

Classified as hazardous in accordance with the criteria of EPA New Zealand

Section 1 - Identification

Product Identifier

Product Name 2-Methyl-2-butene, 2.0M solution in THF

Recommended Use Laboratory chemicals.
Uses advised against No Information available

| | |
|--------------------------------|---|
| Product Code | 426390000; 426391000 |
| Address | Thermo Fisher Scientific New Zealand Ltd 244 Bush Road, Albany, Auckland, New Zealand |
| Emergency Tel. | CHEMTREC® 09 980 6780 or +64 9 980 6780 |
| Telephone / Fax Numbers | Tel: 09 980 6700 Fax: 09 980 6788 |
| E-mail address | ANZinfo@thermofisher.com |

Section 2 - Hazard(s) Identification

Classification under Work Safe New Zealand

Classified as hazardous in accordance with the criteria of EPA New Zealand

GHS Classification

Physical hazards

Flammable liquids

Category 2

Health hazards

Aspiration Toxicity
 Acute Oral Toxicity
 Skin Corrosion/Irritation
 Serious Eye Damage/Eye Irritation
 Germ Cell Mutagenicity
 Carcinogenicity
 Specific target organ toxicity - (single exposure)

Category 1
 Category 4
 Category 2
 Category 2
 Category 2
 Category 2
 Category 3

Environmental hazards

Chronic aquatic toxicity

Category 3

Label Elements



Signal Word

Danger

Hazard Statements

H225 - Highly flammable liquid and vapor
H302 - Harmful if swallowed
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H341 - Suspected of causing genetic defects if inhaled
H351 - Suspected of causing cancer
H412 - Harmful to aquatic life with long lasting effects

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
P242 - Use non-sparking tools
P243 - Take action to prevent static discharges
P270 - Do not eat, drink or smoke when using this product
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection/ face protection

Response

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P330 - Rinse mouth
P331 - Do NOT induce vomiting
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
P362 + P364 - Take off contaminated clothing and wash it before reuse

Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Disposal

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

Other hazards which do not result in classification

Toxic to terrestrial vertebrates
May form explosive peroxides

Section 3 - Composition and Information on Ingredients

| Component | CAS No | Weight % |
|-------------------|----------|----------|
| 2-Methyl-2-butene | 513-35-9 | 14 |

| | | |
|-----------------|----------|----|
| Tetrahydrofuran | 109-99-9 | 86 |
|-----------------|----------|----|

Section 4 - First Aid Measures

Description of first aid measures

| | |
|--|---|
| General Advice | If symptoms persist, call a physician. |
| New Zealand Emergency Tel. | CHEMTREC® 09 980 6780 or +64 9 980 6780 |
| Inhalation | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. Risk of serious damage to the lungs (by aspiration). |
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention. |
| Skin Contact | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. |
| Ingestion | Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward. |
| Self-Protection of the First Aider | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. |
| First Aid Facilities | Eyewash, safety shower and washroom. |
| Most important symptoms and effects | . Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression |
| Notes to Physician | Treat symptomatically. Symptoms may be delayed. |

Section 5 - Fire Fighting Measures

Suitable Extinguishing Media

Water spray, carbon dioxide (CO₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons

No information available.

Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. May form explosive peroxides.

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂).

Special protective equipment and precautions for fire fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 - Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Remove all sources of ignition. Take precautionary

measures against static discharges.

Environmental Precautions

Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Precautions to prevent secondary hazards

Clean contaminated objects and areas thoroughly observing environmental regulations

Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

Section 7 - Handling and Storage

Precautions for Safe Handling

Advice on safe handling

Wear personal protective equipment/face protection. Avoid ingestion and inhalation. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat, sparks and flame. Shelf life 12 months. May form explosive peroxides on prolonged storage. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals.

Incompatible Materials

Strong oxidizing agents.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

AS 1940-2004 - The storage and handling of flammable and combustible liquids

Section 8 - Exposure Controls and Personal Protection

Control parameters

Exposure limits

NZ - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

AUS - Exposure Standards for Atmospheric Contaminants in the Occupational Environment - Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)]

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)] updated in August, 2005. Safe Work Australia

