

[MSDS Browser Format](#)[MSDS Pdf Download](#)

Trichlorotrifluoroethane  
Material Safety Data Sheet

Navigation Key

- [1. Chemical Product and Company Identification](#)
- [2. Composition / Information on Ingredients](#)
- [3. Hazards Identification](#)
- [4. First Aid Measures](#)
- [5. Fire Fighting Measure](#)
- [6. Accidental Release Measure](#)
- [7. Handling and Storage](#)
- [8. Exposure Controls / Personal Protection](#)
- [9. Physical and Chemical Properties](#)
- [10. Stability and Reactivity](#)
- [11. Toxicological Information](#)
- [12. Ecological Information](#)
- [13. Disposal Considerations](#)
- [14. Transport Information](#)
- [15. Regulatory Information](#)
- [16. Other Information](#)

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

[BACK TO KEY](#)

**PRODUCT NAME:** Trichlorotrifluoroethane

**OTHER/GENERIC NAMES:** 1,1,2-Trichloro-1,1,1-trifluoroethane  
Fluorocarbon 113, Refrigerant113

**PRODUCT USE:** Solvent and Refrigerant

**MANUFACTURER:**Honeywell  
Burdick & Jackson, Inc.  
1935 S. Harvey Street  
Muskegon, MI 49442

**FOR MORE INFORMATION  
CALL:**(Monday-Friday, 8:00am-5:00pm)  
1-800-368-0050**IN CASE OF EMERGENCY  
CALL:**(24 Hours/Day, 7 Days/Week)  
1-800-707-4555 or Chemtrec  
1-800-424-9300**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>INGREDIENT NAME</b>	<b>CAS NUMBER</b>	<b>WEIGHT %</b>
Trichlorotrifluoroethane	76-13-1	100

[BACK TO KEY](#)

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

**3. HAZARDS IDENTIFICATION**[BACK TO KEY](#)

**EMERGENCY OVERVIEW:** Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrochloric Acid (HCL), Hydrofluoric Acid (HF), and carbonyl halides such as phosgene.

**POTENTIAL HEALTH HAZARDS**

**SKIN:** Prolonged and/or repeated contact with this solvent can cause irritation of the skin (defatting of skin), erythema (reddening of the skin), or dermatitis.

**EYES:** Irritant: Liquid contact will irritate eyes and may cause conjunctivitis. Vapor may be irritating.

**INHALATION:** At low levels of concentration (human: 2,500 ppm trichlorotrifluoroethane, 0.5-1.0 hour exposure), initial symptoms may include headache, dizziness, nausea, loss of concentration, and irritation. With high exposure levels, effects can include intoxication, central nervous system (CNS) depression (loss of concentration or even death), and cardiac arrhythmia. Product

vapors displace air and can cause suffocation especially in a confined space. At high levels, cardiac effects and/or rapid suffocation resulting in death has been reported. (NIOSH "Alert", Preventing Death from Excessive Exposure to CFC 113, May 1989).

**INGESTION:** Similar symptoms as for inhalation. In large doses, respiratory failure can occur.

**DELAYED EFFECTS:** None currently identified.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
-----------------	------------	-------------	-----------

No ingredients listed in this section			
---------------------------------------	--	--	--

#### 4. FIRST AID MEASURES

[BACK TO KEY](#)

**SKIN:** Immediately rinse affected area with plenty of water for 15 minutes. Get medical assistance.

**EYES:** Immediately rinse eyes with plenty of water or normal saline solution for 15 minutes. Get medical assistance.

**INHALATION:** Remove from exposure area to fresh air. If victim is not breathing administer artificial respiration according to your level of training and obtain professional medical assistance immediately

**INGESTION:** Do not induce vomiting. Get medical assistance immediately.

**ADVICE TO PHYSICIAN:** Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should be used with special caution only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

#### 5. FIRE FIGHTING MEASURES

[BACK TO KEY](#)

<b>FLASH POINT:</b>	Not applicable (None)
<b>FLASH POINT METHOD:</b>	Closed Cup
<b>AUTOIGNITION TEMPERATURE:</b>	680°C
<b>UPPER FLAME LIMIT (volume % in air):</b>	None
<b>LOWER FLAME LIMIT (volume % in air):</b>	None
<b>FLAME PROPAGATION RATE (solids):</b>	Not applicable
<b>OSHA FLAMMABILITY CLASS:</b>	Not applicable

**EXTINGUISHING MEDIA:**

Use any standard agent - choose the one most appropriate for type of surrounding fire (material itself is not flammable).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Contact with certain reactive metals may result in explosive or exothermic reactions under specific conditions (e.g., very high temperatures and/or appropriate pressures and in the presence of oxygen). High temperatures may result in formation of toxic or corrosive products, such as halogen acids, carbonyl halides (e.g. phosgene). See Reactivity section.

**SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

Firefighters should wear self-contained, NIOSH approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should also be provided. Use water spray to keep fire-exposed containers cool and to suppress vaporization.

## [6. ACCIDENTAL RELEASE MEASURES](#)

[BACK TO KEY](#)

**IN CASE OF SPILL OR OTHER RELEASE:** (Always wear recommended personal protective equipment.) Eliminate sources of ignition. Isolate the spill area. Stop leak in a safe and practical manner. (If leak cannot be stopped easily and safely, advise trained emergency response personnel of the situation.) Using inert material (such as ground corncobs) dike the spilled solvent to prevent it from running into drains or waterways.

**Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.**

## [7. HANDLING AND STORAGE](#)

**NORMAL HANDLING:** (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders or expose them to open flame or excessive heat. Use authorized containers only.

**STORAGE RECOMMENDATIONS:**

Store in a cool, well-ventilated area of low fire risk. Storage in subsurface locations should be avoided. Keep containers out of direct sun. If storage temperature exceeds boiling point of 82°F, the container will develop pressure. COOL BEFORE REMOVING PRODUCT.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:**

Provide local exhaust at filling zones and areas where leakage is probable. Mechanical (General) ventilation may be adequate for other operating and storage areas. Concentration should be monitored and kept below the recommended levels in work areas.

**PERSONAL PROTECTIVE EQUIPMENT**

**SKIN PROTECTION:**

Wear protective, impervious gloves and clothing with an outer layer of MYLAR®-coated Durafab (2nd choices: PVA or neoprene), if prolonged or repeated contact with liquid is anticipated. Remove and wash clothing promptly. Any non-impervious clothing should also be promptly removed when contaminated and washed before reuse.

**EYE PROTECTION:**

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

**RESPIRATORY PROTECTION:**

None generally required for adequately ventilated work situations. For accidental or non-ventilated situations, where concentrations are above recommended exposure level, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape, use the former or a NIOSH-approved gas mask with organic vapor canister.

**ADDITIONAL RECOMMENDATIONS:**

Wear impervious boots in case of spillage or leakage, or if there is the probability of repeated or prolonged contact with liquid product. High dose-level warning signs are recommended for areas of potential exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations.

**EXPOSURE GUIDELINES**

<b>INGREDIENT NAME</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>	<b>OTHER LIMIT</b>
Trichlorotrifluoroethane	1000 ppm (TWA)	1000 ppm (TWA)	None
	1250 ppm (STEL)	1250 ppm (STEL)	

\* = Limit established by Honeywell.

\*\* = Workplace Environmental Exposure Level (AIHA).

\*\*\* = Biological Exposure Index (ACGIH).

**OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:**

Hydrogen Fluoride: ACGIH TLV: 3 ppm ceiling

**9. PHYSICAL AND CHEMICAL PROPERTIES**

[BACK TO KEY](#)

<b>APPEARANCE:</b>	Clear, colorless liquid and vapor.
<b>PHYSICAL STATE:</b>	Liquid at room temperature
<b>MOLECULAR WEIGHT:</b>	187.37
<b>CHEMICAL FORMULA:</b>	C <sub>2</sub> Cl <sub>3</sub> F <sub>3</sub>
<b>ODOR:</b>	Faint ethereal odor
<b>SPECIFIC GRAVITY (water = 1.0):</b>	1.564 @ 25°C
<b>SOLUBILITY IN WATER (weight %):</b>	0.017% @ 25°C
<b>pH:</b>	Neutral
<b>BOILING POINT:</b>	47.6°C (117.7°F) @ 760 mm Hg
<b>MELTING POINT:</b>	-35°C (-31°F)
<b>VAPOR PRESSURE:</b>	284 mm Hg
<b>VAPOR DENSITY (air = 1.0):</b>	6.5
<b>EVAPORATION RATE:</b>	>1 COMPARED TO: (Butyl Acetate = 1)
<b>% VOLATILES:</b>	100
<b>FLASH POINT:</b>	Not applicable - None

(Flash point method and additional flammability data are found in

Section 5.)

## 10. STABILITY AND REACTIVITY

[BACK TO KEY](#)

### **NORMALLY STABLE? (CONDITIONS TO AVOID):**

Sources of high temperatures, such as lighted cigarettes, flames, welding cutting torches or unit heaters should be avoided to prevent formation of toxic and/or corrosive by-products.

### **INCOMPATIBILITIES:**

Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals for example, sodium, potassium, calcium, powdered aluminum, magnesium or zinc.

### **HAZARDOUS DECOMPOSITION PRODUCTS:**

Halogens, halogen acids, and possibly carbonyl halides, such as phosgene may be formed. These are toxic and corrosive. After trichlorotrifluoroethane (R-113) has been exposed to lubricated oils, alcohols, polyols or other hydrocarbons at temperatures in excess of 100°F, the composition should be monitored for reaction products, particularly Chlorotrifluoroethane (R-133a).

**HAZARDOUS POLYMERIZATION:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

[BACK TO KEY](#)

### **IMMEDIATE (ACUTE) EFFECTS:**

2-hr LC - Rats - 110,000 ppm (v/v)

Mice - 95,000 ppm (v/v)

Exposure of Dogs to levels of 5,000 ppm (v/v) and greater, have resulted in increased sensitivity of the heart to adrenaline.

### **DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

Results of a 2 year chronic inhalation study on rats exposed to 2,000, 10,000 and 20,000 ppm confirmed the low order of toxicity of this material. This, and results of other studies available in the literature, have shown no evidence of carcinogenicity, mutagenicity or teratogenicity in animal studies and in human experience.

### **OTHER DATA:**

Not mutagenic in in-vitro or in-vivo tests.

Not a development toxin.



## 12. ECOLOGICAL INFORMATION

[BACK TO KEY](#)

None found.

## 13. DISPOSAL CONSIDERATIONS

[BACK TO KEY](#)

### **RCRA**

**Is the unused product a RCRA hazardous waste if discarded?** If used as a solvent, it is hazardous waste.

**If yes, the RCRA ID number is:** F002

**OTHER DISPOSAL CONSIDERATIONS:** (Disposer must comply with federal, state and local disposal or discharge laws). Disposal of waste may be subject to federal regulations. Users should review their operations, then consult with appropriate agencies before discharging or disposing of waste material. Disposal by a licensed waste disposal company may be necessary.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

## 14. TRANSPORT INFORMATION

[BACK TO KEY](#)

<b>US DOT PROPER SHIPPING NAME:</b>	Not regulated by US DOT
<b>US DOT HAZARD CLASS:</b>	Not regulated
<b>US DOT ID NUMBER:</b>	Not regulated by US DOT
<b>US DOT PACKING GROUP:</b>	Not regulated by US DOT
<b>NA EMERGENCY RESPONSE GUIDE:</b>	Not regulated by US DOT

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

## 15. REGULATORY INFORMATION

[BACK TO KEY](#)

### **TOXIC SUBSTANCES CONTROL ACT (TSCA)**



**TSCA INVENTORY STATUS:** Listed

**OTHER TSCA ISSUES:** None

**SARA TITLE III/CERCLA**

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
-----------------	------------------------	----------------------

No ingredients listed in this section

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

**SECTION 311 HAZARD CLASS:** Immediate

**SARA 313 TOXIC CHEMICALS:**

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME	COMMENT
Trichlorotrifluoroethane	None

**STATE RIGHT-TO-KNOW**

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME	WEIGHT %	COMMENT
-----------------	----------	---------

No ingredients listed in this section

**ADDITIONAL REGULATORY INFORMATION:**

**WARNING**

DO NOT VENT TO THE ATMOSPHERE. TO COMPLY WITH PROVISIONS OF THE U.S. CLEAN AIR ACT, ANY RESIDUAL MUST BE RECOVERED. CONTAINS TRICHLOROTRIFLUOROETHANE, A CFC SUBSTANCE WHICH

HARMS PUBLIC HEALTH AND ENVIRONMENT BY DESTROYING OZONE IN THE UPPER ATMOSPHERE. DESTRUCTION OF THE OZONE LAYER CAN LEAD TO INCREASED ULTRAVIOLET RADIATION WHICH, WITH EXCESS EXPOSURE TO SUNLIGHT, CAN LEAD TO AN INCREASE IN SKIN CANCER AND EYE CATARACTS.

**WHMIS CLASSIFICATION (CANADA):** Not determined

**FOREIGN INVENTORY STATUS:**

Canadian DSL

EINECS Number: 2009361

[16. OTHER INFORMATION](#)

---

[BACK TO KEY](#)

**CURRENT ISSUE DATE:** June, 2000

**PREVIOUS ISSUE DATE:** November 5, 1996, September, 1997

**CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:**

New format. New header and footer information.

**NFPA Classification**

Health: 1

Flammability: 0

Reactivity: 1

Copyright © 2000 Honeywell.  
All rights reserved  
Please send any comments to  
[webmaster@honeywell.com](mailto:webmaster@honeywell.com)

Y2K Readiness Disclosure