SAFETY DATA SHEET

Section 1. Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier

Product Name: Sevoflurane

Chemical Name: 1,1,1,3,3,3-Hexafluoro-2-(fluoromethoxy) propane

Synonyms: Ultane; Sevorane; Sevoflurano; 1,1,1,3,3,3-Hexafluoro-2-(fluoromethoxy) propane; Fluoromethyl-2,2,2-trifluoro-1-(trifluoromethyl) ethyl ether

Trade name: Ultane

List Number: 4456

Drug Code Number: 74341; 98009

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use: General inhalation anaesthetic

1.3 Details of the supplier of the safety data sheet

Supplier: AbbVie Inc.
1 North Waukegan Road
North Chicago, IL 60064
USA
+1-847-932-7900

Manufacturer European: AbbVie Inc.
via Pontina, km 52
Campoverde - LT 04010
Italia

Customer Service Telephone: 1-800-255-5162 (US and Canada only)
+1-847-937-7433

E-mail Address: AbbVie.SDS@abbvie.com

1.4 Emergency telephone number

Emergency Telephone: CHEMTREC: 1(800) 424-9300 (in USA and Canada)
or +1-703-527-3887 (international)

Section 2. Hazards identification

2.1 Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Regulation (EC) No 1272/2008</th>
<th>Reproductive toxicity</th>
<th>Specific target organ systemic toxicity (single exposure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>Category 3</td>
<td></td>
</tr>
</tbody>
</table>
Section 2. Hazards identification

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Risk Phrases:
- R62 - Possible risk of impaired fertility
- R67 - Vapors may cause drowsiness and dizziness

2.2 Label elements

Signal Word: Warning
Hazard Statements:
- H336 - May cause drowsiness or dizziness
- H361 - Suspected of damaging fertility or the unborn child
- P202 - Do not handle until all safety precautions have been read and understood
- P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
- P271 - Use only outdoors or in a well-ventilated area
- P281 - Use personal protective equipment as required
- P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
- P308 + P313 - IF exposed or concerned: Get medical advice/attention

2.3 Other hazards
Not determined

Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS Number</th>
<th>EEC Classification</th>
<th>EU - GHS Substance Classification</th>
<th>REACH No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>100</td>
<td>NA</td>
<td>R62 R67</td>
<td>STOT SE 3 (H336)</td>
<td>No data available</td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the R-phrases mentioned in this Section, see Section 16
For the full text of the H-Statements mentioned in this Section, see Section 16

Section 4. First aid measures

4.1 Description of first aid measures
Product Name: Sevoflurane
Issued: May-07-2014

Eye Contact: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Skin Contact: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Inhalation: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Ingestion: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Protection of First-aiders: Use personal protective equipment

4.2 Most important symptoms and effects, both acute and delayed

Signs and Symptoms: Clinical data suggests the following: headaches, incoordination, nausea, breathing difficulty, slow heart rate, sedation, sleep, drowsiness, dizziness. Very rare instances of allergic reactions.

Medical Conditions Aggravated by Exposure: Data suggest any pre-existing ailments in the following organs: central nervous system, respiratory system. Hypersensitivity to the material and/or similar materials.

4.3 Indication of any immediate medical attention and special treatment needed

Notes To Physician: Maintain ventilation, electrolyte balance and monitor cardiovascular function, as necessary.

Section 5. Firefighting measures

5.1 Extinguishing Media

Suitable Extinguishing Media: Use extinguishing agent suitable for type of surrounding fire

Unsuitable Extinguishing Media: Not determined

5.2 Special hazards arising from the substance or mixture

Special Exposure Hazards: Avoid inhalation of combustion products.

5.3 Advice for firefighters

Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus and full protective gear.

Section 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions: If spill response is required, supplied air respirators with impervious gloves and clothing should be worn by response personnel.

6.2. Environmental precautions
Product Name: Sevoflurane
Issued: May-07-2014

Environmental Precautions: Contain material and prevent release to waterways or soil.

6.3. Methods and material for containment and cleaning up

Methods for Cleaning Up: Material evaporates very rapidly. Evacuate the area of the spill immediately and provide ventilation until the applicable exposure levels are below those described in Section 8.

6.4. Reference to other sections

Refer to Sections 8, 12, and 13 for further information.

Section 7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store according to label instructions.