UK - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

ACGIH - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

| Component | New Zealand WEL | Australia | ACGIH TLV | The United Kingdom |
|-------------------|-----------------|--------------|-------------|----------------------|
| 2-Methyl-2-butene | | | TWA: 10 ppm | |
| Tetrahydrofuran | TWA: 50 ppm | TWA: 100 ppm | TWA: 50 ppm | STEL: 100 ppm 15 min |

| | | | | |
|--|--|----------------------------|-----------------------|---|
| | TWA: 150 mg/m ³ STEL: 100 ppm STEL: 300 mg/m ³ Skin | TWA: 295 mg/m ³ | STEL: 100 ppm Skin | STEL: 300 mg/m ³ 15 min TWA: 50 ppm 8 hr TWA: 150 mg/m ³ 8 hr Skin |
|--|--|----------------------------|-----------------------|---|

Biological limit values

NZ - Substances assigned Biological Exposure Indices in the New Zealand Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

ACGIH - American Conference of Governmental Industrial Hygienists (ACGIH) TLVs® and BEIs® - Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. 2022 Edition

| Component | New Zealand | Australia | ACGIH - Biological Exposure Indices | United Kingdom |
|-----------------|--|-----------|---|----------------|
| Tetrahydrofuran | 2 mg/g creatinine (urine) end of exposure or shift, within 1 hour of end of exposure (THF) | | 2 mg/L Medium: urine Time: end of shift Determinant: Tetrahydrofuran | |

Appropriate engineering controls**Engineering Measures**

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Individual protection measures, such as personal protective equipment

Eye Protection Goggles (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

Hand Protection Protective gloves

| Glove material | Breakthrough time | Glove thickness | AUS/NZ Standard | Glove comments |
|--|-----------------------------------|-----------------|-----------------|-----------------------|
| Butyl rubber, Nitrile rubber, Viton (R). Neoprene gloves | See manufacturers recommendations | - | AS/NZS 2161 | (minimum requirement) |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Skin and body protection Long sleeved clothing

Respiratory Protection Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of respiratory protective devices (or AUS/NZ equivalent)

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water system.

Section 9 - Physical and Chemical Properties

Information on basic physical and chemical properties

| | | |
|--|--|--|
| Physical State | Liquid | |
| Appearance | | |
| Odor | No information available | |
| Odor Threshold | No data available | |
| pH | No information available | |
| Melting Point/Range | No data available | |
| Softening Point | No data available | |
| Boiling Point/Range | No information available | |
| Flammability (liquid) | Highly flammable | On basis of test data |
| Flammability (solid,gas) | Not applicable | Liquid |
| Explosion Limits | Lower 1.6 Vol% Upper 8.7 Vol% | |
| Flash Point | -46 °C / -50.8 °F | Method - No information available |
| Autoignition Temperature | No data available | |
| Decomposition Temperature | No data available | |
| Viscosity | No data available | |
| Water Solubility | Partially miscible | |
| Solubility in other solvents | No information available | |
| Partition Coefficient (n-octanol/water) | | |
| Component | log Pow | |
| Tetrahydrofuran | 0.45 | |
| Vapor Pressure | 204 mmHg @ 20°C | |
| Density / Specific Gravity | 0.835 | |
| Bulk Density | Not applicable | Liquid |
| Vapor Density | No data available | (Air = 1.0) |
| Particle characteristics | Not applicable (liquid) | |

Other information

Explosive Properties Vapors may form explosive mixtures with air

Section 10 - Stability and Reactivity

| | |
|---|---|
| Reactivity | None known, based on information available |
| Stability | May form explosive peroxides. |
| Sensitivity to Mechanical Impact | No information available |
| Sensitivity to Static Discharge | No information available |
| Hazardous Polymerization | No information available. |
| Hazardous Reactions | None under normal processing. |
| Conditions to Avoid | Incompatible products, Excess heat, Keep away from open flames, hot surfaces and sources of ignition. |
| Incompatible Materials | Strong oxidizing agents. |
| Hazardous Decomposition Products | Carbon monoxide (CO). Carbon dioxide (CO ₂). |

Section 11 - Toxicological Information

Acute Effects**Information on likely routes of exposure**

Product Information

| | |
|-------------------|--|
| Inhalation | Irritating to respiratory system. INHALATION MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. May be harmful if inhaled. |
| Eyes | Irritating to eyes. |
| Skin | May cause irritation. May be harmful in contact with skin. |
| Ingestion | Aspiration hazard. May be harmful if swallowed. May cause central nervous system effects. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. Potential for aspiration if swallowed. |

Numerical measures of toxicity

| | |
|----------------------------|--|
| (a) acute toxicity; | |
| Oral | Category 4 |
| Dermal | Based on available data, the classification criteria are not met |
| Inhalation | Based on available data, the classification criteria are not met |

