire from a safe distance, with adequate cover. |
| 3 | Prevent fire extinguishing water from contaminating surface water or the ground water system. |

## 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

| | |
|---|---|
| 1 | Avoid breathing vapours and contacting with skin and eye. |
| 2 | Beware of vapours accumulating to form explosive concentrations. |
| 3 | Vapours can accumulate in low areas. |
| 4 | Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves. |
| 5 | Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. |
| 6 | Do not touch or walk through spilled material. |
| 7 | Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. |
| 8 | Use personal protective equipment,do not breathe gas/mist/vapour/spray. |
| 9 | Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
| 10 | Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. |

### Environmental precautions

| | |
|---|---|
| 1 | Prevent further leakage or spillage if safe to do so. |
| 2 | Discharge into the environment must be avoided. |

### Methods and materials for containment and cleaning up

| | |
|---|---|
| 1 | It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus and wear anti-static clothing. |
| 2 | In case of small amount of spillage, use clean non sparking tools to collect absorption materials. |
| 3 | In case of large amount of spillage, construct cofferdam or dig a hole to collect the spillage. Use foam cover to reduce evaporation. Water spray mist can reduce evaporation, but can not reduce the flammability of the leakage in the restricted space. |
| 4 | Collect absorbent material using a clean, non-sparking tool. |
| 5 | Cover with anti-solvent foam to reduce evaporation. |
| 6 | Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. |
| 7 | Water spray reduces evaporation but does not reduce the flammability of spills in confined spaces. |
| 8 | Do not touch or cross spills. |
| 9 | It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus and |

| | |
|---|---|
| | wear anti-virus suits. |
| 10 | Spray water disperses the vapor and dilutes the liquid spill. |
| 11 | Do not touch broken containers and spills before putting on appropriate protective clothing. |
| 12 | Cut off the source of the leak as much as possible. |
| 13 | Keep leaks in a ventilated place. |
| 14 | Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding. |
| 15 | Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |
| 16 | Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container. |
| 17 | Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |

## 7 Handling and storage

### Precautions for safe handling

| | |
|---|---|
| 1 | Avoid inhalation of vapors. |
| 2 | Use only non-sparking tools. |
| 3 | To prevent fire caused by electrostatic discharge steam, equipment on all metal parts should be grounded. |
| 4 | Use explosion proof equipment. |
| 5 | Handling is performed in a well ventilated place. |
| 6 | Wear suitable protective equipment. |
| 7 | Avoid contact with skin and eyes. |
| 8 | Keep away from heat/sparks/open flames/ hot surfaces. |

### Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| 1 | Keep containers tightly closed. |
| 2 | Keep containers in a dry, cool and well-ventilated place. |
| 3 | Keep away from heat/sparks/open flames/hot surfaces. |

## 8 Exposure controls/personal protection

### Control parameters

◆Occupational exposure limit values

| Component | Country/Region | Limit value - Eight hours | | Limit value - Short term | |
|---|---|---|---|---|---|
| | | ppm | mg/m³ | ppm | mg/m³ |
| **1,1-dichloroethylene** | Australia | 5 | 20 | 20 | 79 |
| | Canada - Ontario | 1 | 4 | 20 | 80 |
| | European Union | 2 | 8 | 5 | 20 |
| | New Zealand | 5 | 20 | 20 | 79 |
| | USA - ACGIH | 5 | - | - | - |
| | Austria | 2 | 8 | 5 | 20 |
| **Acetone** | Japan - JSOH(2024–2025) | 200 | 475 | - | - |
| | Permissible exposure | 200 | 475 | 250 | 593.75 |

| | | | | | |
|---|---|---|---|---|---|
| | standards for workers in the workplace | | | | |
| | Australia | 500 | 1185 | 1000 | 2375 |
| | Canada - Ontario | 250 | - | 500 | - |
| | European Union | 500 | 1210 | - | - |
| | New Zealand | 500 | 1185 | 1000 | 2375 |
| **Iodomethane** | Permissible exposure standards for workers in the workplace | 2 | 12 | 4 | 18 |
| | Australia | 2 | 12 | - | - |
| | Canada - Ontario | 2 | - | - | - |
| | New Zealand | 2 | 12 | - | - |
| | USA - ACGIH | 2 | - | - | - |
| | USA - NIOSH | 2 | 10 | - | - |
| **Carbon disulphide** | Japan - JSOH(2024–2025) | 1 | 3.13 | - | - |
| | Permissible exposure standards for workers in the workplace | 10 | 31 | 15 | 46.5 |
| | Australia | 10 | 31 | - | - |
| | Canada - Ontario | 1 | - | - | - |
| | European Union | 5 | 15 | - | - |
| | New Zealand | 1 | 3 | - | - |
| **Dichloromethane** | Japan - JSOH(2024–2025) | 50 | 173 | - | - |
| | Permissible exposure standards for workers in the workplace | 50 | 174 | 75 | 217.5 |
| | Australia | 50 | 174 | - | - |
| | Canada - Ontario | 50 | - | - | - |
| | European Union | 100 | 353 | 200 | 706 |
| | New Zealand | 50 | 174 | - | - |
| **trans-dichloroethylene** | Australia | 200 | 793 | - | - |
| | Canada - Ontario | 200 | 790 | - | - |
| | New Zealand | 200 | 793 | - | - |
| | USA - ACGIH | 200 | - | - | - |
| | USA - NIOSH | 200 | 790 | - | - |
| | USA - OSHA | 200 | 790 | - | - |

| | | | | | |
|---|---|---|---|---|---|
| **1,1-dichloroethane** | Japan - JSOH(2024–2025) | 100 | 400 | - | - |
| | Permissible exposure standards for workers in the workplace | 100 | 405 | 125 | 506.25 |
| | Australia | 100 | 412 | - | - |
| | Canada - Ontario | 100 | - | - | - |
| | European Union | 100 | 412 | - | - |
| | New Zealand | 100 | 405 | 250 | 1010 |
| **cis-dichloroethylene** | Australia | 200 | 793 | - | - |
| | Canada - Ontario | 200 | 790 | - | - |
| | New Zealand | 200 | 793 | - | - |
| | USA - ACGIH | 200 | - | - | - |
| | USA - NIOSH | 200 | 790 | - | - |
| | USA - OSHA | 200 | 790 | - | - |
| **Butanone** | Japan - JSOH(2024–2025) | 75 | 221 | - | - |
| | Permissible exposure standards for workers in the workplace | 200 | 590 | 250 | 737.5 |
| | Australia | 150 | 445 | 300 | 890 |
| | Canada - Ontario | 200 | - | 300 | - |
| | European Union | 200 | 600 | 300 | 900 |
| | New Zealand | 150 | 445 | 300 | 890 |
| **Bromochloromethane** | Permissible exposure standards for workers in the workplace | 200 | 1060 | 250 | 1060 |
| | Australia | 200 | 1060 | - | - |
| | Canada - Ontario | 200 | - | - | - |
| | New Zealand | 200 | 1060 | - | - |
| | USA - ACGIH | 200 | - | - | - |
| | USA - NIOSH | 200 | 1050 | - | - |
| **Chloroform** | Japan - JSOH(2024–2025) | 3 | 14.7 | - | - |
| | Permissible exposure standards for workers in the workplace | - | - | - | - |
| | Australia | 2 | 10 | - | - |

| | | | | | |
|---|---|---|---|---|---|
| | Canada - Ontario | 10 | - | - | - |
| | European Union | 2 | 10 | - | - |
| | New Zealand | 2 | 9.9 | - | - |
| **1,1,1-trichloroethane** | Japan - JSOH(2024–2025) | 200 | 1090 | - | - |
| | Permissible exposure standards for workers in the workplace | 350 | 1910 | 437.5 | 1910 |
| | Australia | 100 | 555 | 200 | 1110 |
| | Canada - Ontario | 350 | - | 450 | - |
| | European Union | 100 | 555 | 200 | 1110 |
| | New Zealand | 100 | 555 | 200 | 1110 |
| **Carbon tetrachloride** | Japan - JSOH(2024–2025) | 5 | 31 | - | - |
| | Permissible exposure standards for workers in the workplace | 2 | 13 | 4 | 19.5 |
| | Australia | 0.1 | 0.63 | - | - |
| | Canada - Ontario | 2 | - | 3 | - |
| | European Union | 1 | 6.4 | 5 | 32 |
| | New Zealand | 0.1 | 0.63 | - | - |
| **1,1-dichloropropene** | Denmark | 1 | 5 | 2 | 10 |
| | Singapore | 1 | 4.5 | - | - |
| **Benzene** | Japan - JSOH(2024–2025) | 1(individual excess lifetime risk of cancer 10^-3) | - | - | - |
| | Permissible exposure standards for workers in the workplace | 1 | 3.2 | 2 | 6.4 |
| | Australia | 1 | 3.2 | - | - |
| | Canada - Ontario | 0.5 | - | 2.5 | - |
| | European Union | 0.2 | 0.66 | - | - |
| | New Zealand | 0.05 | 0.16 | - | - |
| **Trichloroethylene** | Japan - JSOH(2024–2025) | 25 | 135 | - | - |
| | Permissible exposure standards for workers in the workplace | 50 | 269 | 75 | 336.25 |

