

FC13-7100

Methyl Nonafluoroisobutyl Ether

Revised 19-Mar-2023

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Methyl nonafluoroisobutyl ether
Catalog Number	FC13-7100
CAS Number	163702-08-7
Supplier	Fluoryx Labs 3650 Research Way, #22 Carson City, NV 89706 USA
Emergency call (VelocityEHS):	+01-813-248-0585 (International) +1-800-255-3924 (USA)

2. HAZARDS INFORMATION

Emergency Overview

OSHA Hazards	No known OSHA hazards
GHS Classification	None
GHS Label elements, including precautionary statements	
Pictogram	None
Signal word	None
Hazard statement(s)	None
Precautionary statement(s)	None

Hazards not otherwise classified (HNOC) or not covered by GHS

Inhalation of decomposition products from overheating may cause lung irritation or shortness of breath.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Synonyms	Methyl nonafluoroisobutyl ether 1-Methoxy-1,1,2,3,3,3-hexafluoro-2-(trifluoromethyl)propane Propane, 2-(methoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoro- 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxybutane; 1,1,1,2,3,3-hexafluoro-3-methoxy-2-(trifluoromethyl)propane Methyl perfluoroisobutyl ether Perfluoroisobutyl methyl ether Nonafluoromethoxybutane HFE-7100
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Novec-7100

Chemical formulaCH₃OCF₂CF(CF₃)₂
C₅H₃F₉O**Molecular weight**

250.06 g/mol

CAS number

163702-08-7

EC number

422-270-2

TSCA status

Listed

Components

Material	Classification	Concentration
Methyl nonafluoroisobutyl ether	None	≤ 100%

4. FIRST AID MEASURES

If inhaled	No need for first aid is anticipated.
In case of skin contact	No need for first aid is anticipated.
In case of eye contact	No need for first aid is anticipated.
If swallowed	No need for first aid is anticipated.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	Use a firefighting agent suitable for the surrounding fire.
Special protective equipment for firefighters	When firefighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, tunic and trousers (leggings), bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.
Hazardous combustion products	Exposure to extreme heat can give rise to thermal decomposition to carbon oxides, hydrogen fluoride.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Ventilate the area with fresh air. Observe precautions from other sections.
Environmental precautions	Do not let product enter drains or the environment.
Methods for cleaning up	Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible in

accordance with applicable
local/regional/national/international regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Do not breathe thermal decomposition products. For industrial/occupational use only. Not for consumer sale or use. Store work clothes separately from other clothing, food and tobacco products. Avoid release to the environment. Avoid contact with oxidizing agents (e.g. chlorine, chromic acid etc.) No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of hazardous decomposition products.

Conditions for Safe Storage

Store away from acids. Store away from strong bases. Store away from oxidizing agents.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Occupational exposure limits

TWA 750 ppm
TWA: Time-Weighted-Average
Agency: AIHA (American Industrial Hygiene Association)

Engineering controls

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

Personal protective equipment

Respiratory protection

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.

Skin/hand protection

Chemical protective gloves are not required under normal use conditions. However, when the product is subjected to extreme heat, HF may be formed. For those cases, neoprene gloves and apron are recommended.

Eye protection

Not required.

Thermal hazards

Wear heat insulating gloves when handling hot material to prevent thermal burns.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form

Liquid

Color

Colorless, clear

Safety Data

pH	Not applicable
Melting Point/Freezing Point	-135 °C (approximate)
Boiling Point	61 °C
Flash Point	None
Ignition Temperature	No data available
Auto-ignition Temperature	405 °C (ASTM E659-84 Method)
Flammable Limits (LEL)	None detected
Flammable Limits (UEL)	None detected
Thermal Decomposition Temperature	Not applicable
Vapor Pressure	202 mmHg @ 25 °C
Density	1.5 g/mL
Water Solubility	< 12 ppm
Partition Coefficient (<i>n</i> -octanol/water)	3.9 @ 30 °C
Relative Vapor Density (Air = 1)	8.6
Odor	Slight ether
Odor Threshold	No data available
Evaporation Rate	49 (BUOAC = 1)
Refractive index	No data available
Viscosity	0.6 centipoise @ 23 °C
Percent volatile	100%

10. STABILITY AND REACTIVITY

Reactivity	This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.
Chemical stability	Stable.
Possibility of hazardous reactions	Hazardous polymerization will not occur.
Conditions to avoid	None known.
Incompatible materials	Strong acids, strong bases, strong oxidizing agents
Hazardous decomposition products	Carbon monoxide, carbon dioxide, hydrogen fluoride, perfluoroisobutylene (PFIB), toxic vapor/gas/particulates - at elevated temperatures/extreme conditions of heat.

