

## Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Reviewed on 11/09/2015

### 1 Identification

- **Product Identifier**
- **Trade name: R134a Refrigerant**
- **CAS Number:**  
811-97-2
- **EC number:**  
212-377-0
- **Relevant identified uses of the substance or mixture and uses advised against:**
- **Product Description** Refrigerant
- **Details of the Supplier of the Safety Data Sheet:**
- **Manufacturer/Supplier:**  
EcoGreen Industries, LLC  
PO Box 1308  
Anderson, CA 96007  
Phone: (530) 378-4443  
Fax: (888) 612-3207
- **Emergency telephone number:** Chemtrec 1-800-424-9300 or outside USA 1-703-527-3887

### 2 Hazard(s) Identification

- **Classification of the substance or mixture:**



GHS04 Gas cylinder

Press. Gas H281 Contains refrigerated gas; may cause cryogenic burns or injury.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

- **Label elements:**
- **GHS label elements**  
The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS04 GHS07

- **Signal word:** Warning
- **Hazard-determining components of labeling:**  
1,1,1,2-Tetrafluoroethane (HFC-134a)
- **Hazard statements:**  
Contains refrigerated gas; may cause cryogenic burns or injury.  
Harmful if inhaled.
- **Precautionary statements:**  
Wear cold insulating gloves/face shield/eye protection.  
Avoid breathing dust/fume/gas/mist/vapors/spray.  
Use only outdoors or in a well-ventilated area.  
Get immediate medical advice/attention.

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IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor if you feel unwell.

Thaw frosted parts with lukewarm water. Do not rub affected area.

Store in a well-ventilated place.

· **Unknown acute toxicity:**

100 % of the mixture consists of component(s) of unknown toxicity.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMS-ratings (scale 0 - 4)**

HEALTH	2	Health = 2
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

· **Hazard(s) not otherwise classified (HNOC):** None known

### 3 Composition/Information on Ingredients

· **Chemical characterization: Substance**

· **CAS No. Description**

811-97-2 1,1,1,2-Tetrafluoroethane (HFC-134a)

· **Identification number(s)**

· **EC number:** 212-377-0

### 4 First-Aid Measures

· **Description of first aid measures:**

· **General information:**

Symptoms of poisoning may occur after exposure to dust, fumes or particulates; seek medical attention if feeling unwell.

· **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** Generally the product does not irritate the skin.

· **After eye contact:** Rinse opened eye for several minutes under running water.

· **After swallowing:** If swallowed and symptoms occur, consult a doctor.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed:** No further relevant information available.

· **Indication of any immediate medical attention and special treatment needed:**

No further relevant information available.

### 5 Fire-Fighting Measures

· **Extinguishing media:**

· **Suitable extinguishing agents:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **Special hazards arising from the substance or mixture:** No further relevant information available.

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- **Advice for firefighters:**
- **Protective equipment:**  
Mouth respiratory protective device.  
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

### 6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:** Not required.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Dispose contaminated material as waste according to section 13.  
Ensure adequate ventilation.  
Dispose of the collected material according to regulations.
- **Reference to other sections:**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and Storage

- **Handling**
- **Precautions for safe handling:** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities:**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** No further relevant information available..
- **Specific end use(s):** No further relevant information available.

### 8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters:**

· **Components with occupational exposure limits:**

**811-97-2 1,1,1,2-Tetrafluoroethane (HFC-134a)**

WEEL Long-term value: 1000 ppm

- **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

- **Exposure controls:**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Wash hands before breaks and at the end of work.
- **Breathing equipment:** Not required.
- **Protection of hands:** Not required.
- **Material of gloves:**  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material:** Not applicable.
- **Eye protection:** Not required.

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### 9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· **Form:** Gaseous

· **Color:** Colorless

· **Odor:** Odorless

· **Odor threshold:** Not determined.

· **Change in condition**

· **Melting point/Melting range:** Not determined.

· **Boiling point/Boiling range:** -26.2 °C (-15 °F)

· **Flash point:** None

· **Flammability (solid, gaseous):** Not determined.

· **Ignition temperature:** 743 °C (1369 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Not determined.

· **Danger of explosion:** Not determined.

· **Explosion limits:**

· **Lower:** Not determined.

· **Upper:** Not determined.

· **Vapor pressure @ 20 °C (68 °F):** 5716 hPa (4287 mm Hg)

· **Density @ 20 °C (68 °F):** 1.226 g/cm<sup>3</sup> (10.231 lbs/gal)

· **Relative density:** Not determined.