| | | | | | |
|---|---|---|---|---|---|
| | Australia | 10 | 54 | 40 | 216 |
| | Canada - Ontario | 10 | - | 25 | - |
| | European Union | 10 | 54.7 | 30 | 164.1 |
| | New Zealand | 10 | 55 | 25 | 135 |
| **1,2-dichloropropane** | Japan - JSOH(2024–2025) | 1 | 4.6 | - | - |
| | Permissible exposure standards for workers in the workplace | 75 | 347 | 112.5 | 433.75 |
| | Australia | 75 | 347 | 110 | 508 |
| | Canada - Ontario | 10 | - | - | - |
| | New Zealand | 5 | 23 | - | - |
| | USA - ACGIH | 10 | - | - | - |
| **Dibromomethane** | Latvia | - | 10 | - | - |
| | Romania | 1.4 | 10 | 7 | 50 |
| **4-methylpentan-2-one** | Japan - JSOH(2024–2025) | 20 | 82 | - | - |
| | Permissible exposure standards for workers in the workplace | 50 | 205 | 75 | 256.25 |
| | Australia | 50 | 205 | 75 | 307 |
| | Canada - Ontario | 20 | - | 75 | - |
| | European Union | 20 | 83 | 50 | 208 |
| | New Zealand | 50 | 205 | 75 | 307 |
| **Toluene** | Japan - JSOH(2024–2025) | 50 | 188 | - | - |
| | Permissible exposure standards for workers in the workplace | 50 | 188 | 75 | 235 |
| | Australia | 50 | 191 | 150 | 574 |
| | Canada - Ontario | 20 | - | - | - |
| | European Union | 50 | 192 | 100 | 384 |
| | New Zealand | 20 | 75 | 100 | 377 |
| **1,1,2-trichloroethane** | Japan - JSOH(2024–2025) | 10 | 55 | - | - |
| | Permissible exposure standards for workers in the workplace | 10 | 55 | 15 | 82.5 |

| | | | | | |
|---|---|---|---|---|---|
| | Australia | 10 | 55 | - | - |
| | Canada - Ontario | 10 | - | - | - |
| | New Zealand | 10 | 55 | - | - |
| | USA - ACGIH | 10 | - | - | - |
| **Tetrachloroethylene** | Permissible exposure standards for workers in the workplace | 50 | 339 | 75 | 423.75 |
| | Australia | 50 | 340 | 150 | 1020 |
| | Canada - Ontario | 25 | - | 100 | - |
| | European Union | 20 | 138 | 40 | 275 |
| | New Zealand | 20 | 136 | 40 | 271 |
| | USA - ACGIH | 25 | - | 100 | - |
| **1,3-dichloropropane** | Austria | 75 | 350 | 375 | 1750 |
| **Hexan-2-one** | Japan - JSOH(2024–2025) | 5 | 20 | - | - |
| | Permissible exposure standards for workers in the workplace | 5 | 20 | 10 | 30 |
| | Australia | 5 | 20 | - | - |
| | Canada - Ontario | 1 | 4 | - | - |
| | New Zealand | 5 | 20 | - | - |
| | USA - ACGIH | 5 | - | 10 | - |
| **1,2-dibromoethane** | Permissible exposure standards for workers in the workplace | 20 | 154 | 30 | 192.5 |
| | European Union | 0.1 | 0.8 | - | - |
| | New Zealand | 0.0003 | 0.002 | - | - |
| | USA - NIOSH | 0.045 | - | 0.13 | - |
| | USA - OSHA | 20 | - | 30 | - |
| | Austria | 0.1 | 0.8 | 0.4 | 3.2 |
| **Chlorobenzene** | Japan - JSOH(2024–2025) | 10 | 46 | - | - |
| | Permissible exposure standards for workers in the workplace | 75 | 345 | 112.5 | 431.25 |
| | Australia | 10 | 46 | - | - |
| | Canada - Ontario | 10 | - | - | - |
| | European Union | 5 | 23 | 15 | 70 |

| | | | | | |
|---|---|---|---|---|---|
| | New Zealand | 10 | 46 | - | - |
| **1,1,1,2-tetrachloroethane** | Romania | 3 | 20 | 4 | 30 |
| **Ethylbenzene** | Japan - JSOH(2024–2025) | 20 | 87 | - | - |
| | Permissible exposure standards for workers in the workplace | 100 | 434 | 125 | 542.5 |
| | Australia | 100 | 434 | 125 | 543 |
| | Canada - Ontario | 20 | - | - | - |
| | European Union | 100 | 442 | 200 | 884 |
| | New Zealand | 20 | 88 | 40 | 176 |
| **1,1,2-trichloropropane** | Finland | 50 | 310 | 75 | 460 |
| **m-xylene** | Permissible exposure standards for workers in the workplace | 100 | 434 | 125 | 542.5 |
| | Australia | 80 | 350 | 150 | 655 |
| | Canada - Ontario | 100 | - | 150 | - |
| | European Union | 50 | 221 | 100 | 442 |
| | New Zealand | 50 | 217 | - | - |
| | USA - ACGIH | 20 | - | - | - |
| **p-xylene** | Permissible exposure standards for workers in the workplace | 100 | 434 | 125 | 542.5 |
| | Australia | 80 | 350 | 150 | 655 |
| | Canada - Ontario | 100 | - | 150 | - |
| | European Union | 50 | 221 | 100 | 442 |
| | New Zealand | 50 | 217 | - | - |
| | USA - ACGIH | 20 | - | - | - |
| **o-xylene** | Permissible exposure standards for workers in the workplace | 100 | 434 | 125 | 542.5 |
| | Australia | 80 | 350 | 150 | 655 |
| | Canada - Ontario | 100 | - | 150 | - |
| | European Union | 50 | 221 | 100 | 442 |
| | New Zealand | 50 | 217 | - | - |
| | USA - ACGIH | 20 | - | - | - |
| **Styrene** | Japan - JSOH(2024–2025) | 10 | 42.6 | - | - |

| | | | | | |
|---|---|---|---|---|---|
| | Permissible exposure standards for workers in the workplace | 50 | 213 | 75 | 266.25 |
| | Australia | 50 | 213 | 100 | 426 |
| | Canada - Ontario | 35 | - | 100 | - |
| | New Zealand | 20 | 85 | 40 | 170 |
| | USA - ACGIH | 10 | - | 20 | - |
| **Bromoform** | Japan - JSOH(2024–2025) | 1 | 10.3 | - | - |
| | Permissible exposure standards for workers in the workplace | 0.5 | 5.2 | 1.5 | 10.4 |
| | Australia | 0.5 | 5.2 | - | - |
| | Canada - Ontario | 0.5 | - | - | - |
| | New Zealand | 0.5 | 5.2 | - | - |
| | USA - ACGIH | 0.5 | - | - | - |
| **Cumene** | Japan - JSOH(2024–2025) | 10 | 50 | - | - |
| | Permissible exposure standards for workers in the workplace | 50 | 246 | 75 | 307.5 |
| | Australia | 25 | 125 | 75 | 375 |
| | Canada - Ontario | 50 | - | - | - |
| | European Union | 10 | 50 | 50 | 250 |
| | New Zealand | 25 | 125 | 75 | 375 |
| **1,1,2,2-tetrachloroethane** | Japan - JSOH(2024–2025) | 1 | 6.9 | - | - |
| | Permissible exposure standards for workers in the workplace | 1 | 6.9 | 2 | 13.8 |
| | Australia | 1 | 6.9 | - | - |
| | Canada - Ontario | 1 | - | - | - |
| | New Zealand | 1 | 6.9 | - | - |
| | USA - ACGIH | 1 | - | - | - |
| **1,2,3-trichloropropane** | Permissible exposure standards for workers in the workplace | 50 | 302 | 75 | 377.5 |
| | Australia | 10 | 60 | - | - |

| | | | | | |
|---|---|---|---|---|---|
| | Canada - Ontario | 0.005 | - | - | - |
| | New Zealand | 0.005 | 0.03 | - | - |
| | USA - ACGIH | 0.005 | - | - | - |
| | USA - NIOSH | 10 | 60 | - | - |
| **2-chlorotoluene** | Permissible exposure standards for workers in the workplace | 50 | 259 | 75 | 323.75 |
| | Australia | 50 | 259 | - | - |
| | Canada - Ontario | 50 | - | - | - |
| | New Zealand | 50 | 259 | - | - |
| | USA - ACGIH | 50 | - | - | - |
| | USA - NIOSH | 50 | 250 | 75 | 375 |
| **Mesitylene** | Japan - JSOH(2024–2025) | 25 | 120 | - | - |
| | Australia | 25 | 123 | - | - |
| | Canada - Ontario | 25 | - | - | - |
| | European Union | 20 | 100 | - | - |
| | USA - ACGIH | 10 | - | - | - |
| | USA - NIOSH | 25 | 125 | - | - |
| **4-chlorotoluene** | Finland | 50 | 260 | 75 | 390 |
| | Latvia | - | 10 | - | - |
| | Romania | 30 | 150 | 50 | 250 |
| **1,2,4-trimethylbenzene** | Japan - JSOH(2024–2025) | 25 | 120 | - | - |
| | Australia | 25 | 123 | - | - |
| | Canada - Ontario | 25 | - | - | - |
| | European Union | 20 | 100 | - | - |
| | USA - ACGIH | 10 | - | - | - |
| | USA - NIOSH | 25 | 125 | - | - |
| **1,3-dichlorobenzene** | Austria | 3 | 20 | 12 | 80 |
| | Germany (AGS) | 2 | 12 | 4 | 24 |
| | Germany (DFG) | 2 | 12 | 4 | 24 |
| | Hungary | - | 12 | - | 24 |
| | Latvia | - | 20 | - | - |
| | Switzerland | 2 | 12 | 4 | 24 |
| **p-cymene** | Belgium | 20 | 100 | - | - |
| | Denmark | 25 | 135 | 50 | 270 |
| | Sweden | 25 | 140 | 35 | 190 |

