

SDS – SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: SEVOFLURANE (28523-86-6)

Synonyms: Fluoromethyl 2,2,2-trifluoro-1-(trifluoromethyl) ethyl ether

Chemical Formula: C₄H₃F₇O

Recommended Use of the Chemical: Used to produce anesthesia

Manufacturer / Supplier: HALOCARBON PRODUCTS CORPORATION

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2. HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture:

Skin irritation (Category 2)

Eye irritation (Category 2A)

Specific target organ toxicity - single exposure (Category 3), Central nervous system

Risk Phrases:

R36/38: Irritating to eyes and skin.

R67: Vapors may cause drowsiness and dizziness.

Label Elements:

Signal Word: Warning



Hazard Statements:

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H336: May cause drowsiness or dizziness.

Precautionary Statements:

P261: Avoid breathing vapors.

P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

P302+352: IF ON SKIN: Wash with soap and water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

3. COMPOSITION INFORMATION / INGREDIENTS

Ingredient	CAS Number	EC Number	Percent
Sevoflurane	28523-86-6	Not applicable	90-100%

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Seek immediate medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention.

Skin Contact: Wash affected area immediately for at least 15 minutes while removing contaminated clothing and shoes. Seek medical help if needed.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Remove contact lenses, if present and easy to do. Seek medical help if needed.

5. FIRE-FIGHTING MEASURES

Fire: Not flammable.

Explosion: Not combustible.

Fire Extinguishing Media: Use methods appropriate for surroundings.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Prevent contact with skin or eyes. Thermal decomposition products may be corrosive and toxic.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Avoid breathing vapors, mist or gas. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions and Methods and Materials for Containment and Cleaning Up: Use self-contained breathing apparatus and shut off leak at source, if it is safe to do so. Contain and recover liquid when possible. Do not let product enter drains. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth) and place in a chemical waste container. Do not flush to sewer! Clean surface thoroughly to remove residual contamination.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Wear personal protective equipment. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe vapors or spray mist. Avoid contact with skin and eyes.

Conditions for Safe Storage, Including Any Incompatibilities: Protect against physical damage. Keep container tightly closed in a dry and well-ventilated place. Keep out of reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

No OSHA or ACGIH exposure limits have been established. Safe work practices should always be followed. NIOSH – 2 ppm / 1 hr: Ceiling limit is the recommended exposure to waste anesthetic gas. Internal – 50 ppm TWA: Same TWA recommended by ACGIH for Halothane, a similar inhalation anesthetic.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): Under conditions of heavy exposure, respiratory protection may be needed. Self contained breathing apparatus for emergency use.

Skin Protection: Wear appropriate chemical resistant gloves.

Eye and Face Protection: Use chemical safety goggles or goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear liquid

Odor: Non-pungent

Odor Threshold: Not determined

pH: No data available

Melting Point: No data available

Boiling Point / Boiling Range: 58C (136F) at 1,013 hPa (760 mmHg)

Flash Point: No data available

Evaporation Rate (BuAC=1): No data available

Flammability: Not flammable

Upper / Lower Flammability or Explosive Limits: No data available

Vapor Pressure (mm Hg): 245 mm Hg at 30C (86F)

Vapor Density (Air=1): 6.94

Relative Density: 1.52

Solubility: 0.01% v/v

Partition Coefficient: n-octanol / water: No data available

Auto-ignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: No data available

10. STABILITY AND REACTIVITY

Reactivity and / or Chemical Stability: Stable under ordinary conditions of use and storage.

Possibility of Hazardous Reactions and Conditions to Avoid: See Incompatible Materials. Protect from physical damage.

Incompatible Materials: Avoid contact with alkaline earth metals and strong bases.

Hazardous Decomposition Products: Thermal decomposition products may be toxic and corrosive. Include fumes of Carbon Dioxide, Carbon Monoxide, Hydrogen Fluoride and Fluorophosgene.

11. TOXICOLOGICAL INFORMATION

Emergency Overview: Sevoflurane is used to produce anesthesia. Respiratory depression, hypotension, bradycardia, shivering, nausea and headache may accompany anesthesia. Target organs include the central nervous system, respiratory system, cardiovascular system and possibly the fetus.

