

Revision No.: 10, Revision Date: July 2026

SECTION 1 – Identification of the Material and Supplier

Product Name	99.9% METHOXYFLURANE, PENTHROX®, PENTHROP®, PENTHROMAX®
Product Code(s)	ME-759044, ME-MS260, ME-MEOFBULK, ME-MEOFBULK-CF
Recommended Use	Inhalation analgesic - Prescription medicine / medicinal product for pain relief. For clinical use, refer to Product Information
Other Names	2,2-dichloro-1,1-difluoromethoxyethane; 2,2-dichloro-1,1- difluoroethylmethyl ether; Ethane, 2,2-dichloro-1,1-difluoro-1- methoxy; Ether, 2,2-dichloro-1,1-difluoroethyl methyl
Company Name	Medical Developments International Ltd. ABN 14 106 340 667
Address	4 Caribbean Drive, Scoresby, Victoria, Australia, 3179
Website	www.medicaldev.com
Phone	+61 (3) 9547 1888
Emergency Contact	13 11 26 Poisons Information Centre - 24 hours

SECTION 2 – Hazards Identification

Hazard Classification	HAZARDOUS CHEMICAL, NON-DANGEROUS GOODS (Classified as Hazardous according to the criteria of Safe Work Australia)
Signal Word	Warning
Hazard Statements	Flammable liquid and vapour Causes skin irritation Causes serious eye irritation May cause respiratory irritation
Precautionary Statements	Prevention Avoid breathing vapours unless dispensed via the Pentrox Inhaler under the supervision of medical personnel. Wear protective gloves. Wash hands after handling the product. Wear eye protection. Use in a well-ventilated area or outdoors. Keep away from open flames and other ignition sources. No smoking. Keep container tightly closed.

SAFETY DATA SHEET

Response

If inhaled: Remove person to fresh air and keep in comfortable position for breathing.

If on skin or hair, remove contaminated clothing. Rinse skin with water.

If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

If eye irritation persists, get medical attention.

The vapours may ignite from exposure to heat and ignition sources. It will not continue to burn; however, the initial ignition may cause burns that should be treated symptomatically.

Storage

Store in a well-ventilated place not above 30°C. Keep container tightly closed.

Disposal:

Dispose of contents/container via a local approved waste disposal facility.

SECTION 3 – Composition/Information on Ingredients

Compound / Ingredient	CAS Number	Proportion
Methoxyflurane	76-38-0	>99.9%
Butylated hydroxytoluene (BHT)	128-37-0	0.01%

SECTION 4 – First Aid Measures

Swallowed	DO NOT INDUCE VOMITING. Rinse mouth with water and then give water to drink. Seek immediate medical assistance.
Eye	Immediately irrigate with copious amounts of water for at least 15 minutes. Eyelids to be held open. In all cases of eye contamination, it is a sensible precaution to seek medical attention.
Skin	Wash contaminated skin with plenty of soap and water. Remove contaminated clothing and wash before re-use. If irritation occurs, seek medical attention.
Inhaled	Fresh air, rest. Refer for medical attention.
First Aid Facilities	Eye wash and normal washroom facilities.
Advice to Doctor	Treat symptomatically.

SECTION 5 – Fire Fighting Measures

Suitable Extinguishing Media Not applicable.

Hazards from Combustion Carbon Monoxide, Carbon Dioxide, Hydrogen Chloride, Hydrogen Fluoride.

Precautions for fire fighters Product will not support combustion. If involved in a fire, decomposition products will contribute to overall decomposition products of other materials. Wear self-contained breathing apparatus.

SECTION 6 – Accidental Release Measures

Emergency Procedures Alert all nearby personnel of potential hazard and evacuate the affected area.
Ensure adequate ventilation before entering affected area. Wear protective equipment and clothing. Keep unprotected people away from affected areas.

Environmental Precautions Do not allow liquid material to be released to the environment.

Methods and Materials Absorb with liquid-binding material (sand, absorbent pads, sawdust, vermiculite).