| | | | | | |
|---|---|---|---|---|---|
| **1,4-dichlorobenzene** | Japan - JSOH(2024–2025) | 10 | 60 | - | - |
| | Permissible exposure standards for workers in the workplace | 75 | 450 | 112.5 | 562.5 |
| | Australia | 25 | 150 | 50 | 300 |
| | Canada - Ontario | 10 | - | - | - |
| | European Union | 2 | 12 | 10 | 60 |
| | New Zealand | 2 | 12 | 10 | 60 |
| **n-Butylbenzene** | Germany (AGS) | 10 | 56 | 20 | 112 |
| | Germany (DFG) | 10 | 56 | 20 | 112 |
| | Switzerland | 15 | 84 | 30 | 168 |
| **1,2-dichlorobenzene** | Japan - JSOH(2024–2025) | 25 | 150 | - | - |
| | Permissible exposure standards for workers in the workplace | - | - | - | - |
| | Australia | 25 | 150 | 50 | 301 |
| | Canada - Ontario | 25 | - | 50 | - |
| | European Union | 20 | 122 | 50 | 306 |
| | New Zealand | 10 | 61 | 20 | 122 |
| **1,2-dibromo-3-chloropropane** | USA - OSHA | 0.001 | - | - | - |
| | Denmark | 0.001 | 0.01 | 0.002 | 0.02 |
| | Hungary | - | 0.01 | - | - |
| **1,2,4-trichlorobenzene** | Permissible exposure standards for workers in the workplace | - | - | - | - |
| | Australia | - | - | 5 | 37 |
| | European Union | 2 | 15.1 | 5 | 37.8 |
| | New Zealand | - | - | 5 | 37 |
| | USA - NIOSH | - | - | 5 | 40 |
| | Austria | 2 | 15.1 | 5 | 37.8 |
| **Naphthalene** | Permissible exposure standards for workers in the workplace | 10 | 52 | 15 | 78 |
| | Australia | 10 | 52 | 15 | 79 |
| | Canada - Ontario | 10 | - | - | - |
| | New Zealand | 0.5 | 2.6 | 2 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| | USA - ACGIH | 10 | - | - | - |
| | USA - NIOSH | 10 | 50 | 15 | 75 |
| **1,2,3-trichlorobenzene** | Canada - Ontario | - | - | 5 | - |
| | Denmark | 5 | 37 | 10 | 76 |
| | Finland | 5 | 38 | 10 | 75 |
| | Germany (DFG) | 0.5 | 0.38 | 1 | 0.76 |
| | Poland | - | 15 | - | 30 |
| **Hexachlorobuta-1,3-diene** | Japan - JSOH(2024–2025) | 0.01 | 0.12 | - | - |
| | Permissible exposure standards for workers in the workplace | 0.02 | 0.21 | 0.06 | 0.63 |
| | Australia | 0.02 | 0.21 | - | - |
| | Canada - Ontario | 0.02 | - | - | - |
| | USA - ACGIH | 0.02 | - | - | - |
| | USA - NIOSH | 0.02 | 0.24 | - | - |
| **Methanol** | Japan - JSOH(2024–2025) | 200 | 260 | - | - |
| | Permissible exposure standards for workers in the workplace | 200 | 262 | 250 | 327.5 |
| | Australia | 200 | 262 | 250 | 328 |
| | Canada - Ontario | 200 | - | 250 | - |
| | European Union | 200 | 260 | - | - |
| | New Zealand | 200 | 262 | 250 | 328 |

## Engineering controls

| | |
|---|---|
| 1 | Ensure adequate ventilation, especially in confined areas. |
| 2 | Ensure that eyewash stations and safety showers are close to the workstation location. |
| 3 | Use explosion-proof electrical/ventilating/lighting/equipment. |
| 4 | Set up emergency exit and necessary risk-elimination area. |

## Personal protection equipment

| | |
|---|---|
| **General requirement** |  |
| **Eye protection** | Must wear appropriate safety goggles. |
| **Hand protection** | Must wear anti static chemical protective gloves. |
| **Respiratory protection** | Must wear appropriate personal dust proof gas mask. |
| **Skin and body protection** | Must wear anti static chemical protective clothing and anti static shoes. |

## 9 Physical and chemical properties and safety characteristics

### Physical and chemical properties

| | |
|---|---|
| Appearance (physical state, color, etc.) | colorless liquid |
| Odor | No information available |
| Odor threshold | No information available |
| pH | No information available |
| Melting point/freezing point(°C) | -98 ( Methanol ) |
| Initial boiling point and boiling range(°C) | 65 ( Methanol ) |
| Flash point(Closed cup,°C) | 9 ( Methanol ) |
| Evaporation rate | No information available |
| Flammability | No information available |
| Upper/lower explosive limits[%(v/v)] | Upper limit : 50 ( Methanol ); Lower limit : 6 ( Methanol ) |
| Vapor pressure | 12.9 kPa ( 20°C,Methanol ) |
| Vapor density(Air = 1) | 1.1 ( Methanol ) |
| Relative density(Water=1) | 0.79 ( 20°C,Methanol ) |
| Solubility | Miscible with water ( Methanol ) |
| n-octanol/water partition coefficient | -0.74 ( Methanol ) |
| Auto-ignition temperature(°C) | 440 ( Methanol ) |
| Decomposition temperature(°C) | No information available |
| Kinematic viscosity | 0.544 mPa ( 25°C,Methanol ) |

## 10 Stability and reactivity

### Stability and reactivity

| | |
|---|---|
| Reactivity | Contact with incompatible substances can cause decomposition or other chemical reactions. |
| Chemical stability | Stable under proper operation and storage conditions. |
| Possibility of hazardous reactions | Reactions with metals form metal organic coumpounds. In contact with oxidants may cause a fire or an explosion. May catch fire spontaneously in the air. In contact with metals, oxidants, triethyl aluminium, amines, boranes and their derivatives may cause an explosion severely. In contact with halides may cause an active reaction. In contact with oxidants causes severe reactions, and may cause a fire or explosion. |
| Conditions to avoid | Incompatible materials, heat, flame and spark. |
| Incompatible materials | Metal, oxidantss and alkali. Oxidants, chloroform and bromoformNitrate and nitrite, halogens oxyacid salts, potassium permanganate, persulfate, halogen and strong oxidants. Borane class and its derivatives, amines, metals, oxidants, triethyl aluminium, calcium and ethylene. Halides, oxidants and halogen. Oxidants, alkali metals, alkaline earth metals and aluminum. |
| Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## 11 Toxicological information

## Acute toxicity

| Component | $LD_{50}$(oral) | $LD_{50}$(dermal) | $LC_{50}$(inhalation,4h) |
|---|---|---|---|
| **Bromoform** | 933mg/kg(Rat) | No information available | No information available |
| **Chloroform** | 695mg/kg(Rat) | > 20000mg/kg(Rabbit) | 47.702mg/L(Rat) |
| **1,2-dibromoethane** | 108mg/kg(Rat) | 300mg/kg(Rabbit) | No information available |
| **Carbon tetrachloride** | 2350mg/kg(Rat) | > 20000mg/kg(Rabbit) | 50.330mg/L(Rat) |
| **1,2,3-trichloropropane** | 150mg/kg(Rat) | 516mg/kg(Rabbit) | No information available |
| **1,2,4-trichlorobenzene** | 756mg/kg(Rat) | 6139mg/kg(Rat) | No information available |
| **sec-butylbenzene** | 1930mg/kg(Rat) | > 13800mg/kg(Rabbit) | No information available |
| **Propylbenzene** | 6040mg/kg(Rat) | No information available | No information available |
| **1,1,2,2-tetrachloroethane** | 200mg/kg(Rat) | No information available | No information available |
| **tert-butylbenzene** | 3045mg/kg(Rat) | No information available | No information available |
| **1,1,2-trichloropropane** | 1230mg/kg(Rat) | No information available | 12.060mg/L(Rat) |
| **1,1,1-trichloroethane** | 9600mg/kg(Rat) | No information available | 98.209mg/L(Rat) |
| **Bromobenzene** | 2383mg/kg(Rat) | No information available | No information available |
| **Chlorobenzene** | 1110mg/kg(Rat) | No information available | No information available |
| **1,1-dichloroethylene** | 200mg/kg(Rat) | No information available | 25.177mg/L(Rat) |
| **Bromochloromethane** | 5000mg/kg(Rat) | > 20000mg/kg(Rabbit) | No information available |
| **Dibromomethane** | 108mg/kg(Rat) | > 4000mg/kg(Rabbit) | No information available |
| **Hexachlorobuta-1,3-diene** | 82mg/kg(Rat) | 100mg/kg(Rabbit) | No information available |
| **Carbon disulphide** | 1200mg/kg(Rat) | No information available | No information available |
| **1,2,4-trimethylbenzene** | 5000mg/kg(Rat) | No information available | 18mg/L(Rat) |
| **4-methylpentan-2-one** | 2080mg/kg(Rat) | No information available | 11mg/L(Rat) |
| **trans-dichloroethylene** | 1235mg/kg(Rat) | > 5000mg/kg(Rabbit) | No information available |
| **Dichloromethane** | 1600mg/kg(Rat) | No information available | No information available |
| **1,1-dichloroethane** | 725mg/kg(Rat) | No information available | 52.617mg/L(Rat) |
| **1,1,1,2-tetrachloroethane** | 670mg/kg(Rat) | 20000mg/kg(Rabbit) | 14.417mg/L(Rat) |
| **Hexan-2-one** | 2590mg/kg(Rat) | 4800mg/kg(Rabbit) | 32.772mg/L(Rat) |
| **bromodichloromethane** | 430mg/kg(Rat) | No information available | No information available |
| **Ethylbenzene** | 3500mg/kg(Rat) | 15400mg/kg(Rabbit) | No information available |
| **Styrene** | 2650mg/kg(Rat) | No information available | 12mg/L(Rat) |
| **1,1,2-trichloroethane** | 836mg/kg(Rat) | 5350mg/kg(Rabbit) | No information available |
| **1,2,3-trichlorobenzene** | 1830mg/kg(Rat) | No information available | No information available |
| **Benzene** | 930mg/kg(Rat) | > 8260mg/kg(Rabbit) | No information available |
| **Tetrachloroethylene** | 2629mg/kg(Rat) | No information available | 35.269mg/L(Mouse) |
| **1,2-dibromo-3-chloropropane** | 170mg/kg(Rat) | 1400mg/kg(Rabbit) | No information available |
| **Acetone** | 5800mg/kg(Rat) | > 15800mg/kg(Rabbit) | 76mg/L(Rat) |