7.3. Specific end use(s)

Recommended use: General inhalation anaesthetic

Section 8. Exposure controls/personal protection

8.1. Control parameters

Exposure limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Employee Exposure Limit</th>
<th>Skin Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>60 ppm (500 mg/m³) TWA</td>
<td>None</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Engineering Controls: Anesthetic gas scavenging systems should be used during typical product application. Handle inside a process enclosure or chemical fume hood during manufacturing or laboratory use.

Respiratory Protection: An approved respirator (i.e. NIOSH, EN, etc.) should be worn when exposures are expected to exceed the applicable limits.

Eyes: Wear eye protection appropriate to handling activities.

Gloves: Impervious gloves.

Other PPE Data: Wear appropriate body coverings if contact may occur.

Environmental Exposure Controls: Not determined
Section 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Clear Colorless Liquid
Odor: Ethereal odor.
Odor Threshold: Not determined
pH: 7.0 - 7.5
Boiling Pt. @ 760 mm Hg (°C): 58.6
Melting/Freezing Point (°C): Not determined
Flash Point (°C): Not determined.
Evaporation Rate at 20°C: Not determined.
Flammability (Solid): Not flammable in air.
Lower Explosive Limit: > 25%
Upper Explosive Limit: Not determined.
Vapor Pressure (mm Hg): 245.5 at 30 deg C
Vapor Density (Air = 1): 6.94
Specific Gravity: 1.525
Partition coefficient: n-octanol/water
Autoignition Temp. (°C): Not determined.
Decomposition temperature (°C): Not determined.
Viscosity (centipoise): Not determined.
Explosion Severity: Not determined.
Oxidizer Properties: Not determined.

9.2. Other information

Min. Ignition Energy-Cloud (mJ): > 5000

Section 10. Stability and reactivity

10.1. Reactivity

Not determined

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

Hazardous reactions: Not determined.

10.4. Conditions to avoid

Not determined.

10.5 Incompatible materials

Alkaline metals., Strong bases
10.6 Hazardous decomposition products
Carbon oxides, Hydrogen fluoride

Section 11. Toxicological information

11.1. Information on toxicological effects

Routes of Exposure:
- Oral: Unlikely
- Dermal: Yes
- Inhalation: Clinical Route

Acute Toxicity - Oral: Data for component (s) given below.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Acute Test</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>LD50</td>
<td></td>
<td>mg/kg</td>
<td>Rats</td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td>10,800</td>
<td></td>
<td>Mice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18,200</td>
<td></td>
<td>Rats</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.8 - 16.6</td>
<td></td>
<td>Mice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19.2 - 24.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Acute Toxicity - Dermal: Not determined.

Acute Toxicity - Inhalation: Data for component (s) given below.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Test</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>LC 50=</td>
<td></td>
<td>ppm</td>
<td>Rats</td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td>28,800</td>
<td></td>
<td>Mice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28,300 - 83,000</td>
<td></td>
<td>Rabbits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>106,000</td>
<td></td>
<td>Dog</td>
</tr>
<tr>
<td></td>
<td></td>
<td>73,000</td>
<td></td>
<td>Monkey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>68,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Toxicology Data: Data for component (s) given below:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Test Type</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>LD50 (ip)</td>
<td>6.3 - 7.4</td>
<td>ml/kg</td>
<td>Rats</td>
<td></td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td>10.5 - 11.7</td>
<td></td>
<td>Mice</td>
<td></td>
</tr>
</tbody>
</table>

Corrosivity: Not determined.

Dermal Irritation: Not determined.

Eye Irritation: Produced mild to moderate eye irritation in animals.

Sensitization: Not determined.

Toxicokinetics/Metabolism: Not determined.

Target Organ Effects: May cause drowsiness or dizziness.

Reproductive Effects: In animals adverse reproductive effects include: maternal toxicity, reduced fertility in males, reduced fertility in females, reduced fetal growth, fetal abnormalities. Based on these experimental results, protection against maternal toxicity will provide adequate protection against potential embryo-fetal toxicity and teratogenicity.

Carcinogenicity: Not determined.

