SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product Identifier

Material Name: Sevoflurane

Trade Name: SevoFlo®
Synonyms: 1,1,1,3,3,3-Hexafluoro-2-(fluoromethoxy) propane; Fluoromethyl-2,2,2-trifluoro-1-(trifluoromethyl) ethyl ether
Chemical Family: Not determined

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Intended Use: Veterinary product used as anesthetic agent

Details of the Supplier of the Safety Data Sheet

Zoetis Inc.
100 Campus Drive, P.O. Box 651
Florham Park, New Jersey 07932 (USA)
Rocky Mountain Poison and Drug Center Phone: 1-866-531-8896
Product Support/Technical Services Phone: 1-800-366-5288

Zoetis Belgium S.A.
Mercuriusstraat 20
1930 Zaventem
Belgium

Emergency telephone number:
CHEMTREC (24 hours): 1-800-424-9300

Emergency telephone number:
International CHEMTREC (24 hours): +1-703-527-3887

Contact E-Mail: VMIPSrecords@zoetis.com

2. HAZARDS IDENTIFICATION

Appearance: Clear, colorless liquid

Classification of the Substance or Mixture

GHS - Classification

Skin Corrosion/Irritation: Category 2
Serious Eye Damage/Eye Irritation: Category 2A
Specific target organ systemic toxicity (single exposure): Category 3
Acute aquatic toxicity: Category 3
Chronic aquatic toxicity: Category 3

EU Classification:

EU Indication of danger: Not determined

Label Elements

Signal Word: Warning
Hazard Statements: H336 - May cause drowsiness and dizziness
H319 - Causes serious eye irritation
H315 - Causes skin irritation
H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements:

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P264 - Wash hands thoroughly after handling
P273 - Avoid release to the environment
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P312 - Call a POISON CENTRE/doctor/physician if you feel unwell
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention
P302+ P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container in accordance with all local and national regulations

Other Hazards

Short Term: Anesthetic drug: may cause central nervous system and cardiovascular system effects . Breathing high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea, and loss of coordination. Continued inhalation may result in unconsciousness and death. Causes eye irritation . Signs and symptoms might include redness, swelling, blurred vision or pain. Causes skin irritation. Signs and symptoms might include skin rash, itching, redness or swelling.

Long Term: may have the potential to produce effects on the developing fetus.

Known Clinical Effects: The most frequently reported adverse reactions during maintenance anesthesia were hypotension, followed by tachypnea, muscle tenseness, excitation, apnea, muscle fasciculations and vomiting. In susceptible individuals, potent inhalation anesthetic agents, including sevoflurane, may trigger a skeletal muscle hypermetabolic state leading to high oxygen demand and the clinical syndrome known as malignant hyperthermia. The clinical syndrome is signaled by hypercapnia, and may include muscle rigidity, tachycardia, tachypnea, cyanosis, arrhythmias, and/or unstable blood pressure. Some of these nonspecific signs may also appear during light anesthesia: acute hypoxia, hypercapnia, and hypovolemia.

Australian Hazard Classification (NOHSC): Hazardous Substance. Non-Dangerous Goods.

Note: This document has been prepared in accordance with standards for workplace safety, which requires the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warning included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous

Ingredient	CAS Number	EU EINECS/ELINCS List	EU Classification	GHS Classification	%
Sevoflurane	28523-86-6	Not Listed	Not Listed	STOT SE 3 (H336) Eye Irrit. 2A (H319) Skin Irrit. 2 (H315) Aq. Acute 3 (H402) Aq. Chronic 3 (H412)	100

Additional Information: Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety.

For the full text of the R phrases and CLP/GHS abbreviations mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of First Aid Measures

Eye Contact: Flush with water while holding eyelids open for at least 15 minutes. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

Inhalation: Remove to fresh air and keep patient at rest. Seek medical attention immediately.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms and Effects of Exposure: For information on potential signs and symptoms of exposure, See Section 2 - Hazards Identification and/or Section 11 - Toxicological Information.

Medical Conditions Aggravated by Exposure: Individuals who have shown hypersensitivity to this material and individuals with heart conditions and impaired kidney and/or liver functions may be more susceptible to toxicity in cases of overexposure.

Indication of the Immediate Medical Attention and Special Treatment Needed

Notes to Physician: May reduce blood pressure. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing Media: Extinguish fires with CO2, extinguishing powder, foam, or water.