| | | | |
|---|---|---|---|
| **4-chlorotoluene** | 2100mg/kg(Rat) | No information available | No information available |
| **p-cymene** | 4750mg/kg(Rat) | No information available | No information available |
| **Dibromochloromethane** | 370mg/kg(Rat) | No information available | No information available |
| **m-xylene** | 5000mg/kg(Rat) | 12200mg/kg(Rabbit) | No information available |
| **Methanol** | 5628mg/kg(Rat) | 15800mg/kg(Rabbit) | 83.867mg/L(Rat) |
| **1,4-dichlorobenzene** | 500~5000mg/kg(Rat) | > 2000mg/kg(Rabbit) | No information available |
| **Cumene** | 1400mg/kg(Rat) | 10600mg/kg(Rabbit) | No information available |
| **Naphthalene** | 490mg/kg(Rat) | > 20000mg/kg(Rabbit) | No information available |
| **Iodomethane** | 76mg/kg(Rat) | No information available | 1.3mg/L(Rat) |
| **Toluene** | 636mg/kg(Rat) | 12200mg/kg(Rabbit) | 49mg/L(Rat) |
| **2-chlorotoluene** | 3900mg/kg(Rat) | No information available | No information available |
| **p-xylene** | 5000mg/kg(Rat) | No information available | 19.758mg/L(Rat) |
| **1,2-dichlorobenzene** | 500mg/kg(Rat) | > 10000mg/kg(Rabbit) | No information available |
| **1,2-dichloropropane** | 1947mg/kg(Rat) | 10100mg/kg(Rabbit) | No information available |
| **Trichloroethylene** | 4920mg/kg(Rat) | > 20000mg/kg(Rabbit) | 45.409mg/L(Mouse) |
| **Butanone** | 2737mg/kg(Rat) | 6480mg/kg(Rabbit) | 32mg/L(Mouse) |
| **Mesitylene** | No information available | No information available | 24mg/L(Rat) |

## Carcinogenicity

| Component | List of carcinogens by the IARC Monographs | Report on Carcinogens by NTP | OSHA Carcinogen List |
|---|---|---|---|
| **1,1-dichloroethylene** | Category 2B | Not Listed | Not Listed |
| **Acetone** | Not Listed | Not Listed | Not Listed |
| **Iodomethane** | Category 3 | Not Listed | Not Listed |
| **Carbon disulphide** | Not Listed | Not Listed | Not Listed |
| **Dichloromethane** | Category 2A | Category R | Listed |
| **trans-dichloroethylene** | Not Listed | Not Listed | Not Listed |
| **1,1-dichloroethane** | Not Listed | Not Listed | Not Listed |
| **2,2-dichloropropane** | Not Listed | Not Listed | Not Listed |
| **cis-dichloroethylene** | Not Listed | Not Listed | Not Listed |
| **Butanone** | Not Listed | Not Listed | Not Listed |
| **Bromochloromethane** | Not Listed | Not Listed | Not Listed |
| **Chloroform** | Category 2B | Category R | Not Listed |
| **1,1,1-trichloroethane** | Category 2A | Not Listed | Not Listed |
| **Carbon tetrachloride** | Category 2B | Category R | Not Listed |
| **1,1-dichloropropene** | Not Listed | Not Listed | Not Listed |
| **Benzene** | Category 1 | Category K | Listed |
| **1,2-DICHLOROETHANE-D 4** | Not Listed | Not Listed | Not Listed |

| | | | |
|---|---|---|---|
| **Trichloroethylene** | Category 1 | Category K | Not Listed |
| **1,2-dichloropropane** | Category 1 | Not Listed | Not Listed |
| **Dibromomethane** | Not Listed | Not Listed | Not Listed |
| **bromodichloromethane** | Category 2B | Category R | Not Listed |
| **4-methylpentan-2-one** | Category 2B | Not Listed | Not Listed |
| **Toluene** | Category 3 | Not Listed | Not Listed |
| **1,1,2-trichloroethane** | Category 3 | Not Listed | Not Listed |
| **Tetrachloroethylene** | Category 2A | Category R | Not Listed |
| **1,3-dichloropropane** | Not Listed | Not Listed | Not Listed |
| **Hexan-2-one** | Not Listed | Not Listed | Not Listed |
| **Dibromochloromethane** | Category 3 | Not Listed | Not Listed |
| **1,2-dibromoethane** | Category 2A(Remark 1) | Category R | Not Listed |
| **Chlorobenzene** | Not Listed | Not Listed | Not Listed |
| **1,1,1,2-tetrachloroethane** | Category 2B | Not Listed | Not Listed |
| **Ethylbenzene** | Category 2B | Not Listed | Not Listed |
| **1,1,2-trichloropropane** | Not Listed | Not Listed | Not Listed |
| **m-xylene** | Not Listed | Not Listed | Not Listed |
| **p-xylene** | Not Listed | Not Listed | Not Listed |
| **o-xylene** | Not Listed | Not Listed | Not Listed |
| **Styrene** | Category 2A | Category R | Not Listed |
| **Bromoform** | Category 3 | Not Listed | Not Listed |
| **Cumene** | Category 2B | Category R | Not Listed |
| **Bromobenzene** | Not Listed | Not Listed | Not Listed |
| **1,1,2,2-tetrachloroethane** | Category 2B | Not Listed | Not Listed |
| **1,2,3-trichloropropane** | Category 2A | Category R | Not Listed |
| **Propylbenzene** | Not Listed | Not Listed | Not Listed |
| **2-chlorotoluene** | Not Listed | Not Listed | Not Listed |
| **Mesitylene** | Not Listed | Not Listed | Not Listed |
| **4-chlorotoluene** | Not Listed | Not Listed | Not Listed |
| **tert-butylbenzene** | Not Listed | Not Listed | Not Listed |
| **1,2,4-trimethylbenzene** | Not Listed | Not Listed | Not Listed |
| **sec-butylbenzene** | Not Listed | Not Listed | Not Listed |
| **1,3-dichlorobenzene** | Category 3 | Not Listed | Not Listed |
| **p-cymene** | Not Listed | Not Listed | Not Listed |
| **1,4-dichlorobenzene** | Category 2B | Category R | Not Listed |
| **n-Butylbenzene** | Not Listed | Not Listed | Not Listed |
| **1,2-dichlorobenzene** | Category 3 | Not Listed | Not Listed |

| | | | |
|---|---|---|---|
| **1,2-dibromo-3-chloropropane** | Category 2B | Category R | Listed |
| **1,2,4-trichlorobenzene** | Not Listed | Not Listed | Not Listed |
| **Naphthalene** | Category 2B | Category R | Not Listed |
| **1,2,3-trichlorobenzene** | Not Listed | Not Listed | Not Listed |
| **Hexachlorobuta-1,3-diene** | Category 3 | Not Listed | Not Listed |
| **Methanol** | Not Listed | Not Listed | Not Listed |

Remark 1: Overall evaluation upgraded to Group 2A with supporting evidence from other relevant data

### Others

| **59 Mix VOCs in methanol** | |
|---|---|
| **Skin corrosion/irritation** | Based on available data, the classification criteria are not met |
| **Serious eye damage/irritation** | Based on available data, the classification criteria are not met |
| **Skin sensitization** | May cause an allergic skin reaction(Category 1) |
| **Respiratory sensitization** | Based on available data, the classification criteria are not met |
| **Reproductive toxicity** | May damage fertility(Category 1) |
| **STOT-single exposure** | Causes damage to organs(central nervous system, kidneys)(Category 1) |
| **STOT-repeated exposure** | Based on available data, the classification criteria are not met |
| **Aspiration hazard** | Based on available data, the classification criteria are not met |
| **Germ cell mutagenicity** | May cause genetic defects(Category 1B) |