Refer to section 5.2 for hazardous decomposition products during combustion.

If the product is exposed to extreme condition of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride and perfluoroisobutylene can occur.

11. TOXICOLOGICAL INFORMATION

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:	No health effects are expected.
Skin Contact:	Contact with the skin during product use is not expected to result in significant irritation.
Eye Contact:	Contact with the eyes during product use is not expected to result in significant irritation.

Ingestion:

No known health effects.

Acute Toxicity

Route	Species	Value
Dermal		LD50 estimated to be > 5,000 mg/kg
Inhalation-Vapor (4 hours)	Rat	LC50 > 1000 mg/l
Ingestion	Rat	LD50 > 5,000 mg/kg

Skin Corrosion/Irritation

Species	Value
Rabbit	No significant irritation

Serious Eye Damage/Irritation

Species	Value
Rabbit	No significant irritation

Skin Sensitization

Species	Value
Guinea pig	Not classified

Respiratory Sensitization For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Route	Value
In Vitro	Not mutagenic
In Vivo	Not mutagenic

Carcinogenicity For the component/components, either no data are currently available or the data are not sufficient for classification.

Reproductive Toxicity**Reproductive and/or Developmental Effects**

Route	Value	Species	Test Result	Exposure Duration
Inhalation	Not classified for female or male reproduction	Rat	NOAEL 129mg/L	1 generation
Inhalation	Not classified for development	Rat	NOAEL 307 mg/l	During gestation

Target Organ(s)**Specific Target Organ Toxicity - single exposure**

Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Inhalation	Cardiac sensitization	Not classified	Dog	NOAEL 913 mg/l	10 minutes
Inhalation	Nervous system	Not classified	Dog	NOAEL 913 mg/L	10 minutes

Specific Target Organ Toxicity - repeated exposure

Route	Target Organs(s)	Value	Species	Test Result	Exposure Duration
Inhalation	Liver	Not classified	Rat	NOAEL 155 mg/l	13 weeks
Inhalation	Bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 129 mg/l	11 weeks
Inhalation	Heart / skin / endocrine system / gastrointestinal tract / hematopoietic system / immune system / muscles / nervous system / eyes / kidney and/or bladder / respiratory system	Not classified	Rat	NOAEL 155 mg/L	13 weeks
Ingestion	Endocrine system / liver / heart / hematopoietic system / immune system / nervous system / eyes / kidney and/or bladder / respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days

Aspiration Hazard

For the component/components, either no data are currently available or the data are not sufficient for classification.

Synergistic Effects

No data available

Additional Information

No data available

12. ECOLOGICAL INFORMATION

Toxicity

No data available

Persistence and Degradability

No data available

Bioaccumulative Potential

No data available

Mobility in Soil

No data available

PBT and vPvB Assessment

No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Product

Dispose of contents/container in accordance with the local/regional/national/international regulations. Prior to disposal, consult all applicable authorities and regulations to insure proper classification. Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include HF. Facility must be capable of handling halogenated materials. Empty and clean product containers may be disposed as nonhazardous waste. Consult your specific regulations and service providers to determine available options and requirements. Contact Fluorox Labs to return unused product.

EPA Hazardous Waste Number (RCRA)

Not regulated

14. TRANSPORTATION INFORMATION

DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

15. REGULATORY INFORMATION

Chemical Inventories

This material is in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

This material is in compliance with the new substance notification requirements of CEPA.

This material is in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

This material is in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

This material is in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information.

This material is in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

This material is in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

No SARA hazards.

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

No components are subject to the Pennsylvania Right to Know Act.

New Jersey Right To Know Components

No components are subject to the New Jersey Right to Know Act.

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information:

NFPA Hazard Classification

Health: 3
 Flammability: 1
 Instability: 0
 Special Hazards: None

HMIS Hazard Classification

Health: 0

Flammability: 1
Physical Hazard: 0
Personal Protection: X - See PPE section.

Not for drug, household, or other uses. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. Unless noted to the contrary, the technical information applies only to pure product.

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End of SDS