

MATERIAL SAFETY DATA SHEET

134a (1,1,1,2 Tetrafluoroethane)

REVISION DATE: 11/28/2011

**EMERGENCY CONTACT:** CHANNAHON PLANT (815) 424-2000  
 CHEMTREC (800) 424-9300 US, (703) 527-3887 (Collect) INTERNATIONAL

*(APPROVED BY U.S. DEPARTMENT OF LABOR 'ESSENTIALLY SIMILAR 'TO FORM LSB-OOS-4)  
 INFORMATION ON THIS FORM IS FURNISHED SOLELY FOR THE PURPOSES OF COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND  
 HEALTH ACT OF 1970 AND SHALL NOT BE USED FOR ANY OTHER PURPOSE. USE OR DISSEMINATION OF ALL OR ANY PART OF THIS  
 INFORMATION FOR ANY OTHER PURPOSE OR PURPOSES IS ILLEGAL.*

**PRODUCT NAME:** 134a (1,1,1,2 Tetrafluoroethane)

**SECTION I PRODUCT IDENTIFICATION**

**CAS REGISTRY # :** 811-97-2  
**CHEMICAL FAMILY :** HYDROFLUOROCARBON  
**CHEMICAL NAME:** 1,1,1,2-TETRAFLUOROETHANE (134a)  
**CHEMICAL FORMULA:** CF<sub>3</sub>-CH<sub>2</sub>F

**SECTION II HAZARDOUS COMPONENTS**

INGREDIENT	PERCENT	TLV (PPM)
1,1,1,2 TETRAFLUOROETHANE	100	1000

\*\*\* PHYSICAL HAZARD DUE TO FLAMMABLE NATURE. FLAMMABLE WHEN COMBINED WITH AIR. \*\*\*

**SECTION III PHYSICAL DATA**

**BOILING RANGE:** -15.5 F      **SPECIFIC GRAVITY (H<sub>2</sub>O = 1.00) :** 1.24  
**VAPOR PRESSURE @ 70 DEG F:** 70 PSIG      **PERCENT VOLATILE BY VOLUME :** 100%  
**VAPOR DENSITY (AIR = 1.00):** 3.5      **SOLUBILITY IN WATER @ 70 °F:** 0.95%

**EVAPORATION RATE:** > 1 (ETHYL ETHER = 1.0)  
**APPEARANCE & ODOR:** CLEAR, COLORLESS LIQUEFIED GAS WITH A SLIGHT ETHEREAL ODOR.

**SECTION IV FIRE AND EXPLOSION HAZARD DATA**

**FLASH POINT (METHOD) :** NONFLAMMABLE  
**LOWER EXPLOSION LIMIT:** NA% (VOL.) GAS IN AIR  
**UPPER EXPLOSION LIMIT:** NA% (VOL.) GAS IN AIR  
**EXTINGUISHING MEDIA :** DRY CHEMICAL EXTINGUISHER (B-C), WATER

**SPECIAL FIRE FIGHTING PROCEDURES**

SELF CONTAINED BREATHING APPARATUS (SCBA) IS REQUIRED IF CYLINDERS RUPTURE OR CONTENTS ARE RELEASED UNDER FIRE CONDITIONS. COOL VAPOR SPACE OF THE STORAGE CONTAINER WITH WATER SPRAY. REMOVE PERSONNEL IN GENERAL AREA. NONFLAMMABLE BLENDS OF 134A CONTAINING FLAMMABLE COMPONENTS, MAY, IN THE EVENT OF A SPILL OR LEAK, FRACTIONATE, IE, THE COMPONENTS MAY SEPARATE, PRODUCING COMPOSITIONS THAT ARE FLAMMABLE.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

OTHER BURNING MATERIAL MAY CAUSE THIS MATERIAL TO BURN WEAKLY. EXTINGUISHANT FOR OTHER BURNING MATERIALS IN AREA IS SUFFICIENT TO STOP BURNING. NONFLAMMABLE BLENDS OF 134A CONTAINING FLAMMABLE COMPONENTS, MAY, IN THE EVENT OF A SPILL OR LEAK, FRACTIONATE, IE, THE COMPONENTS MAY SEPARATE, PRODUCING COMPOSITIONS THAT ARE FLAMMABLE. USE WATER OR FOG TO COOL CONTAINERS. CYLINDERS ARE EQUIPPED WITH PRESSURE AND TEMPERATURE RELIEF DEVICES BUT MAY RUPTURE UNDER FIRE CONDITIONS. DECOMPOSITION MAY OCCUR.

**MATERIAL SAFETY DATA SHEET**

134a (1,1,1,2 Tetrafluoroethane)

REVISION DATE: 11/28/2011

**SECTION V HEALTH HAZARD DATA**

**EFFECTS OF OVEREXPOSURE**

**INGESTION-** LIQUID INGESTION MAY CAUSE FROSTBITE. ASPIRATION HAZARD!

**INHALATION-** INHALATION OF VAPOR MAY PRODUCE ANESTHETIC EFFECTS AND FEELING OF EUPHORIA. PROLONGED OVEREXPOSURE CAN CAUSE RAPID BREATHING, HEADACHE, DIZZINESS, NARCOSIS, UNCONSCIOUSNESS, AND DEATH FROM ASPHYXIATION, DEPENDING ON CONCENTRATION AND TIME OF EXPOSURE.

**SKIN CONTACT-** CONTACT WITH EVAPORATING LIQUID CAN CAUSE FROSTBITE.

**EYE CONTACT-** LIQUID CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION, AND POSSIBLE FREEZE BURNS.

**EMERGENCY FIRST AID PROCEDURES**

**INGESTION-** DO NOT INDUCE VOMITING. CONTACT A PHYSICIAN IMMEDIATELY.

**INHALATION-** REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, RESTORE BREATHING AT ONCE. ADMINISTER OXYGEN AND GET MEDICAL HELP.

**SKIN CONTACT-** FOR LIQUID CONTACT, WARM AREAS GRADUALLY AND GET MEDICAL ATTENTION IF THERE IS EVIDENCE OF TISSUE DAMAGE. FLUSH AREA WITH PLENTY OF WATER. TREAT AS FROSTBITE.

**EYE CONTACT-** FOR LIQUID CONTACT, IRRIGATE WITH RUNNING WATER FOR MINIMUM OF 15 MINUTES. CONSULT PHYSICIAN IMMEDIATELY IF FROSTBITE OCCURS.

**SECTION VI REACTIVITY DATA**

<b>STABILITY:</b>	STABLE
<b>HAZARDOUS POLYMERIZATION:</b>	CAN NOT OCCUR
<b>INCOMPATIBILITY (MATERIALS TO AVOID):</b>	FINELY DIVIDED METALS, MAGNESIUM AND ALLOYS CONTAINING MORE THAN 2% MAGNESIUM. CAN REACT VIOLENTLY IF IN CONTACT WITH ALKALI OR ALKALINE EARTH METALS SUCH AS SODIUM, POTASSIUM, OR BARIUM.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	HALOGEN ACIDS BY THERMAL DECOMPOSITION
<b>CONDITIONS TO AVOID:</b>	HIGH HEAT AND OPEN FLAMES

**SECTION VII SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED**

VENTILATE THE AREA - ESPECIALLY LOW AREAS WHERE VAPORS MAY ACCUMULATE. REMOVE OPEN FLAMES. USE SELF CONTAINED BREATHING APPARATUS. FOR LARGE SPILLS OR RELEASES MECHANICAL VENTILATION SHOULD BE USED IN LOW PLACES.

NONFLAMMABLE BLENDS OF 134A CONTAINING FLAMMABLE COMPONENTS, MAY, IN THE EVENT OF A SPILL OR LEAK SEPARATE, PRODUCING COMPOSITIONS THAT ARE FLAMMABLE.

**WASTE DISPOSAL**

RECYCLE OR RECLAIM IF POSSIBLE

**\*\* COMPLY WITH ALL STATE AND LOCAL REGULATIONS \*\***

MATERIAL SAFETY DATA SHEET

134a (1,1,1,2 Tetrafluoroethane)

REVISION DATE: 11/28/2011

**SECTION VIII SPECIAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION:** NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS.  
**PROTECTIVE GLOVES:** IMPERVIOUS, INSULATED GLOVES RECOMMENDED  
**EYE PROTECTION:** FACESHIELD OR GOGGLES RECOMMENDED  
**OTHER:** IMPERVIOUS CLOTHING FOR PROLONGED OR REPEATED CONTACT

**VENTILATION**

USE WITH ADEQUATE VENTILATION. CHECK AIR FOR CONTAMINANT AND FOR OXYGEN DEFICIENCY. WHERE VENTILATION IS INADEQUATE, USE A LOCAL EXHAUST SYSTEM TO REMOVE VAPORS.

**SECTION IX SPECIAL PRECAUTIONS**

DO NOT GET IN EYES, ON SKIN OR CLOTHING. DO NOT BREATHE VAPORS, MIST OR GAS. KEEP AWAY FROM HEAT, SPARKS AND FLAMES. STORE IN TIGHTLY CLOSED CONTAINERS AWAY FROM DIRECT SUNLIGHT, HEAT, AND SOURCES OF IGNITION. STORE AT TEMPERATURES NOT EXCEEDING 113 ° F. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS RESIDUE. DO NOT SMOKE. DO NOT CUT, GRIND OR WELD ON OR NEAR CONTAINER DUE TO POSSIBLE TOXIC FUME GENERATION.

7

**SECTION X MISCELLANEOUS INFORMATION**

**TRANSPORT INFORMATION**

1,1,1,2 TETRAFLUOROETHANE

2.2, NON FLAMMABLE GAS, UN3159  
 LABELED / PLACARDED NON FLAMMABLE GAS

**NPCA - HMIS RATINGS**

**HEALTH** 1  
**FLAMMABILITY** 0  
**REACTIVITY** 1  
**PERSONAL PROTECTION** -

(PERSONAL PROTECTION INFORMATION TO BE SUPPLIED BY THE USER)

**REGULATORY INFORMATION**

THE INGREDIENTS LISTED IN SECTION 2 ARE REPORTED/INCLUDED IN THE U.S. TSCA INVENTORY AND CANADIAN DOMESTICS SUBSTANCE LIST.