## 12 Ecological information

### Acute aquatic toxicity

| Component | Fish | Crustaceans | Algae or other aquatic plants |
|---|---|---|---|
| **Bromoform** | $LC_{50}$ : 29mg/L (96h)(Fish) | $EC_{50}$ : 46mg/L (48h)(Crustaceans) | $ErC_{50}$ : 13mg/L (72h)(Algae) |
| **1,2-dibromoethane** | $LC_{50}$ : 1.13mg/L (96h)(Fish) | No information available | No information available |
| **1,2,3-trichloropropane** | $LC_{50}$ : 41.6mg/L (96h)(Fish) | $EC_{50}$ : 4.1mg/L (48h)(Crustaceans) | $ErC_{50}$ : 101mg/L (72h)(Algae) |
| **1,2,4-trichlorobenzene** | $LC_{50}$ : 2.4mg/L (96h)(Fish) | $EC_{50}$ : 2.05mg/L (48h)(Crustaceans) | $ErC_{50}$ : 5.7mg/L (72h)(Algae) |
| **Propylbenzene** | $LC_{50}$ : 1.55mg/L (96h)(Fish) | No information available | No information available |
| **tert-butylbenzene** | No information available | $EC_{50}$ : > 100mg/L (48h)(Crustaceans) | $ErC_{50}$ : 290.44mg/L (72h)(Algae) |
| **Chlorobenzene** | $LC_{50}$ : 6.6mg/L (96h)(Fish) | $EC_{50}$ : 5.29mg/L (48h)(Crustaceans) | $ErC_{50}$ : 202mg/L (96h)(Algae) |
| **1,1-dichloroethylene** | $LC_{50}$ : 45mg/L (96h)(Fish) | $EC_{50}$ : 16mg/L (48h)(Crustaceans) | $ErC_{50}$ : 410mg/L (96h)(Algae) |
| **Dibromomethane** | $LC_{50}$ : 45mg/L (96h)(Fish) | No information available | No information available |
| **Carbon disulphide** | $LC_{50}$ : 3mg/L (96h)(Fish) | No information available | $ErC_{50}$ : 21mg/L (96h)(Algae) |
| **Dichloromethane** | $LC_{50}$ :193mg/L (96h)(Fish) | $EC_{50}$ : 1470mg/L (48h)(Crustaceans) | No information available |

| | | | |
|---|---|---|---|
| **trans-dichloroethylene** | $LC_{50}$ :135mg/L (96h)(Fish) | No information available | No information available |
| **1,1,1,2-tetrachloroethane** | $LC_{50}$ : 20mg/L (96h)(Fish) | No information available | No information available |
| **1,1-dichloroethane** | $LC_{50}$ : >110mg/L (96h)(Fish) | $EC_{50}$ : 34mg/L (48h)(Crustaceans) | $ErC_{50}$ : >94mg/L (72h)(Algae) |
| **bromodichloromethane** | $LC_{50}$ : 28mg/L (96h)(Fish) | $EC_{50}$ : 29mg/L (48h)(Crustaceans) | $ErC_{50}$ : 12mg/L (72h)(Algae) |
| **Styrene** | $LC_{50}$ : 4.02mg/L (96h)(Fish) | $EC_{50}$ : 4.7mg/L (48h)(Crustaceans) | $ErC_{50}$ : 0.72mg/L (96h)(Algae) |
| **4-chlorotoluene** | $LC_{50}$ : 5.92mg/L (96h)(Fish) | $EC_{50}$ : 2.0mg/L (48h)(Crustaceans) | $ErC_{50}$ : 6.1mg/L (72h)(Algae) |
| **Dibromochloromethane** | $LC_{50}$ : 79mg/L (96h)(Fish) | $EC_{50}$ : 27mg/L (48h)(Crustaceans) | $ErC_{50}$ : 9.6mg/L (72h)(Algae) |
| **1,3-dichloropropane** | $LC_{50}$ : 124~137mg/L (96h)(Fish) | No information available | $ErC_{50}$ : 50mg/L (96h)(Algae) |
| **Naphthalene** | $LC_{50}$ : 0.9mg/L (96h)(Fish) | $EC_{50}$ : 3.6mg/L (48h)(Crustaceans) | No information available |
| **Cumene** | $LC_{50}$ : 4.8mg/L (96h)(Fish) | $EC_{50}$ : 10.6mg/L (48h)(Crustaceans) | No information available |
| **Toluene** | $LC_{50}$ : 25mg/L (96h)(Fish) | $EC_{50}$ : 4.1mg/L (48h)(Crustaceans) | $ErC_{50}$ : 29mg/L (72h)(Algae) |
| **2-chlorotoluene** | $LC_{50}$ : 7.8mg/L (96h)(Fish) | $EC_{50}$ : 0.7mg/L (48h)(Crustaceans) | $ErC_{50}$ : 7.8mg/L (72h)(Algae) |
| **p-xylene** | $LC_{50}$ : 5.5mg/L (96h)(Fish) | $EC_{50}$ : 6.9mg/L (48h)(Crustaceans) | $ErC_{50}$ : 9.6mg/L (72h)(Algae) |
| **1,2-dichlorobenzene** | $LC_{50}$ : 6.66mg/L (96h)(Fish) | $EC_{50}$ : 0.7mg/L (48h)(Crustaceans) | $ErC_{50}$ : 71.1mg/L (96h)(Algae) |
| **Mesitylene** | $LC_{50}$ : 12.52mg/L (96h)(Fish) | No information available | No information available |
| **Chloroform** | $LC_{50}$ : > 110mg/L (96h)(Fish) | No information available | No information available |
| **Carbon tetrachloride** | $LC_{50}$ : 7.6mg/L (96h)(Fish) | $EC_{50}$ : 8.1mg/L (48h)(Crustaceans) | $ErC_{50}$ : 0.46mg/L (72h)(Algae) |
| **1,1,2,2-tetrachloroethane** | $LC_{50}$ : 20.4mg/L (96h)(Fish) | $EC_{50}$ : 24mg/L (48h)(Crustaceans) | $ErC_{50}$ : 89mg/L (96h)(Algae) |
| **1,1,1-trichloroethane** | $LC_{50}$ : 42.3mg/L (96h)(Fish) | $EC_{50}$ : 11.2mg/L (48h)(Crustaceans) | No information available |
| **Bromobenzene** | $LC_{50}$ : 4.3mg/L (96h)(Fish) | $EC_{50}$ : 15.7mg/L (48h)(Crustaceans) | $ErC_{50}$ : 12mg/L (72h)(Algae) |
| **o-xylene** | $LC_{50}$ : 16.1mg/L (96h)(Fish) | $EC_{50}$ : 1.1mg/L (48h)(Crustaceans) | $ErC_{50}$ : 0.80mg/L (72h)(Algae) |
| **Bromochloromethane** | $LC_{50}$ : 360.048mg/L (96h)(Fish) | No information available | No information available |
| **Hexachlorobuta-1,3-diene** | $LC_{50}$ : 0.32mg/L (96h)(Fish) | No information available | No information available |
| **1,3-dichlorobenzene** | $LC_{50}$ : 7.8mg/L (96h)(Fish) | $EC_{50}$ : 2.5mg/L (48h)(Crustaceans) | $ErC_{50}$ : 126mg/L (96h)(Algae) |
| **1,2,4-trimethylbenzene** | $LC_{50}$ : 7.72mg/L (96h)(Fish) | No information available | No information available |
| **4-methylpentan-2-one** | $LC_{50}$ :179mg/L (96h)(Fish) | No information available | No information available |
| **Hexan-2-one** | $LC_{50}$ :428mg/L (96h)(Fish) | No information available | No information available |

| | | | |
|---|---|---|---|
| **Ethylbenzene** | $LC_{50}$ : 4.2mg/L (96h)(Fish) | $EC_{50}$ : 4.75mg/L (48h)(Crustaceans) | $ErC_{50}$ : 3.6mg/L (96h)(Algae) |
| **1,1,2-trichloroethane** | $LC_{50}$ : 40mg/L (96h)(Fish) | $EC_{50}$ : 79.5mg/L (48h)(Crustaceans) | $ErC_{50}$ : 200mg/L (96h)(Algae) |
| **cis-dichloroethylene** | $LC_{50}$ : 67mg/L (96h)(Fish) | $EC_{50}$ : 40mg/L (48h)(Crustaceans) | $ErC_{50}$ : >74mg/L (72h)(Algae) |
| **1,2,3-trichlorobenzene** | $LC_{50}$ : 3.2mg/L (96h)(Fish) | $EC_{50}$ : 0.46mg/L (48h)(Crustaceans) | $ErC_{50}$ : 0.9mg/L (96h)(Algae) |
| **Benzene** | $LC_{50}$ : 21.6mg/L (96h)(Fish) | $EC_{50}$ : 10.9mg/L (48h)(Crustaceans) | $ErC_{50}$ : 1600mg/L (96h)(Algae) |
| **Tetrachloroethylene** | $LC_{50}$ : 14mg/L (96h)(Fish) | $EC_{50}$ : 1.3mg/L (48h)(Crustaceans) | $ErC_{50}$ : 27mg/L (72h)(Algae) |
| **1,2-dibromo-3-chloropropane** | $LC_{50}$ : 39mg/L (96h)(Fish) | $EC_{50}$ : 19mg/L (48h)(Crustaceans) | $ErC_{50}$ : 62mg/L (72h)(Algae) |
| **Acetone** | $LC_{50}$ : 5540mg/L (96h)(Fish) | $EC_{50}$ : 18500mg/L (48h)(Crustaceans) | $ErC_{50}$ : 7200mg/L (96h)(Algae) |
| **p-cymene** | $LC_{50}$ : 2.0mg/L (96h)(Fish) | $EC_{50}$ : 3.7mg/L (48h)(Crustaceans) | $ErC_{50}$ : 5.8mg/L (72h)(Algae) |
| **m-xylene** | $LC_{50}$ : 10.6mg/L (96h)(Fish) | $EC_{50}$ : 2.4mg/L (48h)(Crustaceans) | $ErC_{50}$ : 8.9mg/L (72h)(Algae) |
| **Methanol** | $LC_{50}$ : 24000mg/L (96h)(Fish) | $EC_{50}$ : 24500mg/L (48h)(Crustaceans) | No information available |
| **1,4-dichlorobenzene** | $LC_{50}$ : 2.2mg/L (96h)(Fish) | $EC_{50}$ : 2.5mg/L (48h)(Crustaceans) | $ErC_{50}$ : 5.4mg/L (72h)(Algae) |
| **Iodomethane** | $LC_{50}$ : 1.4mg/L (96h)(Fish) | $EC_{50}$ : 0.57mg/L (48h)(Crustaceans) | $ErC_{50}$ : 1.69mg/L (72h)(Algae) |
| **n-Butylbenzene** | $LC_{50}$ : 3.3mg/L (96h)(Fish) | $EC_{50}$ : 1.0mg/L (48h)(Crustaceans) | $ErC_{50}$ : 1.6mg/L (72h)(Algae) |
| **1,2-dichloropropane** | $LC_{50}$ :160mg/L (96h)(Fish) | $EC_{50}$ : 30mg/L (48h)(Crustaceans) | $ErC_{50}$ : 83mg/L (96h)(Algae) |
| **Trichloroethylene** | $LC_{50}$ : 42.4mg/L (96h)(Fish) | $EC_{50}$ : 11mg/L (48h)(Crustaceans) | $ErC_{50}$ : 77mg/L (72h)(Algae) |
| **Butanone** | $LC_{50}$ : 3220mg/L (96h)(Fish) | $EC_{50}$ : 5090mg/L (48h)(Crustaceans) | $ErC_{50}$ : >1200mg/L (72h)(Algae) |

