



Rev. 2-01

## Isoflurane, USP

### MATERIAL IDENTIFICATION

Manufacturer	Minrad Inc. P.O. Box 21170 Lehigh Valley, PA 18002-1170
Phone Numbers	(610) 974-9760
	FAX: (610) 861-4750
24 Hour Emergency	CHEMTREC 1-703-527-3887
Chemical Family	HALOGENATED ETHER
CAS Number	26675-46-7
Formula	$\text{CHF}_2\text{OCClHCF}_3$
Therapeutic Category	Inhalation Anesthetic Agent
NFPA Ratings	Health: 2 Flammability: 1 Reactivity: 1 Personal Protection rating to be supplied by user depending on use conditions.

### COMPONENTS

Material	CAS Number	Percent
1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROMETHYL ETHER	26675-46-7	100

### PHYSICAL DATA

Boiling Point	48.5°C (119.3°F) at 760 mm Hg.
Vapor Pressure	330 mm Hg at 25 deg C (77 deg F)
Vapor Density	6.3 (Air = 1.0)
% Volatiles	100 WT %
Evaporation Rate	Not Applicable
Water Solubility	Slightly soluble
pH	Neutral
Odor	Slight ethereal
Form	Liquid
Color	Colorless
Density	1.496 g/ml at 25 deg C (77 deg F) - Liquid
Appearance	Clear

**HAZARDOUS REACTIVITY**

Instability	Material is stable.
Incompatibility	Not applicable
Polymerization	Polymerization will not occur.
Decomposition	Decomposition products are hazardous. This compound when heated to decomposition emits toxic fumes.

**FIRE AND EXPLOSION DATA**

Flash Point	Will not burn
Flammable Limits in Air, % by Volume	LEL Not applicable UEL Not applicable
Autoignition	Not determined
Autodecomposition	Not determined
Fire and Explosion Hazards	Containers may rupture under fire conditions. Decomposition may occur.
Extinguishing Media	As appropriate for combustibles in area.
Special Fire Fighting Instructions	Use water spray to cool containers. Self-contained breathing apparatus (SCBA) is required if containers rupture and contents are spilled under fire conditions.

**HEALTH HAZARD INFORMATION**

PRINCIPLE HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Overexposure, and Medical Conditions Aggravated by Exposure)

Inhalation of high concentrations of vapor is harmful and may cause headaches, drowsiness, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Product causes mild eye, nose, and throat irritation. Product is a potent respiratory depressant and can impair cardiac performance.

**ANIMAL DATA:**

LD50:	4770	mg/Kg oral-rat;
LC50:	15300	ppm/3H inhalation-rat;
LD50:	4280	g/Kg intraperitoneal-rat;
LD50:	5080	g/Kg oral-mouse;
LC50:	16800	ppm/3H inhalation-mouse;
LD50:	3030	mg/Kg intraperitoneal-mouse;

**HUMAN HEALTH EFFECTS:**

Overexposure by inhalation to the vapors may cause temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; or with gross overexposure (>20%), possibly temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Carcinogenicity % by Volume	Isoflurane has not been shown to be carcinogenic. Studies in mice have not shown evidence of tumorigenicity.
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<b>Exposure Limits</b>	
TLV (ACGIH)	None Established
PEL (OSHA)	None Established
<b>Safety Precautions</b>	Avoid breathing high concentrations of vapor. Provide adequate ventilation for storage, handling, and use, especially for enclosed or low spaces. Avoid contact of liquid with eyes and prolonged skin exposure. Do not allow product to contact open flame or electrical heating elements because dangerous decomposition products may form.

**FIRST AID**

<b>INHALATION:</b>	If high concentrations are inhaled, immediately remove to fresh air. Keep persons calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call physician. Transfer promptly to a medical facility.
<b>SKIN CONTACT:</b>	In case of contact, remove contaminated clothing, flush with water for 15 minutes. Get medical attention if irritation is present.
<b>EYE CONTACT:</b>	In case of contact, immediately flush eye with large amounts of tepid potable water for 15 minutes. Call a physician.
<b>INGESTION:</b>	If product has been swallowed and person is conscious, immediately administer large amounts of water and induce vomiting. Begin artificial respiration if breathing has stopped and CPR if heart action has stopped. Seek medical attention immediately.
<b>Notes to Physician</b>	Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be considered only as a last resort in life-threatening emergencies.

**PROTECTION INFORMATION**

<b>Generally Applicable Control Measures and Precautions</b>	Normal ventilation is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low places.
<b>Personal Protective Equipment</b>	Impervious gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. Under normal manufacturing conditions no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large spill occurs.

**DISPOSAL INFORMATION**

<b>Spill, Leak, or Release</b>	<p>NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.</p> <p>Dike spill. Prevent liquid from entering sewers, waterways or low areas. Restrict persons not wearing protective equipment from entering area until after clean up is complete.</p> <p>Ventilate area of spill or leak. Collect on absorbent material and transfer to steel drums for recovery/disposal. Comply with Federal, state and local regulations on reporting releases.</p>
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Water Disposal	Comply with Federal, state and local regulations in the disposal of waste.
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**SHIPPING INFORMATION**

Shipping Containers	100 ml Amber Glass Bottles 250 ml Amber Glass Bottles Stainless Steel DOT-5 Drums Isoflurane is not regulated as a hazardous material by DOT or IMO.
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**TITLE III HAZARD CLASSIFICATIONS**

Acute	Yes
Chronic	No
Fire	No
Reactivity	No
Pressure	No

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## Lists:

Extremely Hazardous Substance	No
CERCLA Hazardous Substance	No
Toxic Chemicals	No

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.