** * * Section 1 - PRODUCT AND COMPANY IDENTIFICATION* * *

Product Identifier: HALOTHANE

Manufacturer Information
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920

General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Chemical Family
halogenated, aliphatic

Synonyms
MTG MSDS 117; FLUOTHANE®; 1,1,1-TRIFLUORO-2-CHLORO-2-BROMOETHANE; 2,2,2-TRIFLUORO-1-CHLORO-1-BROMOETHANE; BROMOCHLOROTRIFLUOROETHANE; HALOTAN; FLUOROTANE; CHALOTHANE; OCHALOTHANE; NARCOTANE; 1,1,1-TRIFLUORO-2-BROMO-2-CHLOROETHANE; FLUOTHANE; C2HBrClF3; RTECS: KH6550000

** * * Section 2 - HAZARDS IDENTIFICATION* * *

EMERGENCY OVERVIEW
Color: colorless
Physical Form: liquid
Odor: sweet odor, pleasant odor
Health Hazards: respiratory tract irritation, skin irritation, eye irritation

POTENTIAL HEALTH EFFECTS

Inhalation
Short Term: irritation, cough, nausea, vomiting, irregular heartbeat, liver damage, unconsciousness
Long Term: kidney damage, liver damage

Skin
Short Term: irritation
Long Term: irritation

Eye
Short Term: irritation (possibly severe), tearing
Long Term: irritation

Ingestion
Short Term: irregular heartbeat, headache, drowsiness, dizziness, loss of coordination, unconsciousness
Long Term: no information is available

** * * Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>151-67-7</td>
<td>HALOTHANE</td>
<td>100</td>
</tr>
</tbody>
</table>
**Section 4 - FIRST AID MEASURES**

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**Skin**
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Eyes**
Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion**
If a large amount is swallowed, get medical attention.

**Section 5 - FIRE FIGHTING MEASURES**

See Section 9 for Flammability Properties

**NFPA Ratings:**
- Health: 2
- Fire: 0
- Reactivity: 0

**Hazard Scale:** 0 = Minimal  1 = Slight  2 = Moderate  3 = Serious  4 = Severe

**Flammable Properties**
Negligible fire hazard.

**Extinguishing Media**
Use extinguishing agents appropriate for surrounding fire.

**Fire Fighting Measures**
Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Water Release**
Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

**Occupational spill/release**
Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

**Section 7 - HANDLING AND STORAGE**

**Storage Procedures**
Store and handle in accordance with all current regulations and standards. Protect from sunlight. Keep container tightly closed. Store between 15 C and 30 C. Keep separated from incompatible substances.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Analysis**
HALOTHANE (151-67-7)
- ACGIH: 50 ppm TWA
- NIOSH: 2 ppm Ceiling (60 min exposure to waste anesthetic gas); 16.2 mg/m3 Ceiling (60 min exposure to waste anesthetic gas)

**Component Biological Limit Values**
There are no biological limit values for any of this product's components.
Ventilation
Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing
Wear appropriate chemical resistant clothing.

Glove Recommendations
Wear appropriate chemical resistant gloves.

Protective Materials
neoprene, protective skin cream

Respiratory Protection
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
Any chemical cartridge respirator with organic vapor cartridge(s).
Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES***

<table>
<thead>
<tr>
<th>Physical State: Liquid</th>
<th>Appearance: Not available</th>
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<tbody>
<tr>
<td>Color: colorless</td>
<td>Physical Form: liquid</td>
</tr>
<tr>
<td>Odor: sweet odor, pleasant odor</td>
<td>Odor Threshold: Not available</td>
</tr>
<tr>
<td>pH: Not available</td>
<td>Melting/Freezing Point: Not available</td>
</tr>
<tr>
<td>Boiling Point: 50 °C</td>
<td>Decomposition: Not available</td>
</tr>
<tr>
<td>Flash Point: not flammable</td>
<td>Evaporation Rate: Not available</td>
</tr>
<tr>
<td>Vapor Pressure: 243 mmHg @ 20 °C</td>
<td>Henry's Law Constant: 0.0313</td>
</tr>
<tr>
<td>Vapor Density (air = 1): Not available</td>
<td>Specific Gravity (water=1): 1.87</td>
</tr>
<tr>
<td>Water Solubility: 0.345 %</td>
<td>KOW: 24547.09 estimated from water solubility</td>
</tr>
<tr>
<td>Log KOW: Not available</td>
<td>Coeff. Water/Oil Dist: Not available</td>
</tr>
<tr>
<td>KOC: 7834.30 estimated from water solubility</td>
<td>Auto Ignition: Not available</td>
</tr>
<tr>
<td>Viscosity: Not available</td>
<td>Molecular Weight: 197.39</td>
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<tr>
<td>Molecular Formula: C2-H-Br-Cl-F3</td>
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</table>

Solvent Solubility
Soluble: petroleum ether, acetone, ether, benzene, fat solvents
** ** Section 10 - STABILITY AND REACTIVITY** **

Chemical Stability
Stable at normal temperatures and pressure.

Conditions to Avoid
None reported.

Materials to Avoid
metals, combustible materials, aluminum

Decomposition Products
chlorine, halides, halogens, oxides of carbon, hydrochloric acid, phosgene, carbonyl fluoride, hydrogen fluoride, hydrogen bromide, hydrogen chloride

Possibility of Hazardous Reactions
Will not polymerize.

** ** Section 11 - TOXICOLOGICAL INFORMATION** **

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
HALOTHANE (151-67-7)
Oral LD50 Rat 5680 mg/kg; Inhalation LC50 Rat 120000 mg/m3 4 h

Acute Toxicity Level
HALOTHANE (151-67-7)
Slightly Toxic: inhalation, ingestion

Component Carcinogenicity
HALOTHANE (151-67-7)
ACGIH: A4 - Not Classifiable as a Human Carcinogen

Local Effects
HALOTHANE (151-67-7)
Irritant: inhalation, skin, eye

Medical Conditions Aggravated by Exposure
respiratory disorders, heart disorders

Additional Data
May be excreted in breast milk. May cross the placenta.

** ** Section 12 - ECOLOGICAL INFORMATION** **

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components.

** ** Section 13 - DISPOSAL CONSIDERATIONS** **

Disposal Methods
Dispose in accordance with all applicable regulations.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.
**Section 14 - TRANSPORT INFORMATION**

US DOT Information
No Classification assigned.

TDG Information
No Classification assigned.

**Section 15 - REGULATORY INFORMATION**

U.S. Federal Regulations
None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312
Acute Health: Yes Chronic Health: No Fire: No Pressure: No Reactive: No

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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<tr>
<td>HALOTHANE</td>
<td>151-67-7</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

**Component Analysis - Inventory**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>NZ</th>
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<tbody>
<tr>
<td>HALOTHANE</td>
<td>151-67-7</td>
<td>No</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Section 16 - OTHER INFORMATION**

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States
Other Information

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End of Sheet MAT10625