## Chronic aquatic toxicity

| Component | Fish | Crustaceans | Algae or other aquatic plants |
|---|---|---|---|
| **Carbon tetrachloride** | No information available | NOEC : 0.49mg/L(Crustaceans) | NOEC : 0.12mg/L(Algae) |
| **1,2,3-trichloropropane** | NOEC : 4.4mg/L(Fish) | No information available | No information available |
| **1,2,4-trichlorobenzene** | NOEC : 0.04mg/L(Fish) | NOEC : 0.10mg/L(Crustaceans) | NOEC : 2.2mg/L(Algae) |
| **Bromobenzene** | No information available | No information available | NOEC : 4.9mg/L(Algae) |
| **Chlorobenzene** | No information available | NOEC : 0.72mg/L(Crustaceans) | No information available |
| **o-xylene** | No information available | NOEC : 0.63mg/L(Crustaceans) | NOEC : 0.73mg/L(Algae) |
| **1,3-dichlorobenzene** | NOEC : 0.7mg/L(Fish) | NOEC : <0.10mg/L(Crustaceans) | NOEC : 2.2mg/L(Algae) |
| **1,1-dichloroethane** | No information available | NOEC : | NOEC : 94mg/L(Algae) |

| | | | |
|---|---|---|---|
| | | 0.53mg/L(Crustaceans) | |
| **bromodichloromethane** | NOEC : 0.78mg/L(Fish) | NOEC : 2.2mg/L(Crustaceans) | NOEC : 0.80mg/L(Algae) |
| **cis-dichloroethylene** | No information available | NOEC : 4.5mg/L(Crustaceans) | NOEC : 74mg/L(Algae) |
| **1,2,3-trichlorobenzene** | NOEC : 0.32mg/L(Fish) | NOEC : 0.17mg/L(Crustaceans) | NOEC : 0.23mg/L(Algae) |
| **Tetrachloroethylene** | NOEC : 1.9mg/L(Fish) | NOEC : 0.023mg/L(Crustaceans) | NOEC : 9.1mg/L(Algae) |
| **1,2-dibromo-3-chloropropane** | No information available | NOEC : 5.0mg/L(Crustaceans) | NOEC : 2.7mg/L(Algae) |
| **4-chlorotoluene** | No information available | NOEC : 0.32mg/L(Crustaceans) | NOEC : 2.2mg/L(Algae) |
| **Dibromochloromethane** | NOEC : 3.2mg/L(Fish) | NOEC : 0.063mg/L(Crustaceans) | NOEC : 4.5mg/L(Algae) |
| **p-cymene** | No information available | NOEC : 0.46mg/L(Crustaceans) | NOEC : 0.48mg/L(Algae) |
| **m-xylene** | No information available | NOEC : 0.41mg/L(Crustaceans) | NOEC : 5.3mg/L(Algae) |
| **1,4-dichlorobenzene** | NOEC : 0.9mg/L(Fish) | NOEC : 0.10mg/L(Crustaceans) | NOEC : 0.83mg/L(Algae) |
| **Toluene** | No information available | NOEC : 1.2mg/L(Crustaceans) | NOEC : 9.1mg/L(Algae) |
| **n-Butylbenzene** | No information available | NOEC : 0.17mg/L(Crustaceans) | NOEC : 0.42mg/L(Algae) |
| **2-chlorotoluene** | No information available | NOEC : 0.31mg/L(Crustaceans) | NOEC : 2.6mg/L(Algae) |
| **p-xylene** | No information available | NOEC : 1.3mg/L(Crustaceans) | NOEC : 4.4mg/L(Algae) |
| **1,2-dichlorobenzene** | NOEC : 0.8mg/L(Fish) | NOEC : <0.10mg/L(Crustaceans) | NOEC : 2.6mg/L(Algae) |
| **1,2-dichloropropane** | NOEC : 6~11mg/L(Fish) | NOEC : 0.96mg/L(Crustaceans) | NOEC : 11mg/L(Algae) |
| **Trichloroethylene** | NOEC : 5.76mg/L(Fish) | NOEC : 2.1mg/L(Crustaceans) | NOEC : 45mg/L(Algae) |
| **Butanone** | No information available | NOEC : 100mg/L(Crustaceans) | NOEC : 93mg/L(Algae) |

## | Persistence and degradability

| Component | Persistence (water/soil) | Persistence (air) |
|---|---|---|
| **Iodomethane** | Low(Half-life = 56 days) | High(Half-life = 222.83 days) |
| **trans-dichloroethylene** | High | High |
| **cis-dichloroethylene** | High | High |
| **Butanone** | Low(Half-life = 14 days) | Low(Half-life = 26.75 days) |
| **1,1,1-trichloroethane** | High(Half-life = 546 days) | High(Half-life = 2247.04 days) |
| **Dibromomethane** | High(Half-life = 560.17 days) | High(Half-life = 354.58 days) |
| **1,1,2-trichloroethane** | High(Half-life = 730 days) | Medium(Half-life = 81.5 days) |
| **Tetrachloroethylene** | High(Half-life = 720 days) | Medium(Half-life = 160.13 days) |

| | | |
|---|---|---|
| **1,3-dichloropropane** | High | High |
| **Hexan-2-one** | Low | Low |
| **m-xylene** | High(Half-life = 360 days) | Low(Half-life = 1.08 days) |
| **p-xylene** | High(Half-life = 360 days) | Low(Half-life = 1.75 days) |
| **o-xylene** | High(Half-life = 360 days) | Low(Half-life = 1.83 days) |
| **Bromoform** | High(Half-life = 360 days) | High(Half-life = 541.21 days) |
| **Bromobenzene** | High | High |
| **1,2,3-trichloropropane** | High(Half-life = 720 days) | Low(Half-life = 25.54 days) |
| **2-chlorotoluene** | High | High |
| **4-chlorotoluene** | High | High |
| **tert-butylbenzene** | High | High |
| **1,2,4-trimethylbenzene** | Low(Half-life = 56 days) | Low(Half-life = 0.67 days) |
| **sec-butylbenzene** | High | High |
| **1,3-dichlorobenzene** | High(Half-life = 360 days) | Low(Half-life = 37.13 days) |
| **p-cymene** | High | High |
| **n-Butylbenzene** | High | High |
| **1,2-dichlorobenzene** | High(Half-life = 360 days) | Medium(Half-life = 63.67 days) |
| **1,2-dibromo-3-chloropropane** | High(Half-life = 360 days) | Medium(Half-life = 60.79 days) |
| **1,2,4-trichlorobenzene** | High(Half-life = 360 days) | Low(Half-life = 53.5 days) |
| **Naphthalene** | High(Half-life = 258 days) | Low(Half-life = 1.23 days) |
| **1,2,3-trichlorobenzene** | High | High |
| **Methanol** | Low | Low |

## Bioaccumulative potential

| Component | Bioaccumulative potential | Comments |
|---|---|---|
| **Iodomethane** | Low | Log Kow=1.51-1.69 |
| **trans-dichloroethylene** | Low | Log Kow=2.09 |
| **cis-dichloroethylene** | Low | Log Kow=1.9808 |
| **Butanone** | Low | Log Kow=0.29 |
| **1,1,1-trichloroethane** | Low | BCF=9 |
| **Dibromomethane** | Low | Log Kow=1.7 |
| **1,1,2-trichloroethane** | Low | BCF=17 |
| **Tetrachloroethylene** | Low | BCF=77.1 |
| **1,3-dichloropropane** | Low | Log Kow=2.0 |
| **Hexan-2-one** | Low | Log Kow=1.38 |
| **m-xylene** | Low | BCF=1.37 |
| **p-xylene** | Low | BCF=2.2 |

| | | |
|---|---|---|
| **o-xylene** | Low | BCF=219 |
| **Bromoform** | Low | BCF=21 |
| **Bromobenzene** | Low | BCF=34 |
| **1,2,3-trichloropropane** | Low | BCF=9 |
| **2-chlorotoluene** | Low | BCF=112 |
| **4-chlorotoluene** | Low | BCF=101.6 |
| **tert-butylbenzene** | Medium | Log Kow=4.11 |
| **1,2,4-trimethylbenzene** | Low | BCF=275 |
| **sec-butylbenzene** | High | Log Kow=4.57 |
| **1,3-dichlorobenzene** | High | BCF=6918 |
| **p-cymene** | Medium | Log Kow=4.1 |
| **n-Butylbenzene** | Medium | Log Kow=4.38 |
| **1,2-dichlorobenzene** | Low | BCF=260 |
| **1,2-dibromo-3-chloropropane** | Low | Log Kow=2.96 |
| **1,2,4-trichlorobenzene** | High | BCF=4420 |
| **Naphthalene** | High | BCF=18000 |
| **1,2,3-trichlorobenzene** | Medium | Log Kow=4.05 |
| **Methanol** | Low | BCF=10 |

