1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.  
150 Allen Road Suite 302  
Basking Ridge, New Jersey 07920  
Information: 1-800-416-2505

Emergency Contact:  
CHEMTREC 1-800-424-9300  
Calls Originating Outside the US:  
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: CHLORINE TRIFLUORIDE

TRADE NAMES/SYNONYMS:  
MTG MSDS 202; CHLORINE FLUORIDE; CHLOROTRIFLUORIDE; CTF; UN 1749; CIF3; MAT04650; RTECS FO2800000

CHEMICAL FAMILY: interhalogens

CREATION DATE: Jan 24 1989  
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: CHLORINE TRIFLUORIDE
CAS NUMBER: 7790-91-2
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

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

EMERGENCY OVERVIEW:
COLOR: colorless, yellow or green
PHYSICAL FORM: gas, liquid
ODOR: sweet odor, pungent odor
MAJOR HEALTH HAZARDS: harmful if inhaled, respiratory tract burns, skin burns, eye burns, mucous membrane burns
PHYSICAL HAZARDS: Strong oxidizer. Containers may rupture or explode if exposed to heat. May ignite combustibles. Reacts violently with water to generate toxic and/or flammable gases.

POTENTIAL HEALTH EFFECTS:
INHALATION:
4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

ANTIDOTE: calcium gluconate, intravenous; milk of magnesia.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials.

EXTINGUISHING MEDIA: water

Large fires: Flood with water. Apply water from a protected location or from a safe distance.

FIRE FIGHTING: For small fires, contain and let burn. If fire must be fought, water spray or fog is recommended. Do not get water inside container. Move container from fire area if it can be done without risk. Damaged cylinders should be handled only by specialists. For tank, rail car or tank truck: Fight fire from
maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn.

**FLASH POINT:** not flammable

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### 6. ACCIDENTAL RELEASE MEASURES

**OCCUPATIONAL RELEASE:**
Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch or walk through spilled material. Avoid contact with combustible materials. Stop leak if possible without personal risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Do not direct water at spill or source of leak. If possible, turn leaking containers so that gas escapes rather than liquid. Prevent entry into waterways, sewers, basements, or confined areas. Isolate area until gas has dispersed. Ventilate the area.

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### 7. HANDLING AND STORAGE


**HANDLING:** Use only with adequate ventilation. When using, do not eat, drink or smoke. Wash thoroughly after handling. Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

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### 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**EXPOSURE LIMITS:**

**CHLORINE TRIFLUORIDE:**
- 0.1 ppm (0.4 mg/m3) OSHA ceiling
- 0.1 ppm ACGIH ceiling
- 0.1 ppm (0.4 mg/m3) NIOSH recommended ceiling

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

**EYE PROTECTION:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye
CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: do not use natural rubber, neoprene, polyethylene, polyvinyl chloride (PVC)

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

2.5 ppm
Any supplied-air respirator operated in a continuous-flow mode.

5 ppm
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.

20 ppm
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.
Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
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.

Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas
COLOR: colorless, yellow or green
PHYSICAL FORM: gas, liquid
ODOR: sweet odor, pungent odor
MOLECULAR WEIGHT: 92.45
MOLECULAR FORMULA: Cl-F3
BOILING POINT: 52.7-54 F (11.5-12 C)
FREEZING POINT: -105 F (-76 C)
DECOMPOSITION POINT: 356 F (180 C)
VAPOR PRESSURE: 1.46 atm @ 21.1 C
VAPOR DENSITY (air=1): 3.2
SPECIFIC GRAVITY (water=1): 1.77 @ 13 C (liquid)
WATER SOLUBILITY: reacts, decomposes
PH: Not applicable
10. STABILITY AND REACTIVITY

REACTIVITY: Reacts violently with water to generate toxic and/or flammable gases.

CONDITIONS TO AVOID: Avoid contact with combustible materials. Protect from physical damage and heat. Containers may rupture or explode if exposed to heat. Minimize contact with material. Keep out of water supplies and sewers. Avoid contact with water or moisture.

INCOMPATIBILITIES: halogens, acids, alkalis, combustible materials, metal oxides, metals, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products or contact with water or moisture: chlorine, hydrogen fluoride, oxides of chlorine
Thermal decomposition products: chlorine, fluorinated compounds

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

CHLORINE TRIFLUORIDE:
IRRITATION DATA: 21 ppm/12 hour(s)-intermittent eyes-rat; 21 ppm/12 hour(s)-intermittent eyes-dog
TOXICITY DATA: 299 ppm/1 hour(s) inhalation-rat LC50
LOCAL EFFECTS:
Corrosive: inhalation, skin, eye, ingestion

ACUTE TOXICITY LEVEL:
Toxic: inhalation

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Chlorine trifluoride
ID NUMBER: UN1749
HAZARD CLASS OR DIVISION: 2.3
LABELING REQUIREMENTS: 2.3; 5.1; 8
QUANTITY LIMITATIONS:
-PASSENGER AIRCRAFT OR RAILCAR: Forbidden
-CARGO AIRCRAFT ONLY: Forbidden
ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Chlorine trifluoride
UN NUMBER: UN1749
CLASS: 2.3; 5.1; 8

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: Yes
-FIRE: Yes
-REACTIVE: Yes
-SUDDEN RELEASE: Yes
OSHA PROCESS SAFETY (29 CFR 1910.119):
CHLORINE TRIFLUORIDE: 1000 LBS TQ

STATE REGULATIONS:
California Proposition 65: Not regulated.
16. OTHER INFORMATION

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