Special Hazards Arising from the Substance or Mixture

Hazardous Combustion Products: Combustion may produce hydrogen fluoride, other fluorinated products, oxides of carbon, and other irritating or toxic gases.

Fire / Explosion Hazards: Not flammable. Fine particles (such as mists) may fuel fires/explosions.

Advice for Fire-Fighters

During all fire fighting activities, wear appropriate protective equipment, including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Ensure adequate ventilation. Personnel must wear appropriate protective equipment (see Section 8). Prevent exposure by any route.

Environmental Precautions

Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.

Methods and Material for Containment and Cleaning Up

Measures for Cleaning / Collecting: Contain the source of spill if it is safe to do so. Collect spill with absorbent material. Clean spill area thoroughly. Prevent discharge to drains.

Additional Consideration for Large Spills: Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel. Provide adequate ventilation. Contain the source of the spill or leak and shut off all electrical equipment if it is safe to do so. Use absorbant material to wipe up spill and place in a sealed container for disposal. Clean spill area thoroughly. Prevent runoff from entering waterways or sewers. Prevent discharge to drains.

7. HANDLING AND STORAGE

Precautions for Safe Handling

When handling, use appropriate personal protective equipment (see Section 8). Use with adequate ventilation. Minimize generating airborne mists and vapors. Avoid open handling. Use local exhaust ventilation or perform work under fume hood/fume cupboard. Restrict access to work area. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Releases to the environment should be avoided.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions: Keep containers tightly closed in a cool, well-ventilated place . Store as directed by product packaging. Keep out of reach of children.

Incompatible Materials: Strong oxidizing agents, strong bases , Alkali metals

Specific end use(s): No data available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Refer to available public information for specific member state Occupational Exposure Limits.

Sevoflurane

Austria OEL - MAKs	10 ppm 80 mg/m^3
Czech Republic OEL - TWA	15 mg/m^3
Denmark OEL - TWA	5 ppm 42 mg/m^3
Finland OEL - TWA	10 ppm 83 mg/m^3
Latvia OEL - TWA	2 ppm 20 mg/m^3
Poland OEL - TWA	55 mg/m^3
Sweden OEL - TWAs	10 ppm 80 mg/m^3

Exposure Controls

Engineering Controls: Engineering controls should be used as the primary means to control exposures. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

Personal Protective Equipment: Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

Hands: Wear impervious gloves if skin contact is possible.

Eyes: Wear safety glasses or goggles if eye contact is possible.

Skin: Use protective clothing (uniforms, lab coats, disposable coveralls, etc.) in both production and laboratory areas.

Respiratory protection: Whenever air contamination (mist, vapor or odor) is generated, respiratory protection is recommended as a precaution to minimize exposure. If the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid	**Color:**	Clear, colorless
Odor:	Ethereal	**Odor Threshold:**	No data available.
Molecular Formula:	C4 H3 F7 O	**Molecular Weight:**	200.5

Solvent Solubility: Miscible: Ethanol Ether Chloroform Benzene
Water Solubility: Slightly Soluble: Water
pH: 7.0 - 7.5
Melting/Freezing Point (°C): No data available
Boiling Point (°C): 58.6C / 137.5F
Partition Coefficient: (Method, pH, Endpoint, Value)
Sevoflurane
Predicted Log P 1.75
Decomposition Temperature (°C): No data available.

Evaporation Rate (Gram/s): No data available
Vapor Pressure (kPa): 21 kPa @ 20C/68F; 157 mm Hg @ 20C/68F; 197 mm Hg @ 25C/77F
Vapor Density (g/ml): 6.94 Heavier than air
Relative Density: 1.525 g/cm3 (bulk density)
Viscosity: No data available

Flammablity:
Autoignition Temperature (Solid) (°C): No data available
Flammability (Solids): No data available
Flash Point (Liquid) (°C): Non-flammable
Upper Explosive Limits (Liquid) (% by Vol.): No data available
Lower Explosive Limits (Liquid) (% by Vol.): > 25%

10. STABILITY AND REACTIVITY

Reactivity: No data available
Chemical Stability: Stable under normal conditions of use.
Possibility of Hazardous Reactions
Oxidizing Properties: No data available
Conditions to Avoid: Avoid direct sunlight, conditions that might generate heat, and sources of ignition.
Incompatible Materials: Strong oxidizing agents, strong bases , Alkali metals
Hazardous Decomposition Products: Thermal decomposition products may include carbon monoxide, carbon dioxide and other toxic vapors. Thermal decomposition products may include fluorine and Hydrogen fluoride .