## Mobility in soil

| Component | log Koc | Remark |
|---|---|---|
| **1,1-dichloroethylene** | 1.72 | 20 ℃ |
| **Iodomethane** | 1.53908 | |
| **Carbon disulphide** | 1.53 | 20 ℃ |
| **Dichloromethane** | 1.67 | 20 ℃ |
| **trans-dichloroethylene** | 1.641 | |
| **cis-dichloroethylene** | 1.641 | |
| **Butanone** | 0.654 | 25 ℃ |
| **Bromochloromethane** | 1.34 | 20 ℃ |
| **Chloroform** | 2.27 | 20 ℃ |
| **1,1,1-trichloroethane** | 0.34 | 20 ℃ |
| **Carbon tetrachloride** | 2.06 | 20 ℃ |
| **Benzene** | 2.13 | 20 ℃ |
| **Trichloroethylene** | 2.15 | |
| **1,2-dichloropropane** | 1.67 | |
| **Dibromomethane** | 1.48 | 20 ℃ |
| **Toluene** | 2.31 | 20 ℃ |

| | | |
|---|---|---|
| **1,1,2-trichloroethane** | 1.831 | |
| **Tetrachloroethylene** | 2.15 | 20 ℃ |
| **1,3-dichloropropane** | 1.907 | |
| **Hexan-2-one** | 1.115 | |
| **Chlorobenzene** | 2.369 | MCI method |
| **Ethylbenzene** | 3.12 | 20 ℃ |
| **m-xylene** | 2.73 | 20 ℃ |
| **p-xylene** | 2.73 | 20 ℃ |
| **o-xylene** | 2.73 | 20 ℃ |
| **Styrene** | 2.55 | |
| **Bromoform** | 2.08 | |
| **Cumene** | 2.95 | 20 ℃ |
| **Bromobenzene** | 2.428 | |
| **1,2,3-trichloropropane** | 1.89 | 20 ℃ |
| **2-chlorotoluene** | 2.54 | 20 ℃ |
| **Mesitylene** | 2.87 | |
| **4-chlorotoluene** | 2.637 | |
| **tert-butylbenzene** | 2.888 | 25 ℃， pH=6.0 |
| **1,2,4-trimethylbenzene** | 3.04 | 20 ℃ |
| **sec-butylbenzene** | 3.198 | |
| **1,3-dichlorobenzene** | 2.5 | |
| **p-cymene** | 3.61 | 20 ℃ |
| **n-Butylbenzene** | 3.246 | |
| **1,2-dichlorobenzene** | 2.65 | 20 ℃ |
| **1,2-dibromo-3-chloropropane** | 2.117 | |
| **1,2,4-trichlorobenzene** | 2.856 | |
| **Naphthalene** | 2.58 | 20 ℃ |
| **1,2,3-trichlorobenzene** | 2.87 | |
| **Methanol** | 0.000 | |

## 13 Disposal considerations

### Disposal considerations

| | |
|---|---|
| **Waste chemicals** | Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal. |
| **Contaminated packaging** | Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. |
| **Disposal recommendations** | Refer to section waste chemicals and contaminated packaging. |

## 14 Transport information

## Label and Mark

| | |
|---|---|
| Transporting Label |   |

## IMDG-CODE

| | |
|---|---|
| UN number | 1230 |
| UN proper shipping name | METHANOL |
| Transport hazard class | 3 |
| Transport subsidiary hazard class | 6.1 |
| Packing group | Ⅱ |
| Marine pollutant ( Yes or no ) | No |

## IATA-DGR

| | |
|---|---|
| UN number | 1230 |
| UN proper shipping name | METHANOL |
| Transport hazard class | 3 |
| Transport subsidiary hazard class | 6.1 |
| Packing group | Ⅱ |

## UN-ADR

| | |
|---|---|
| UN number | 1230 |
| UN proper shipping name | METHANOL |
| Transport hazard class | 3 |
| Transport subsidiary hazard class | 6.1 |
| Packing group | Ⅱ |

## Transport in bulk according to IMO instruments

◆Transport in bulk according to Annex II of MARPOL and the IBC code

| | |
|---|---|
| | Not Available |

◆Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| | |
|---|---|
| | Not Available |

◆Transport in bulk in accordance with the IGC Code

| | |
|---|---|
| | Not Available |

## Others

| | |
|---|---|
| Precautions for transport | Transit should be anti-exposure, rain, high temperature. Strictly prohibited shipping or transportation with acids, alkalis, oxidants, food and food additives etc. Shipment of the goods vehicle exhaust pipe must be equipped with fire retardant devices, prohibit using mechanical equipment and tools of which easy to produce sparks. Transit should be anti-exposure, anti-rain, anti-high temperature. Transportation used tank (tank) cars should be grounded chain, tank can be installed to reduce the partition hole static electricity shocks. Strictly |

| | |
|---|---|
| | prohibited shipping or transportation with oxidants, acids, food and food additives etc. When bulk transport, Prohibit the use of cement or wooden boats. Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements. |

## 15 Regulatory information

### International chemical inventory

| Component | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-dichloroethylene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Acetone | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Iodomethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| Carbon disulphide | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Dichloromethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| trans-dichloroethylene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,1-dichloroethane | √ | √ | √ | × | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 2,2-dichloropropane | × | √ | √ | √ | × | × | × | √ | × | × | √ | √ | √ |
| cis-dichloroethylene | √ | √ | √ | × | √ | × | √ | √ | √ | × | × | √ | √ |
| Butanone | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Bromochloromethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| Chloroform | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,1,1-trichloroethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Carbon tetrachloride | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,1-dichloropropene | × | √ | × | × | × | × | × | × | × | × | × | √ | √ |
| Benzene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,2-DICHLOROETHANE-D4 | × | × | × | × | √ | × | × | × | × | × | × | √ | √ |
| Trichloroethylene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,2-dichloropropane | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Dibromomethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| bromodichloromethane | × | √ | √ | × | √ | × | × | × | × | × | √ | √ | √ |
| 4-methylpentan-2-one | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Toluene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,1,2-trichloroethane | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Tetrachloroethylene | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 1,3-dichloropropane | √ | √ | √ | × | √ | √ | × | √ | √ | × | √ | √ | √ |
| Hexan-2-one | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| Dibromochloromethane | × | √ | √ | × | × | × | × | × | × | × | √ | √ | √ |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1,2-dibromoethane** | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| **Chlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,1,1,2-tetrachloroethane** | × | √ | √ | √ | × | × | × | √ | √ | × | √ | √ | √ |
| **Ethylbenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,1,2-trichloropropane** | × | √ | √ | × | × | × | × | × | √ | × | × | √ | √ |
| **m-xylene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **p-xylene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **o-xylene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Styrene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Bromoform** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Cumene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Bromobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| **1,1,2,2-tetrachloroethane** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,2,3-trichloropropane** | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| **Propylbenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **2-chlorotoluene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| **Mesitylene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **4-chlorotoluene** | √ | √ | √ | × | √ | √ | √ | √ | √ | × | × | √ | √ |
| **tert-butylbenzene** | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2,4-trimethylbenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **sec-butylbenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,3-dichlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| **p-cymene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,4-dichlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **n-Butylbenzene** | √ | √ | √ | √ | √ | √ | × | √ | √ | × | √ | √ | √ |
| **1,2-dichlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,2-dibromo-3-chloropropane** | √ | √ | √ | × | × | √ | √ | × | √ | × | √ | √ | √ |
| **1,2,4-trichlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Naphthalene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,2,3-trichlorobenzene** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ |
| **Hexachlorobuta-1,3-diene** | √ | √ | √ | √ | × | √ | √ | √ | √ | × | √ | √ | √ |
| **Methanol** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |

【A】 China Inventory of Existing Chemical Substances(IECSC)
【B】 European Inventory of Existing Commercial Chemical Substances(EC inventory)
【C】 United States Toxic Substances Control Act Inventory(TSCA)
【D】 Canadian Domestic Substances List(DSL)
【E】 New Zealand Inventory of Chemicals(NZIoC)
【F】 Philippines Inventory of Chemicals and Chemical Substances(PICCS)
【G】 Korea Existing Chemicals Inventory(KECL)
【H】 Australian. Inventory of Industrial Chemical (AIICS)

【I】 Japan Inventory of Existing & New Chemical Substances(ENCS)
【J】 Thailand Existing Chemicals Inventory(TECI)
【K】 Mexico National Inventory of Chemical Substances (INSQ)
【L】 Russia Inventory of Existing Substances(DRAFT)
【M】 Inventory of Existing Chemical Substances in Taiwan, China (TCSI)