Mutagenicity: Data for component (s) given below.
Product Name: Sevoflurane
Issued: May-07-2014

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Micronucleus Assay</th>
<th>Ames Test:</th>
<th>Mouse Lymphoma Assay</th>
<th>Chromosomal Abbr. Assay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Aspiration hazard: Not determined

Notes:
1. ALD: Approximate lethal dosage
2. LC50: Concentration in air that produces 50% mortality
3. LD50: Oral or dermal dosage that produces 50% mortality

## Section 12. Ecological information

### 12.1. Toxicity

Data for component(s) given below.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>LC 50 (mg/l)</th>
<th>Species</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>100</td>
<td>43</td>
<td>Fathead Minnow</td>
<td>96 Hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>EC 50 (mg/l)</th>
<th>Species</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>100</td>
<td>48</td>
<td>Daphnia magna</td>
<td>48 Hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>EB 50/ErC 50 (mg/l)</th>
<th>Species</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>100</td>
<td>&gt;100</td>
<td>Pseudokirchneriella subcapitata</td>
<td>72 Hours</td>
</tr>
</tbody>
</table>

### 12.2. Persistence and degradability

Not readily biodegradable.

Data for component(s) given below.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>% Degradation</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>100</td>
<td>4.4</td>
<td>28 days</td>
</tr>
</tbody>
</table>

### 12.3. Bioaccumulative potential

Data for components given below.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>Log Po/w</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane 28523-86-6</td>
<td>100</td>
<td>1.75</td>
</tr>
</tbody>
</table>

### 12.4. Mobility in soil

Not determined.

### 12.5. Results of PBT or vPvB assessment

Chemical safety report is not required for this substance/product.

### 12.6. Other adverse effects

Page 7 of 10
Do not allow undiluted material or large quantities to reach groundwater, bodies of water or sewer system.

Notes:
1. EC50: Concentration in water that produces 50% mortality in Daphnia sp.
2. LC50: Concentration in water that produces 50% mortality in fish.
3. EbC50/ErC50: Concentration in water that produces 50% inhibition of growth and in algae.

Section 13. Disposal considerations

13.1 Waste treatment methods

Waste Disposal Methods: Disposal should be made in accordance with country, federal, state and local regulations.

Section 14. Transport information

ICAO/IATA

Status: Regulated

14.1. UN Number: UN3334
14.2. Proper shipping name: Aviation regulated liquid, n.o.s. (1,1,1,3,3,3-Hexafluoro-2-(fluoromethoxy) propane)
14.3. Hazard class: 9
14.4. Packing group: III
14.5. Environmental hazard: Not applicable
14.6. Special Provisions: Not applicable
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

ADR, IMDG/IMO, DOT

Status: Not regulated

Section 15. Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EINECS/ELINCS</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>PICCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Not listed</td>
<td>-</td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ENCS</th>
<th>ISHL</th>
<th>IECSC</th>
<th>AICS</th>
<th>KECL</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>-</td>
<td>Present</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>28523-86-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
**Product Name:** Sevoflurane  
**Issued:** May-07-2014

ENCS - Japan Existing and New Chemical Substances  
ISHL - Japan Industrial Safety and Health Law  
IECSC - China Inventory of Existing Chemical Substances  
AICS - Australian Inventory of Chemical Substances  
KECL - Korean Existing and Evaluated Chemical Substances

### Carcinogenicity Rating:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>NTP:</th>
<th>IARC:</th>
<th>ACGIH:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>100</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Non répertorié</td>
</tr>
</tbody>
</table>

### SARA 313 Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percent</th>
<th>SARA 313 Chemical:</th>
<th>CERCLA RQ/SARA EHS RQ (lbs):</th>
<th>SARA EHS TPQ (lbs):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>100</td>
<td>No</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Immediate Health:** Yes  
**Delayed Health:** No  
**Fire:** No  
**Sudden Pressure:** No  
**Reactivity:** No

**RCRA Status:** Not determined.  
**Proposition 65 Status:** Does not contain chemicals known to the state of California to cause cancer or reproductive harm.  
**WHMIS Hazard Class:** Not determined.

**NFPA Rating:**  
- Health: 1  
- Fire: 0  
- Reactivity: 0

**Notes:**
1. SARA = Superfund Amendments and the Reauthorization Act.  
4. TSCA = Toxic Substances Control Act.  
5. EC = European Community.  

### 15.2. Chemical safety assessment

Chemical safety assessment has not been conducted on the substance/product.

### Section 16. Other information

**Risk Phrases:** R62 - Possible risk of impaired fertility, R67 - Vapors may cause drowsiness and dizziness

**Full text of H-Statements referred to under sections 2 and 3**  
H336 - May cause drowsiness or dizziness, H361 - Suspected of damaging fertility or the unborn child

**Document Authored By:** Occupational and Environmental Toxicology  
**Issued:** May-07-2014
<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Sevoflurane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issued:</td>
<td>May-07-2014</td>
</tr>
</tbody>
</table>

Supersedes the SDS dated: Feb-17-2012

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