11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects
General Information: The information included in this section describes the potential hazards of the active ingredient. Toxicological properties have not been thoroughly investigated. Routes of exposure: inhalation , eye contact , skin contact

Acute Toxicity: (Species, Route, End Point, Dose)

Sevoflurane
Rat Inhalation LC50 28,800 ppm (3 hours)

11. TOXICOLOGICAL INFORMATION

Rat Oral LD50 10,800 mg/kg

Inhalation Acute Toxicity Based on components, inhalation may cause irritation, headache, drowsiness, dizziness, nausea, vomiting, diarrhea, dehydration, and symptoms of drunkenness. Breathing high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea, and loss of coordination. Continued inhalation may result in unconsciousness and death.

Irritation / Sensitization Comments: May cause eye irritation.
Skin Irritation / Sensitization May cause skin irritation.

Reproductive & Development Toxicity Comments: may have the potential to produce effects on the developing fetus.

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

Sevoflurane
Micronucleus Negative
Bacterial Mutagenicity (Ames) Negative
Forward Mutation Assay Mouse Negative
Chromosome Aberration Negative

Carcinogen Status: Not listed as a carcinogen by IARC, NTP or US OSHA.

12. ECOLOGICAL INFORMATION

Environmental Overview: Environmental properties have not been thoroughly investigated. May have harmful effects on the aquatic environment. Releases to the environment should be avoided.

Toxicity:

Aquatic Toxicity: (Species, Method, End Point, Duration, Result)

Sevoflurane
Pimephales promelas (Fathead Minnow) LC50 43 mg/L
Daphnia magna (Water Flea) EC50 48 Hours 48 mg/L
Pseudokirchneriella subcapitata (Green Alga) IC50 72 Hours > 100 mg/L

Persistence and Degradability:
Biodegradation: (Method, Inoculum, Biodeg Study, Result, Endpoint, Duration, Classification)
Sevoflurane Ready 4.4% After 28 Day(s)

Bio-accumulative Potential:

Sevoflurane
Predicted Log P 1.75

Mobility in Soil: No data available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

14. TRANSPORT INFORMATION

Please refer to the applicable dangerous goods regulations for additional information. Transport according to the requirements of the appropriate regulatory body.

IATA / ICAO
IATA UN / ID No: UN 3334
IATA Proper shipping name: Aviation regulated liquid, n.o.s. (sevoflurane)
IATA Hazard Class: 9
IATA Packing Group: III

IMDG IMDG
IMDG UN / ID No: Not regulated

ADR/RID
ADR / RID UN / ID No: Not regulated

DOT / ANTT:
DOT Proper shipping name: Not regulated

TDG (Canada):
TDG UN / ID No: Not regulated

15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

Canada - WHMIS: Classifications
WHMIS hazard class:
Class D, Division 2, Subdivision B
This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.

15. REGULATORY INFORMATION

Sevoflurane

CERCLA/SARA 313 Emission reporting	Not Listed
California Proposition 65	Not Listed
Standard for the Uniform Scheduling for Drugs and Poisons:	Schedule 4
EU EINECS/ELINCS List	Not Listed

16. OTHER INFORMATION

Text of R phrases and GHS Classification abbreviations mentioned in Section 3

Specific target organ toxicity, single exposure; Narcotic effects-Cat.3; H336 - May cause drowsiness and dizziness
Serious eye damage/eye irritation-Cat.2A; H319 - Causes serious eye irritation
Skin corrosion/irritation-Cat.2; H315 - Causes skin irritation
Hazardous to the aquatic environment, acute toxicity-Cat.3; H402 - Harmful to aquatic life
Hazardous to the aquatic environment, chronic toxicity-Cat.3; H412 - Harmful to aquatic life with long lasting effects

Data Sources: The data contained in this SDS may have been gathered from confidential internal sources, raw material suppliers, or from the published literature.

Reasons for Revision: New data sheet.

Prepared by: Toxicology and Hazard Communication
Zoetis Global Risk Management

Zoetis Inc. believes that the information contained in this Safety Data Sheet is accurate, and while it is provided in good faith, it is without warranty of any kind, expressed or implied. If data for a hazard are not included in this document there is no known information at this time.

End of Safety Data Sheet