Potential Health Effects:

Inhalation: Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Ingestion: May be harmful if swallowed.

Skin Contact: May be harmful if absorbed through skin. Causes skin irritation.

Eye Contact: Causes eye irritation.

Chronic Exposure: No data available.

Aggravation of Pre-existing Conditions: Patients sensitive to other halogenated anesthetics. History of or predisposition to malignant hyperthermia. Impaired liver or kidney function. Asthma. Coronary artery disease. Muscular dystrophy. Convulsive disorders. Myasthenia gravis. Head injury or increased intracranial pressure, tumors, or lesions. Cardiovascular or respiratory disorder.

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System): Narcotic effects.

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System): No data available.

Germ Cell Mutagenicity: Oral, rat, micronucleus test, oral, dosage 4mmol/kg.

Reproductive Toxicity: Sevoflurane has been shown to have reproductive effects in rats. Large concentrations of sevoflurane have produced slight elevations in serum enzymes and produced maternal effects, fetal effect (decreased weight gain) and decreased reproductive performance in animals. (Only selected data from RTECS is presented here. See RTECS#K00737000 for full data.)

Aspiration Hazard: No data available.

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	Known	Anticipated	IARC Category
Sevoflurane (28523-86-6)	No	No	None

Acute Toxicity:

Rat: Oral LD50: 10,800 mg/kg. Intraperitoneal LD50: 6300 mg/kg. Inhalation LC50: 28,800 ppm, 3 hrs

Mouse: Oral LD50: 18,200 mg/kg. Intraperitoneal LD50: 10,500 mg/kg. Inhalation LC50: 28,300 ppm, 3 hrs.

Monkey: Inhalation LC50: 68,000 ppm, 3 hrs

12. ECOLOGICAL INFORMATION

Ecotoxicity: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Results of PBT and vPvB assessment: No data available.

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS

Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Anesthetics are classified as Dangerous Goods / Hazardous Materials when shipped by air. US and international shipping regulations require that any person(s) shipping Dangerous Goods be properly trained and certified. Shipping Dangerous Goods without meeting these requirements is a violation of US law and the shipper could be subject to fines and / or imprisonment. Anesthetics cannot be shipped by US Mail.

Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)
Not regulated

Maritime Transport IMDG/GGVSea
Not regulated

Air Transport ICAO-TI and IATA-DGR

UN Number: UN 3334

UN Proper Shipping Name: Aviation Regulated Liquid, N.O.S. Fluoromethyl 2,2,2-trifluoro-1-(trifluoromethyl) ethyl ether

Packing Group: III

Transport Hazard Class(es): 9

Transport in Bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable

Special Precautions for User: HMIS Labeling Information: HI, FO, RO, PB

15. REGULATORY INFORMATION

Chemical Inventory Status – Part 1

Ingredient	TSCA	EC	Japan	Australia
Sevoflurane (28523-86-6)	No	No	No	No

Chemical Inventory Status – Part 2

Ingredient	Korea	Canada		Phil.
		DSL	NDSL	
Sevoflurane (28523-86-6)	No	No	No	No

Federal, State & International Regulations - Part 1

Ingredient	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
Sevoflurane (28523-86-6)	No	No	No	No

Federal, State & International Regulations - Part 2

Ingredient	RCRA		TSCA
	CERCLA	261.33	8(d)
Sevoflurane (28523-86-6)	No	No	No

Chemical Weapons Convention: No	TSCA 12(b): No	CDTA: No
SARA 311/312: Acute: Yes	Chronic: Yes	Fire: No
Reactivity: No	Pure / Liquid	
	Pressure: No	

16. OTHER INFORMATION

Effective Date: 1/24/17 – Updated address

Previous Revisions: 09/08/11 – First Issue: 09/15/14 – Standardized for GHS / REACH

Disclaimer: Halocarbon believes the information given here to be correct. However, we cannot guarantee its accuracy or be responsible for loss or damage that result from the use of such information.