Contamination and Clean up Procedures For **minor spills** absorb the product using paper towels and dispose with device and containers in sealed plastic bags.
For **large spills** wear an air purifying respirator with a Type A Organic Vapour filter or self-contained breathing apparatus. Wear protective equipment and clothing. Dispose of all contaminated material according to local waste legislations.

SECTION 7 – Handling and Storage

Precautions for safe handling Avoid contact with skin and eyes. Avoid unintentional inhalation of vapour or mist. See section 2 for precautions.

Storage Conditions Store in a tightly closed container. Avoid direct contact with air or light. Keep separated from incompatible substances. Store in a well-ventilated area away from foodstuff. Keep bulk containers closed at all times - check regularly for leaks.

This product is a Prescription Only Medicine (Schedule 4). Store in accordance with local regulations & standards.

SECTION 8 – Exposure Controls/Personal Protection

Workplace Exposure A workplace exposure limit has not been established for methoxyflurane by Safe Work Australia. Human clinical and toxicity data have been independently reviewed and used to derive a Maximum Exposure Limit (MEL) 8-hour time-weighted average (TWA) of 15 ppm.

Engineering Controls DO NOT enter confined areas where vapour may have collected. Use in well-ventilated areas. Where ventilation is inadequate, local exhaust ventilation should be used. Vapour is heavier than air - prevent concentration in hollows or sumps. Keep containers closed when not in use.

Personal Protective Equipment RESPIRATOR TYPE: Where ventilation is inadequate, the use of an Air Purifying Respirator with a Type A Organic Vapour filter or a self-contained breathing apparatus complying with AS/NZS 1715 and AS/NZS 1716 is recommended.

EYE PROTECTION: Safety glasses or goggles.

GLOVE TYPE: PVA gloves.

CLOTHING: Overalls or similar protective clothing.

SECTION 9 – Physical and Chemical Properties

Appearance	Clear, colourless liquid
Odour	Characteristic odour
Odour threshold	0.2 ppm
pH	Not applicable
Vapour Pressure	2.66 kPa @ 17.7°C
Vapour Density (absolute)	7.36 g/L @ 37°C
Boiling Point	104.6°C
Melting Point	-35°C
Solubility in Water	<1 mg/L @ 19°C
Specific Gravity	1.420 to 1.425 g/ml @ 25°C (water = 1)
Flash Point	63°C (Open Cup method) 38°C (Closed Cup method)
Combustibility Rate	Does not sustain combustion @75°C for 30 sec. Refer Manual of Tests and Criteria, Part III, sub-section 32.5.2
Flamm. Limit LEL	7%
Flamm. Limit UEL	Not Determined
Decomposition Temp.	Not Determined
Volatile Component	99.9%
Solubility in Organic	Soluble in acetone, alcohol, chloroform, ether, acetonitrile, oils.
Stability	Stable under normal conditions, may be sensitive to prolonged exposure to light
Haz. Polymerization	Will not occur
Materials to Avoid	Oxidising agents and powdered metals
Formula	C ₃ H ₄ OCl ₂ F ₂
Molecular Weight	164.97

SECTION 10 – Stability and Reactivity

Chemical Stability	Stable at normal temperatures and pressures.
Conditions to avoid	Avoid heat, as well as flames, sparks and other sources of ignition. Sealed containers may rupture if exposed to high levels of heat.
Incompatible materials	Oxidizing materials. Finely powdered metals.
Hazardous decomposition products	Thermal decomposition products: Halogenated compounds and oxides of carbon that are only relevant if the product is involved in a fire. It will not sustain combustion; therefore, minimal decomposition products will be created from its initial ignition.
Hazardous reactions	Will not polymerize.