Toxicology data for the components

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-------------------|------------------------|-----------------------|---|
| 2-Methyl-2-butene | 700-2600 mg/kg (Rat) | >2000 mg/kg (Rat) | LC50 > 61000 ppm (Rat) 4 h |
| Tetrahydrofuran | 1650 mg/kg (Rat) | > 2000 mg/kg (Rabbit) | 180 mg/L (Rat) 1 h 53.9 mg/L (Rat) 4 h |

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

| | |
|--------------------|-------------------|
| Respiratory | No data available |
| Skin | No data available |

| Component | Test method | Test species | Study result |
|------------------------------------|---|--------------|-----------------|
| Tetrahydrofuran 109-99-9 (86) | Local Lymph Node Assay OECD Test Guideline 429 | mouse | non-sensitising |

(e) germ cell mutagenicity; Category 2

| Component | Test method | Test species | Study result |
|------------------------------------|---|-----------------------|--------------|
| Tetrahydrofuran 109-99-9 (86) | OECD Test Guideline 476 Gene cell mutation | in vivo Mammalian | negative |
| | OECD Test Guideline 473 Chromosomal aberration assay | in vitro Mammalian | negative |

Mutagenic effects have occurred in experimental animals

(f) carcinogenicity; Category 2

Limited evidence of a carcinogenic effect The table below indicates whether each agency has listed any ingredient as a carcinogen

| Component | New Zealand | Australia | New South Wales | Western Australia | IARC | EU | UK | Germany |
|-----------------|----------------------|-----------|-----------------|-------------------|----------|----|----|---------|
| Tetrahydrofuran | Suspected carcinogen | | | | Group 2B | | | |

(g) reproductive toxicity; No data available

| Component | Test method | Test species / Duration | Study result |
|------------------------------------|-------------------------|-------------------------|-------------------|
| Tetrahydrofuran 109-99-9 (86) | OECD Test Guideline 416 | Rat 2 Generation | NOAEL = 3,000 ppm |

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system
Central nervous system (CNS)

(i) STOT-repeated exposure; No data available

Target Organs No information available.

(j) aspiration hazard; Category 1

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

Symptoms / effects, both acute and delayed

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Causes central nervous system depression.

Section 12 - Ecological Information

Ecotoxicity

Aquatic ecotoxicity Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains. Do not flush into surface water or sanitary sewer system. The product contains following substances which are hazardous for the environment. Contains a substance which is: Toxic to aquatic organisms.

| Component | Freshwater Fish | Water Flea | Freshwater Algae | Microtox |
|-------------------|--|--|------------------|----------|
| 2-Methyl-2-butene | LC50: = 4.99 mg/L, 96h semi-static (Oncorhynchus mykiss) | EC50: = 3 mg/L, 48h (Daphnia magna) | | |
| Tetrahydrofuran | 2160 mg/l LC50 = 96 h Pimephales promelas Leuciscus idus: LC50: 2820 mg/L/48h | EC50 48 h 3485 mg/l EC50: >10000 mg/L/24h | | |

Terrestrial ecotoxicity There is no data for this product

Persistence and Degradability No information available

Persistence Persistence is unlikely.

Degradation in sewage treatment plant Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative Potential Bioaccumulation is unlikely

| Component | log Pow | Bioconcentration factor (BCF) |
|-----------------|---------|-------------------------------|
| Tetrahydrofuran | 0.45 | No data available |

Mobility No information available.

Other adverse effects

Endocrine Disruptor Information

| Component | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-----------------|--|--|---|
| Tetrahydrofuran | Group III Chemical | | |

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential

This product does not contain any known or suspected substance

Section 13 - Disposal Considerations

Waste treatment methods

Waste from Residues/Unused Products

Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations.

Contaminated Packaging

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

Other Information

Disposal agencies or waste contractors must comply with the New Zealand Hazardous Substances (Disposal) Regulations. Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not let this chemical enter the environment. Do not empty into drains.

Section 14 - Transport Information

| Component | Hazchem Code |
|--------------------------------------|--------------|
| 2-Methyl-2-butene 513-35-9 (14) | 3YE |
| Tetrahydrofuran 109-99-9 (86) | 2YE |

NZS 5433:2020

| | |
|-------------------------|------------------------------------|
| UN-No | UN1993 |
| Proper Shipping Name | Flammable liquid, n.o.s. |
| Technical Shipping Name | Tetrahydrofuran, 2-Methyl-2-butene |
| Hazard Class | 3 |
| Packing Group | II |

IATA

| | |
|-------------------------|------------------------------------|
| UN-No | UN1993 |
| Proper Shipping Name | Flammable liquid, n.o.s. |
| Technical Shipping Name | Tetrahydrofuran, 2-Methyl-2-butene |
| Hazard Class | 3 |
| Packing Group | II |

IMDG/IMO

| | |
|-------------------------|------------------------------------|
| UN-No | UN1993 |
| Proper Shipping Name | Flammable liquid, n.o.s. |
| Technical Shipping Name | Tetrahydrofuran, 2-Methyl-2-butene |
| Hazard Class | 3 |
| Packing Group | II |

Environmental hazards No hazards identified

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable, packaged goods

Special Precautions

No special precautions required. Please refer to the applicable dangerous goods regulations for additional information.