· **Vapor density:** Not determined.

· **Evaporation rate:** Not applicable.

· **Solubility in / Miscibility with:**

· **Water @ 20 °C (68 °F):** 1.93 g/l

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

· **Dynamic @ 20 °C (68 °F):** 0.22 mPas

· **Kinematic:** Not determined.

· **Organic solvents:** 0.0 %

· **Other information:** No further relevant information available.

### 10 Stability and Reactivity

· **Reactivity:** No further relevant information available.

· **Chemical stability:** Stable under normal conditions.

· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

· **Possibility of hazardous reactions:** No dangerous reactions known.

· **Conditions to avoid:** No further relevant information available.

· **Incompatible materials:** No further relevant information available.

· **Hazardous decomposition products:** No dangerous decomposition products known.

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### 11 Toxicological Information

· **Information on toxicological effects:**

· **Acute toxicity:**

· **Primary irritant effect:**

· **On the skin:** No irritating effect.

· **On the eye:** No irritating effect.

· **Additional toxicological information:**

· **Carcinogenic categories:**

· **IARC (International Agency for Research on Cancer):**

· **NTP (National Toxicology Program):**

Substance is not listed.

· **OSHA-Ca (Occupational Safety & Health Administration):**

Substance is not listed.

### 12 Ecological Information

· **Toxicity:**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability:** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential:** No further relevant information available.

· **Mobility in soil:** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Do not allow undiluted product or product that has not been neutralized to reach ground water, water course or sewage system.

· **Results of PBT and vPvB assessment:**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects:** No further relevant information available.

### 13 Disposal Considerations

· **Waste treatment methods:**

· **Recommendation:**

Observe all federal, state and local environmental regulations when disposing of this material.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport Information

· **UN-Number:**

· **DOT, ADR, IMDG, IATA**

UN3159

· **UN proper shipping name:**

· **DOT, IATA**

1,1,1,2-Tetrafluoroethane

· **ADR**

UN3159 1,1,1,2-Tetrafluoroethane

· **IMDG**

1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)

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· **Transport hazard class(es):**

· **DOT**



· **Class:** 2.2  
· **Label:** 2.2

· **ADR, IMDG, IATA**



· **Class:** 2.2  
· **Label:** 2.2  
· **Packing group:**  
· **DOT, ADR, IMDG, IATA** Non-Regulated Material  
· **Environmental hazards:** Not applicable.  
· **Special precautions for user:** Not applicable.  
· **Stowage Category** A  
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.  
· **Transport/Additional information:**  
· **DOT**  
· **Quantity limitations:** On passenger aircraft/rail: 75 kg  
On cargo aircraft only: 150 kg

· **ADR**

· **Excepted quantities (EQ):** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml

· **IMDG**

· **Limited quantities (LQ):** 120 ml  
· **Excepted quantities (EQ):** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml  
· **UN "Model Regulation":** UN 3159 ,1,1,2-TETRAFLUOROETHANE, 2.2

### 15 Regulatory Information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture:**  
· **SARA (Superfund Amendments and Reauthorization):**

· **Section 355 (extremely hazardous substances):**

Substance is not listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

· **TSCA (Toxic Substances Control Act):**

Substance is listed.

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· **California Proposition 65:**

· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **Carcinogenic categories:**

· **EPA (Environmental Protection Agency):**

Substance is not listed.

· **TLV (Threshold Limit Value established by ACGIH):**

Substance is not listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

Substance is not listed.

· **GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms:**



GHS04 GHS07

· **Signal word:** Warning

· **Hazard-determining components of labeling:**

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

· **Hazard statements:**

Contains refrigerated gas; may cause cryogenic burns or injury.  
Harmful if inhaled.

· **Precautionary statements:**

Wear cold insulating gloves/face shield/eye protection.  
Avoid breathing dust/fume/gas/mist/vapors/spray.  
Use only outdoors or in a well-ventilated area.  
Get immediate medical advice/attention.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
Call a POISON CENTER/doctor if you feel unwell.  
Thaw frosted parts with lukewarm water. Do not rub affected area.  
Store in a well-ventilated place.

· **National regulations:**

Non-Regulated Material

· **State Right to Know:**

None of the ingredients are listed

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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### 16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

· **Date of preparation / last revision:** 11/09/2015 / -

· **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Press. Gas: Gases under pressure: Refrigerated liquefied gas

Acute Tox. 4: Acute toxicity, Hazard Category 4

· **\* Data compared to the previous version altered.**

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