MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.  Emergency Contact:
150 Allen Road Suite 302  CHEMTREC 1-800-424-9300
Basking Ridge, New Jersey 07920  Calls Originating Outside the US:
Information: 1-800-416-2505  703-527-3887 (Collect Calls Accepted)

SUBSTANCE: HEXAFLUORO-1,3-BUTADIENE

TRADE NAMES/SYNONYMS:
1,1,2,3,4,4-HEXAFLUORO-1,3-BUTADIENE; 1,3-BUTADIENE, 1,1,2,3,4,4-HEXAFLUORO-;
1,1,2,3,4,4,-HEXAFLUOROBUTA-1,3-DIENE; 1,3-BUTADIENE, HEXAFLUORO-;
HEXAFLUOROBUTA-1,3-DIENE; HEXAFLUOROBUTADIENE-1,3; PERFLUORO-1,3-BUTADIENE;
PERFLUOROBUTA-1,3-DIENE; PERFLUOROBUTADIENE-1,3; PERFLUOROBUTADIENE; C4F6;
00226131

CHEMICAL FAMILY: aliphatic, halogenated hydrocarbons

CREATION DATE: Nov 07 2000
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HEXAFLUORO-1,3-BUTADIENE
CAS NUMBER: 685-63-2
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4):  HEALTH=3  FIRE=4  REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: compressed, liquefied gas
ODOR: odorless
MAJOR HEALTH HAZARDS: harmful if inhaled
PHYSICAL HAZARDS: Flammable gas. May cause flash fire. Flash back hazard.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, cough, irregular heartbeat, drowsiness, dizziness
LONG TERM EXPOSURE: no information is available

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation, skin disorders

EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: no information is available

INGESTION:
SHORT TERM EXPOSURE: ingestion of a gas is unlikely
LONG TERM EXPOSURE: no information is available

4. FIRST AID MEASURES

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

SKIN CONTACT: If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

EYE CONTACT: Contact with liquid: Immediately 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.

NOTE TO PHYSICIAN: Avoid adrenaline or other stimulants.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Containers may rupture or explode if exposed to heat.

EXTINGUISHING MEDIA: alcohol-resistant foam, carbon dioxide, regular dry chemical, water

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. For tank, rail car or tank truck: Let burn unless leak can be stopped immediately.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

LOWER FLAMMABLE LIMIT: 7%
UPPER FLAMMABLE LIMIT: 73%

HAZARDOUS COMBUSTION PRODUCTS:
Thermal decomposition or combustion products: oxides of carbon, hydrogen fluoride, fluorinated compounds, carbonyl fluoride

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition.

7. HANDLING AND STORAGE


8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
HEXAFLUORO-1,3-BUTADIENE:
No occupational exposure limits established.

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

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

CLOTHING: Wear protective clothing to prevent contact.

GLOVES: Wear insulated gloves.
PROTECTIVE MATERIAL TYPES: leather, rubber

RESPIRATOR: 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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas
COLOR: colorless
PHYSICAL FORM: compressed, liquefied gas
ODOR: odorless
MOLECULAR WEIGHT: 162.03
MOLECULAR FORMULA: C-F2-C-F-C-F-C-F2
BOILING POINT: 43-45 F (6-7 C)
FREEZING POINT: -206 F (-132 C)
VAPOR PRESSURE: 25 psia @ 20 C
VAPOR DENSITY (air=1): 6.79 @ 15 C
SPECIFIC GRAVITY (water=1): 1.553 @ -20 C
WATER SOLUBILITY: insoluble
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: 123.03 estimated

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers. Avoid contact with combustible materials.

INCOMPATIBILITIES: alkali metals, combustible materials, metals, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition or combustion products: oxides of carbon, hydrogen fluoride, fluorinated compounds, carbonyl fluoride

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

HEXAFLUORO-1,3-BUTADIENE:
TOXICITY DATA: 667 ppm/4 hour(s) Continuous inhalation-rat LC50 (Ausimont, Inc. Italy)
ACUTE TOXICITY LEVEL:
Toxic: inhalation
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: heart disorders, nervous system disorders, skin disorders, respiratory disorders, kidney disorders

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Liquefied gas, toxic, flammable, n.o.s. (HEXAFLUORO-1,3-BUTADIENE)
ID NUMBER: UN3160
HAZARD CLASS OR DIVISION: 2.3
LABELING REQUIREMENTS: 2.3; 2.1
QUANTITY LIMITATIONS:
PAASSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: Forbidden

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Liquefied gas, toxic, flammable, n.o.s. (HEXAFLUORO-1,3-BUTADIENE)
UN NUMBER: UN3160
CLASS: 2.3; 2.1
15. REGULATORY INFORMATION

**U.S. REGULATIONS:**
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
- ACUTE: Yes
- CHRONIC: No
- FIRE: Yes
- REACTIVE: No
- SUDDEN RELEASE: Yes


**STATE REGULATIONS:**
California Proposition 65: Not regulated.

**CANADIAN REGULATIONS:**
WHMIS CLASSIFICATION: Not determined.

**NATIONAL INVENTORY STATUS:**
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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