

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

- 1.1 Product Code:** 23989
Product Name: Isoflurane
Synonyms: 2-chloro-2-(difluoromethoxy)-1,1,1-trifluoro-ethane; (±)-Isoflurane;
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:**
Relevant identified uses: For research use only, not for human or veterinary use.
- 1.3 Details of the Supplier of the Safety Data Sheet:**
Company Name: Cayman Chemical Company
 1180 E. Ellsworth Rd.
 Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: Cayman Chemical Company +1 (734)971-3335
- 1.4 Emergency telephone number:**
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
 CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:**
Specific Target Organ Toxicity (single exposure), Category 3
Specific Target Organ Toxicity (repeated exposure), Category 2

2.2 Label Elements:



GHS Signal Word: **Warning**

GHS Hazard Phrases:

H336: May cause drowsiness or dizziness.

H373: May cause damage to {cardiovascular system, Central Nervous System} through prolonged or repeated exposure.

GHS Precaution Phrases:

P260: Do not breathe {dust/fume/gas/mist/vapors/spray}.

GHS Response Phrases:

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

P314: Get medical attention/advice if you feel unwell.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

- 2.3 Adverse Human Health** Material may be irritating to the mucous membranes and upper respiratory tract.
Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.
 May cause eye, skin, or respiratory system irritation.
 May cause damage to {cardiovascular system, Central Nervous System} through prolonged or repeated exposure.
 May cause drowsiness or dizziness.
 To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

CAS # / RTECS #	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	GHS Classification
26675-46-7 KN6799000	Isoflurane	100.0 %	247-897-7 NA	STOT (SE) 3: H335 H336 STOT (RE) 2: H373

Section 4. First Aid Measures

- 4.1 Description of First Aid Measures:**
- In Case of Inhalation:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
- In Case of Skin Contact:** Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
- In Case of Eye Contact:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.
- In Case of Ingestion:** Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

- 5.1 Suitable Extinguishing Media:** Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.
- Unsuitable Extinguishing Media:** A solid water stream may be inefficient.
- 5.2 Flammable Properties and Hazards:** No data available.
- Flash Pt:** No data.
- Explosive Limits:** LEL: No data. UEL: No data.
- Autoignition Pt:** No data.
- 5.3 Fire Fighting Instructions:** As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

- 6.1 Protective Precautions, Protective Equipment and Emergency Procedures:** Avoid raising and breathing dust, and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).
- 6.2 Environmental Precautions:** Take steps to avoid release into the environment, if safe to do so.
- 6.3 Methods and Material For Containment and Cleaning Up:** Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

- 7.1 Precautions To Be Taken in Handling:** Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.
- 7.2 Precautions To Be Taken in Storing:** Keep container tightly closed. Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

CAS #	Chemical Name	Jurisdiction	Recommended Exposure Limits	Notations
26675-46-7	Isoflurane	Britain EH40	TWA: 383 mg/m ³ (50 ppm) STEL: ()	

8.2 Exposure Controls:

8.2.1 Engineering Controls (Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Do not take internally.

Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.

Wash thoroughly after handling.

No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [] Gas [X] Liquid [] Solid

Appearance and Odor: An oil

pH: No data.

Melting Point: No data.

Boiling Point: No data.

Flash Pt: No data.

Evaporation Rate: No data.

Flammability (solid, gas): No data available.

Explosive Limits: LEL: No data. UEL: No data.

Vapor Pressure (vs. Air or mm Hg): No data.

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Solubility Notes: Soluble (slightly) in: chloroform; MeOH;

Octanol/Water Partition Coefficient: No data.

Autoignition Pt:	No data.		
Decomposition Temperature:	No data.		
Viscosity:	No data.		
9.2 Other Information			
Percent Volatile:	No data.		
Molecular Formula & Weight:	C3H2ClF5O	184.5	

Section 10. Stability and Reactivity

10.1 Reactivity:	No data available.		
10.2 Stability:	Unstable []	Stable [X]	
10.3 Stability Note(s):	Stable if stored in accordance with information listed on the product insert.		
Polymerization:	Will occur []	Will not occur [X]	
10.4 Conditions To Avoid:	No data available.		
10.5 Incompatibility - Materials To Avoid:	strong oxidizing agents		
10.6 Hazardous Decomposition or Byproducts:	carbon dioxide	carbon monoxide	hydrogen chloride gas hydrogen fluoride

Section 11. Toxicological Information

11.1 Information on Toxicological Effects:	The toxicological effects of this product have not been thoroughly studied. Isoflurane - Toxicity Data: Oral LDLO (man): 1071 uL/kg; Oral LD50 (rat): 4770 uL/kg; Intraperitoneal LD50 (rat): 4280 uL/kg; Oral LD50 (mouse): 5080 uL/kg; Intraperitoneal LD50 (mouse): 3030 uL/kg;		
Chronic Toxicological Effects:	Isoflurane - Investigated as a drug, mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. Isoflurane RTECS Number: KN6799000		

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
26675-46-7	Isoflurane	n.a.	n.a.	n.a.	n.a.

Section 12. Ecological Information

12.1 Toxicity:	Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.		
12.2 Persistence and Degradability:	No data available.		
12.3 Bioaccumulative Potential:	No data available.		
12.4 Mobility in Soil:	No data available.		
12.5 Results of PBT and vPvB assessment:	No data available.		
12.6 Other adverse effects:	No data available.		