Additional information

None known

Section 15 - Regulatory Information

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

National Regulations

There are no applicable tolerable exposure limits or environmental exposure limits according to the EPA Controls for Hazardous Substances

Certified handlers, tracking and controlled substance license requirements

Certified handlers are required for some substances. This includes substances requiring a controlled substance license, and most explosives, vertebrates toxic agents, and certain fumigants. Acutely toxic substances which are a Category 1 or 2, such as pesticides also require Certified handlers. Please check the Health and Safety at Work Act 2015 for further information. Tracking is required for some highly hazardous substances. These substances need to be under the control of an appropriately trained person or appropriately secured. Please check the Health and Safety at Work Act 2015 for further information.

Prohibition or notification/licensing requirements

Shown below are details of specific prohibition/notifications or licencing requirements when they apply.

| Component | New Zealand |
|-----------------|----------------------|
| Tetrahydrofuran | Suspected carcinogen |

International Regulations**Ozone Depletion Potential**

This product does not contain any known or suspected substance

Persistent Organic Pollutant

This product does not contain any known or suspected substance

Rotterdam Convention (PIC)

Not applicable

Authorisation/Restrictions according to EU REACH

| Component | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|-----------------|---|---|---|
| Tetrahydrofuran | - | Use restricted. See item 75. (see link for restriction details) | - |

<https://echa.europa.eu/substances-restricted-under-reach>

International Inventories

New Zealand (NZIoC), Australia (AICS), Europe (EINECS/ELINCS/NLP), Korea (KECL), China (IECSC), Taiwan (TCSI), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component | CAS No | NZIoC | AICS | EINECS | ELINCS | NLP | KECL | IECSC | TCSI |
|-------------------|----------|-------|------|-----------|--------|-----|----------|-------|------|
| 2-Methyl-2-butene | 513-35-9 | X | X | 208-156-3 | - | - | KE-23587 | X | X |
| Tetrahydrofuran | 109-99-9 | X | X | 203-726-8 | - | - | KE-33454 | X | X |

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | PICCS | ISHL | ENCS |
|-------------------|----------|------|---|-----|------|-------|------|------|
| 2-Methyl-2-butene | 513-35-9 | X | ACTIVE | X | - | X | X | X |
| Tetrahydrofuran | 109-99-9 | X | ACTIVE | X | - | X | X | X |

Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

Section 16 - Other Information

This safety data sheet complies with the requirements of the EPA Hazardous Substances (Hazard Classification) Notice 2020 and WorkSafe New Zealand Regulations

Legend

NZIoC - New Zealand Inventory of Chemicals
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

IECSC - Chinese Inventory of Existing Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

NZS 5433:2020 - Transport of Dangerous Goods on Land

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from Ships

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

WEL - Workplace Exposure Limit

DNEL - Derived No Effect Level

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

VOC - (Volatile Organic Compound)

AICS - Australian Inventory of Chemical Substances

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

ENCS - Japanese Existing and New Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

CAS - Chemical Abstracts Service

ACGIH - American Conference of Governmental Industrial Hygienists

PNEC - Predicted No Effect Concentration

OECD - Organisation for Economic Co-operation and Development

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

ADG - Australian Code for the Transport of Dangerous Goods by Road and Rail

LC50 - Lethal Concentration 50%

ATE - Acute Toxicity Estimate

RPE - Respiratory Protective Equipment

NOEC - No Observed Effect Concentration

BCF - Bioconcentration factor

PBT - Persistent, Bioaccumulative, Toxic

Key literature references and sources for data

HSNO classifications provided in the New Zealand Chemical Classification Information Database (CCID).

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

EPA Guide to classifying hazardous substances in New Zealand

EPA - Assigning a product to an existing HSNO approval guide

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards On basis of test data

Health Hazards Calculation method

Environmental hazards Calculation method

Training Advice

Chemical incident response training.

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Revision Date 10-Mar-2023

Revision Summary Not applicable

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet