

E. F. Products, Inc.

MATERIAL SAFETY DATA SHEET

MSDS: 301

**SECTION 1: CHEMICAL PRODUCT AND COMPANY INFORMATION**

<b>Company:</b> E F Products, Inc. 1860 Crown Drive, Suite 1400 Dallas, Texas 75234 Phone No.: 1-888-396-0422 CHEMTREC Phone No.: 1-800-298-9164	<b>HAZARD RATING</b> Health 1 Fire: 0 Reactivity: 0 Special: -- Toxicity: 1	<b>SCALE</b> 0 = <i>Insignificant</i> 1 = <i>Slight</i> 2 = <i>Moderate</i> 3 = <i>High</i> 4 = <i>Extreme</i>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------

**Product Description:** Automotive Refrigerant

**Name:** 301 Quest 134A Refrigerant (standard package contains 12 fl oz)

**Product Code:** 301

**MSDS Date:** 03-24-06

**Supersedes:** 10-20-00

**SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS**

No.	Description	CAS Reg. No.	Units	Amount
1	1,1,1,2-Tetrafluoroethane	811-97-2	% vol	100

**SECTION 3: HAZARDS INFORMATION**

**Portals of Entry:** Inhalation, eye contact, and skin contact.

**Inhalation:** Inhalation of high vapor concentrations can cause anesthetic effects including dizziness, weakness, nausea, and unconsciousness. It can act as an asphyxiant by limiting available oxygen. Very high doses can cause abnormal heart rhythm which is potentially fatal. Breathing high concentration vapors or prolonged breathing vapors can cause irritation of the nose, throat, and lungs as well as headaches, drowsiness, central nervous system (CNS) depression, and fatigue. Extreme inhalation can cause loss of coordination and unconsciousness.

**Eye Contact:** Liquid splashes or vapor spray may cause freeze burns. Vapors can cause eye irritation.

**Skin Contact:** Vapor spray can cause freeze burns. Product can cause eye irritations.

**Ingestion:** The product is a gas at Standard Temperature and Pressure (STP) which would allow the product to be ingested.

**Delayed Effects:** Prolonged and repeated overexposure can cause irritation of the respiratory tract and mucous membranes, and kidney effects.

**HEALTH EFFECTS FROM OVEREXPOSURE:**

**Primary Routes of Exposure:** Skin and inhalation.

**SECTION 4: FIRST AID MEASURES**

**Inhalation:** Inhalation under normal exposure should not cause problems; however if inhalation has resulted in symptoms, move patient to fresh air. If breathing is difficult, give oxygen. Give artificial respiration if breathing has stopped. Get prompt medical attention.

**Eye Contact:** Immediately flush eyes with a large amount of water for at least 15 minutes. If symptoms exist and/or persist, get prompt medical attention.

**Skin Contact:** Wash affected skin areas thoroughly with soap and water. Remove contaminated clothing. If skin irritation persists, see a physician.

**Ingestion:** If swallowed, give large quantities of water to drink. Induce vomiting. Careful gastric lavage may be indicated. Immediately see a physician. Never give anything by mouth nor induce vomiting of an unconscious person.

**SECTION 5: FIRE FIGHTING MEASURES**

**Unusual Hazards:** Toxic fumes are generated when material is exposed to fire and fire conditions.

**Extinguishing Agents:** Use the following extinguishing media when fighting fires involving this material: polar solvent foam, carbon dioxide, dry chemical, and water spray.

**Personal Protective Equipment:** Wear self-contained breathing apparatus and full protective gear.

**Special Precautions:** Use water spray to cool large containers exposed to fire. Vapors are denser than air and will have a tendency to accumulate in lower areas which can cause the vapors to concentrate and suffocate.

**FIRE AND EXPLOSIVE PROPERTIES:**

Flash Point (°C): Non-Flammable at STP

Auto-Ignition Temperature (°C): >350

Lower Explosive Limit (°C): Non-Flammable at STP

Upper Explosive Limit (°C): Non-Flammable at STP

**SECTION 6: ACCIDENTAL SPILL OR LEAK RELEASE INFORMATION**

**Personal Protection:** Appropriate protective equipment must be worn when handling a large spill of this material. See the PERSONAL PROTECTION MEASURES Section for recommendations. If exposed to material during clean-up operations, see the FIRST AID PROCEDURES Section for actions to follow.

**Procedures:** Evacuate the spill area. Ventilate the spill area. Avoid breathing vapor.

**SECTION 7: HANDLING AND STORAGE**

**Storage Conditions:** Store in a cool, well ventilated place. Keep containers dry. Store product away from reactive and corrosive materials. The minimum recommended storage temperature for this material is -29° C/ -20° F. The maximum storage temperature is 49° C/ 120° F.

**Handling Procedures:** Avoid causing and inhaling high concentrations of vapor. The vapor concentration levels in air need to be kept below occupational exposure limits and kept as low as practicable. Do not mix product with air or oxygen under pressure. Avoid exposure of product to flame or very hot surfaces. Vapors can be evolved when material is being used in processing operations. See FACILITY CONTROL MEASURES Section for types of ventilation required.

**SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

**Respiratory Protection:** A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. If respiratory protection is needed, use, MSHA-NIOSH approved respirator for organic vapors. None required if airborne concentrations are maintained below the TWA/TLV's listed in the COMPONENT EXPOSURE INFORMATION Section.

Up to 10 times the TWA/TLV: Wear a half-mask, air purifying respirator.

Up to 1000 ppm organic vapor: Wear an approved full-face piece, air-purifying respirator.

Above 1000 ppm organic vapor or unknown: Wear an approved positive pressure mode, or an approved full-face piece airline respirator in the positive pressure mode with emergency escape provisions.

Air purifying respirators should be equipped with organic vapor cartridges.

**Eye Protection:** Use eye goggles and/or face shield.

**Hand Protection:** The gloves listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection: Polyvinyl alcohol and Viton.

Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.

**Other Protection:** Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact.

**FACILITY CONTROL MEASURES:**

**Ventilation:** Use normal local exhaust ventilation with a minimum capture velocity of 100 ft/min (0.5 m/sec) at the point of vapor evolution.

**Other Protective Equipment:** Facilities storing and utilizing this material should be equipped with an eyewash facility and a safety shower.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**TYPICAL PHYSICAL PROPERTIES:**

PROPERTY	METRIC UNITS	ENGLISH UNITS
Appearance:	Product in Aerosol Container	Product in Aerosol Container
Color:	Colorless	Colorless
State: Pressure	Liquid under Gas Pressure	Liquid under Gas
Odor Characteristics:	Ethereal	Ethereal
Viscosity, as Liquid (CP 20° C); [CP 68° F]:	18	18
Specific Gravity (d/do 4°C); [d/do 39°F]	1.27	1.27
Vapor Density (Air = 1.0):	3.3	3.3
Vapor Pressure (mm Hg @ 20° C); [psia]:	4268	85.6
Melting Point (°C); [°F]:	Extremely Low; < -26 °C	Extremely Low; < -15 °F
Boiling Point (°C); [°F]:	-26.2	-15.1
Solubility in Water (gr/100 cm <sup>3</sup> ); [lb/100 in <sup>3</sup> ]:	0; Non-soluble	0; Non-soluble
Soluble In:	Ether	Ether
Solubility Parameters $\delta_p$ , $\delta_{hb}$ (gr-cal/mol)	2.1, 1.7	2.1, 1.7
Evaporation Rate (n-butyl acetate = 1.0):	> 120	> 120
pH (product or water extract)	< 7	< 7
Percent Volatility (% wt):	100	100
Molecular Weight (gr/mol); [lb/mol]	102	0.225

**SECTION 10: STABILITY AND REACTIVITY**

**Stability:** Stable under normal conditions.

**Hazardous Decomposition Products:** Thermal decomposition may yield toxic decomposition products which include alkyl low molecular weight components, organic chlorides, COx, hydrochloric acid, hydrofluoric acid, and organic pyrolytic components.

**Hazardous Polymerization:** Product will not undergo polymerization.

**Incompatibility:** Avoid contact with strong oxidizing and reducing agents, fine particulate metals, magnesium and alloy containing more than 2 percent magnesium. Product can react under certain conditions with alkali or alkali earth metals such as sodium, potassium or barium and other Group IA and IIA of the Periodic Table of Elements.

**SECTION 11: TOXICOLOGICAL INFORMATION**

**ACCIDENT PREVENTION INFORMATION:**

**COMPONENT EXPOSURE INFORMATION:**

Component Information:

No.	Description	CAS Reg. No.	Units	Amount	Max. Amount
					% Wt.
1	1,1,1,2-Tetrafluoroethane	811-97-2	% vol	100	100

**Exposure Information for Specific Component:**

No.	Health		Component Units	OSHA		ACGIH			
	Rating	Flammable Rating		TWA	STEL	TWA	STEL	IDLH	HAP
1	1	0	ppm	1000	NA	NA	NA	NA	No

NA: Not Available; ppm: parts per million

Note: 1 ppm equals 3.8 mg/m<sup>3</sup>; 5 ppm equals 19 mg/m<sup>3</sup>; 10 ppm equals 38 mg/m<sup>3</sup>; 100 ppm equals 380 mg/m<sup>3</sup>.

**SECTION 12: ECOLOGICAL INFORMATION**

**Persistence and Degradation:** Decomposes comparatively rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is 15.6 years. Products of decomposition will be highly dispersed and hence will have a very low concentration. It is not a significant contributor to photochemical smog and is not considered to be a VOC. It is not considered as an ozone depleting chemical.

**SECTION 13: DISPOSAL INFORMATION**

**WASTE DISPOSAL:**

**Procedure:** For disposal, dispose this material at a facility that complies with local, state, and federal regulations.

**SECTION 14: TRANSPORTATION INFORMATION**

**DOT Hazard Description:**

**Proper Shipping Name:** 1,1,1,2-TETRAFLUOROETHANE

**Hazard Class:** 2.2

**Identification Number:** UN 3159  
**Packing Group:** NA  
**Hazardous Substance (RQ):** NA  
**Placard/Label:** NON-FLAMMABLE GAS

**SECTION 15: REGULATORY INFORMATION**

EPA Regulation:  
SARA SECTION 355/370, and 372: This product does not contain any chemicals subject to reporting requirements of SARA 313.

All components of this product are on the TSCA list.

State Regulations: This product meets requirements of Southern California AQMD Rule 443.1 and Similar Regulations California Proposition 65: This product contains the following chemical known to the State of California to cause cancer: None.

**SECTION 16: OTHER INFORMATION**

\*\*\*\*\*  
\*\*\*\*\*  
All information, recommendations, and suggestions made by E F Products, Inc. (“Company”) appearing herein concerning our product are based upon tests and data believed to be reliable. However, because of the variable characteristics of analytical procedures and samples, and the inability to control its customers’ uses of the information and recommendations, or the related products or materials, Company makes NO WARRANTY, EXPRESS OR IMPLIED as to the accuracy of the information or recommendations or that such are fit for any general or specific purpose, whatsoever. Company shall have NO LIABILITY arising from the use by its customers or any third parties of the information and recommendations, and it shall be each customer’s sole responsibility to determine the suitability for its own use of any information or recommendations provided by Company.  
\*\*\*\*\*  
\*\*\*\*\*