## List of Chemical Substances under International Conventions

| Component | A | B | C |
|---|---|---|---|
| 1,1-dichloroethylene | × | × | × |
| Acetone | × | × | × |
| Iodomethane | × | × | × |
| Carbon disulphide | × | × | × |
| Dichloromethane | × | × | × |
| trans-dichloroethylene | × | × | × |
| 1,1-dichloroethane | × | × | × |
| 2,2-dichloropropane | × | × | × |
| cis-dichloroethylene | × | × | × |
| Butanone | × | × | × |
| Bromochloromethane | √ | × | × |
| Chloroform | × | × | × |
| 1,1,1-trichloroethane | √ | × | × |
| Carbon tetrachloride | √ | × | × |
| 1,1-dichloropropene | × | × | × |
| Benzene | × | × | × |
| 1,2-DICHLOROETHANE-D4 | × | × | × |
| Trichloroethylene | × | × | × |
| 1,2-dichloropropane | × | × | × |
| Dibromomethane | × | × | × |
| bromodichloromethane | × | × | × |
| 4-methylpentan-2-one | × | × | × |
| Toluene | × | × | × |
| 1,1,2-trichloroethane | × | × | × |
| Tetrachloroethylene | × | × | × |
| 1,3-dichloropropane | × | × | × |
| Hexan-2-one | × | × | × |
| Dibromochloromethane | × | × | × |
| 1,2-dibromoethane | × | × | √ |
| Chlorobenzene | × | × | × |
| 1,1,1,2-tetrachloroethane | × | × | × |

| | | | |
|---|---|---|---|
| **Ethylbenzene** | × | × | × |
| **1,1,2-trichloropropane** | × | × | × |
| **m-xylene** | × | × | × |
| **p-xylene** | × | × | × |
| **o-xylene** | × | × | × |
| **Styrene** | × | × | × |
| **Bromoform** | × | × | × |
| **Cumene** | × | × | × |
| **Bromobenzene** | × | × | × |
| **1,1,2,2-tetrachloroethane** | × | × | × |
| **1,2,3-trichloropropane** | × | × | × |
| **Propylbenzene** | × | × | × |
| **2-chlorotoluene** | × | × | × |
| **Mesitylene** | × | × | × |
| **4-chlorotoluene** | × | × | × |
| **tert-butylbenzene** | × | × | × |
| **1,2,4-trimethylbenzene** | × | × | × |
| **sec-butylbenzene** | × | × | × |
| **1,3-dichlorobenzene** | × | × | × |
| **p-cymene** | × | × | × |
| **1,4-dichlorobenzene** | × | × | × |
| **n-Butylbenzene** | × | × | × |
| **1,2-dichlorobenzene** | × | × | × |
| **1,2-dibromo-3-chloropropane** | × | × | × |
| **1,2,4-trichlorobenzene** | × | × | × |
| **Naphthalene** | × | × | × |
| **1,2,3-trichlorobenzene** | × | × | × |
| **Hexachlorobuta-1,3-diene** | × | √ | × |
| **Methanol** | × | × | × |

【A】 The Montreal Protocol on Substances that Deplete the Ozone Layer
【B】 Stockholm Convention on Persistent Organic Pollutants (POPs)
【C】 Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

## US chemical inventory

| Component | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| **1,1-dichloroethylene** | √ | × | √ | √ | √ | √ | √ | √ |
| **Acetone** | × | × | √ | √ | √ | √ | √ | × |
| **Iodomethane** | √ | × | √ | √ | √ | √ | √ | √ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Carbon disulphide** | √ | √ | √ | √ | √ | √ | √ | √ |
| **Dichloromethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **trans-dichloroethylene** | × | × | √ | √ | × | √ | √ | × |
| **1,1-dichloroethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **2,2-dichloropropane** | × | × | × | √ | × | × | × | × |
| **cis-dichloroethylene** | × | × | × | √ | × | √ | × | × |
| **Butanone** | × | × | √ | √ | √ | √ | √ | × |
| **Bromochloromethane** | × | × | × | √ | √ | √ | √ | × |
| **Chloroform** | √ | √ | √ | √ | √ | √ | √ | √ |
| **1,1,1-trichloroethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **Carbon tetrachloride** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,1-dichloropropene** | × | × | × | √ | × | × | × | × |
| **Benzene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2-DICHLOROETHANE-D4** | × | × | × | × | × | × | × | × |
| **Trichloroethylene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2-dichloropropane** | √ | × | √ | √ | √ | √ | √ | √ |
| **Dibromomethane** | × | × | √ | √ | √ | √ | √ | × |
| **bromodichloromethane** | × | × | √ | √ | √ | √ | √ | √ |
| **4-methylpentan-2-one** | √ | × | √ | √ | √ | √ | √ | √ |
| **Toluene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,1,2-trichloroethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **Tetrachloroethylene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,3-dichloropropane** | × | × | √ | √ | × | √ | √ | × |
| **Hexan-2-one** | × | × | × | √ | √ | √ | √ | √ |
| **Dibromochloromethane** | × | × | √ | √ | √ | √ | √ | × |
| **1,2-dibromoethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **Chlorobenzene** | √ | × | √ | √ | √ | √ | √ | × |
| **1,1,1,2-tetrachloroethane** | × | × | √ | √ | √ | √ | √ | √ |
| **Ethylbenzene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,1,2-trichloropropane** | × | × | × | × | × | × | × | × |
| **m-xylene** | √ | × | √ | √ | √ | √ | √ | × |
| **p-xylene** | √ | × | √ | √ | √ | √ | √ | × |
| **o-xylene** | √ | × | √ | √ | √ | √ | √ | × |
| **Styrene** | √ | × | √ | √ | √ | √ | √ | √ |
| **Bromoform** | √ | × | √ | √ | √ | √ | √ | √ |
| **Cumene** | √ | × | √ | √ | √ | √ | √ | √ |
| **Bromobenzene** | × | × | × | √ | √ | √ | √ | × |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1,1,2,2-tetrachloroethane** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2,3-trichloropropane** | × | × | × | √ | √ | √ | √ | √ |
| **Propylbenzene** | × | × | × | √ | √ | √ | √ | × |
| **2-chlorotoluene** | × | × | × | √ | √ | √ | √ | × |
| **Mesitylene** | × | √ | × | √ | × | × | √ | × |
| **4-chlorotoluene** | × | × | × | √ | × | × | × | × |
| **tert-butylbenzene** | × | × | × | √ | √ | √ | × | × |
| **1,2,4-trimethylbenzene** | × | √ | × | √ | √ | √ | √ | × |
| **sec-butylbenzene** | × | × | × | √ | × | √ | × | × |
| **1,3-dichlorobenzene** | × | × | √ | √ | √ | √ | √ | × |
| **p-cymene** | × | × | × | √ | × | √ | × | × |
| **1,4-dichlorobenzene** | √ | × | √ | √ | √ | √ | √ | √ |
| **n-Butylbenzene** | × | × | × | √ | √ | √ | √ | × |
| **1,2-dichlorobenzene** | × | × | √ | √ | √ | √ | √ | × |
| **1,2-dibromo-3-chloropropane** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2,4-trichlorobenzene** | √ | × | √ | √ | √ | √ | √ | × |
| **Naphthalene** | √ | × | √ | √ | √ | √ | √ | √ |
| **1,2,3-trichlorobenzene** | × | × | × | √ | × | × | √ | × |
| **Hexachlorobuta-1,3-diene** | √ | × | √ | √ | √ | √ | √ | √ |
| **Methanol** | √ | × | √ | √ | √ | √ | √ | √ |

[A] US Clean Air Act (CAA)- Section 112, Hazardous Air Pollutants
[B] US SARA 302- Extremely Hazardous Substance List
[C] US CERCLA- Hazardous Substances List
[D] US Massachusetts Right-to-Know Substance List
[E] US New Jersey Right to Know Hazardous Substance List
[F] US Pennsylvania Right to Know Hazardous Substance List
[G] US New York City Right-to-Know Hazardous Substance List
[H] US California Proposition 65 List

Note:
"√" Indicates that the substance included in the regulations.
"×" No data or not included in the regulations.

## 16 Other information

### Information on revision

| | |
|---|---|
| **Creation Date** | 2025/11/07 |
| **Revision Date** | - |
| **Reason for revision** | - |

### Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
[2] IARC, website: http://www.iarc.fr/.
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
[4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.

[5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
[6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
[7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
[8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

## Abbreviations and acronyms

| | | | |
|---|---|---|---|
| CAS | Chemical Abstracts Service | UN | The United Nations |
| PC-STEL | Short term exposure limit | OECD | Organization for Economic Co-operation and Development |
| PC-TWA | Time Weighted Average | IMDG-CODE | International Maritime Dangerous Goods CODE |
| MAC | Maximum Allowable Concentration | IARC | International Agency for Research on Cancer |
| DNEL | Derived No Effect Level | ICAO | International Civil Aviation Organization |
| PNEC | Predicted No Effect Concentration | IATA | International Air Transportation Association |
| NOEC | No Observed Effect Concentration | ACGIH | American Conference of Governmental Industrial Hygienists |
| $LC_{50}$ | Lethal Concentration 50% | NFPA | National Fire Protection Association |
| $LD_{50}$ | Lethal Dose 50% | NTP | National Toxicology Program |
| $EC_{50}$ | Effective Concentration 50% | PBT | Persistent, Bioaccumulative, Toxic |
| $EC_X$ | Effective Concentration X% | vPvB | very Persistent, very Bioaccumulative |
| $P_{OW}$ | Partition coefficient Octanol: Water | CMR | Carcinogens, mutagens or substances toxic to reproduction |
| BCF | Bioconcentration factor | RPE | Respiratory Protective Equipment |
| ED | Endocrine disruptor | HCS | Hazard Communication Standard |

## Disclaimer

This Safety Data Sheet (SDS) was prepared according to OSHA HCS-2024. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.