SECTION 11 – Toxicological Information

Acute - Swallowed	The liquid may be discomforting to the gastrointestinal tract and may cause nausea and vomiting.								
Acute - Eye	The liquid is irritating to the eyes and may cause pain and redness.								
Acute - Skin	Prolonged or repeated skin contact with the liquid may cause irritation.								
Acute - Inhaled	The vapour may be irritating to the upper respiratory tract. Exposure to low vapour concentrations can cause headaches and nausea. (High vapour concentrations, such as when used as an anaesthetic, have a depressant action on the central nervous system producing loss of consciousness.)								
Chronic	Chronic inhalation of methoxyflurane in high doses may cause liver and kidney damage. Fluoride-induced nephrotoxicity (kidney damage) is dose-dependent, requiring serum fluoride levels exceeding 50 µmol per liter, a threshold established in high-dose anaesthetic use. It has been reported that volatile agents may increase the risk of spontaneous abortion. To our knowledge there have been no reported cases of this occurring when methoxyflurane is used as an analgesic. Exposure to any volatile agent during early pregnancy should be limited or avoided by clinical staff administering the product, as with many medications as a precaution. The presence of other drugs or pre-existing medical conditions may increase the effects of methoxyflurane on the renal system, but only when used in anaesthetic quantities.								
Toxicology	<table> <tr> <td>Oral (rat):</td><td>LD50 3600 mg/kg</td></tr> <tr> <td>Inhalation (rat):</td><td>LC50 33,500 mg/m³/4H</td></tr> <tr> <td>Inhalation (human):</td><td>TCLo 3,500 ppm/1H</td></tr> <tr> <td>Eye (rabbit):</td><td>100 mg (moderate irritation)</td></tr> </table>	Oral (rat):	LD50 3600 mg/kg	Inhalation (rat):	LC50 33,500 mg/m ³ /4H	Inhalation (human):	TCLo 3,500 ppm/1H	Eye (rabbit):	100 mg (moderate irritation)
Oral (rat):	LD50 3600 mg/kg								
Inhalation (rat):	LC50 33,500 mg/m ³ /4H								
Inhalation (human):	TCLo 3,500 ppm/1H								
Eye (rabbit):	100 mg (moderate irritation)								

SECTION 12 – Ecological Information

Ecotoxicity	No data available. Do not allow the product to enter drains or sewers
Persistence & Degradability	No data available
Mobility	No data available

SECTION 13 – Disposal Considerations

Dispose of product in accordance with all applicable local and federal regulations. May be subjected to specific disposal regulations.

SECTION 14 – Transport Information

UN Number	IATA-DGR: Non dangerous goods IMDG: Non dangerous goods ADR/RID: Non dangerous goods
UN proper shipping name	IATA-DGR: Non dangerous goods IMDG: Non dangerous goods ADR/RID: Non dangerous goods
Class and Subsidiary Risk	IATA-DGR: Non dangerous goods IMDG: Non dangerous goods ADR/RID: Non dangerous goods
Packaging Group	IATA-DGR: Non dangerous goods IMDG: Non dangerous goods ADR/RID: Non dangerous goods
Special Precautions for user	This product is a Prescription Only Medicine and must be stored, maintained and used in accordance with both local & federal regulations and guidance materials provided by health authorities.
Hazchem Code	Not applicable
Other Information	Methoxyflurane is not a dangerous goods or mixture according to Australian Dangerous Goods Code (Edition 7.9, July 2024 – section 2.3.1.3 (a) and the IATA Dangerous Goods Regulations (67 th Edition, January 2026 – section 3.3.1.3). Liquid meeting the definition of these codes with a flash point of more than 35°C which do not sustain combustion when tested to <i>Manual of Tests and Criteria, Part III, sub-section 32.5.2</i> ; need not be considered as flammable liquids for the purpose of this code.

SECTION 15 – Regulatory Information

Regulatory Status of methoxyflurane under relevant Australian health, safety and environmental legislation:

(a) SUSMP – methoxyflurane is Schedule 4 (Prescription Only Medicine)

(b) AICS – listed

This product is classified as Hazardous according to the criteria of Safe Work Australia

Additional information:

CERCLA/SARA Hazardous Substances: Not applicable

CERCLA (Superfund) reportable quantity: None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard Yes

Delayed Hazard Yes

Fire Hazard Yes

Section 311 hazardous chemical Excluded

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Chemical Agency (ECHA)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*"Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

Note: As methoxyflurane is a therapeutic drug, many jurisdictions' chemical control laws relating to industrial chemicals do not apply.

SECTION 16 – Other Information

Contact Poisons information Centre (24 hours) **Tel: 13 11 26**

IMPORTANT NOTE:

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...End of SDS...