



NATIONAL REFRIGERANTS, INC.

R-134a

## Safety Data Sheet

R-134a

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** R-134a  
**OTHER NAME:** 1,1,1,2-Tetrafluoroethane  
**USE:** Refrigerant Gas  
**DISTRIBUTOR:** National Refrigerants, Inc.  
 661 Kenyon Avenue  
 Bridgeton, New Jersey 08302

**FOR MORE INFORMATION CALL:**  
 (Monday-Friday, 8:00am-5:00pm)  
 1-800-262-0012

**IN CASE OF EMERGENCY CALL:**  
 CHEMTREC: 1-800-424-9300

### 2. HAZARDS IDENTIFICATION

<b>CLASSIFICATION:</b> <b>SIGNAL WORD:</b> <b>HAZARD STATEMENT:</b> <b>SYMBOL:</b> <b>PRECAUTIONARY STATEMENT:</b>	Gases under pressure, Liquefied Gas <b>WARNING</b> Contains gas under pressure, may explode if heated Gas Cylinder <b>STORAGE:</b> Protect from sunlight, store in a well ventilated place	
--	--	--

**EMERGENCY OVERVIEW:** Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. 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 Hydrofluoric Acid (HF) and carbonyl halides.

#### POTENTIAL HEALTH HAZARDS

**SKIN:** Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

**EYES:** Liquid contact can cause severe irritation and frostbite. Mist may irritate.

**INHALATION:** R-134a is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

**INGESTION:** Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

**DELAYED EFFECTS:** None Known

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

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

**INGREDIENT NAME**

**CAS NUMBER**

**WEIGHT %**

1,1,1,2-Tetrafluoroethane

811-97-2

100

**COMMON NAME AND SYNONYMS**

R-134a; HFC134a

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

**4. FIRST AID MEASURES**

**SKIN:** Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

**EYES:** Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

**INHALATION:** Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. **DO NOT** give epinephrine (adrenaline).

**INGESTION:** Ingestion is unlikely because of the physical properties and is not expected to be hazardous. **DO NOT** induce vomiting unless instructed to do so by a physician.

**ADVICE TO PHYSICIAN:** Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and 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**

**FLAMMABLE PROPERTIES**

<b>FLASH POINT:</b>	Gas, not applicable per DOT regulations
<b>FLASH POINT METHOD:</b>	Not applicable
<b>AUTOIGNITION TEMPERATURE:</b>	>750°C
<b>UPPER FLAME LIMIT (volume % in air):</b>	None*
<b>LOWER FLAME LIMIT (volume % in air):</b>	None*
	*Based on ASHRAE Standard 34 with match ignition
<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:**

R-134a is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

**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 be provided. Use water spray to keep fire-exposed containers cool.

---

**6. ACCIDENTAL RELEASE MEASURES**

---

**IN CASE OF SPILL OR OTHER RELEASE:** (Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

**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, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-134a should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

**STORAGE RECOMMENDATIONS:**

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

**INCOMPATIBILITIES:**

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction. Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

---

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

---

**ENGINEERING CONTROLS:**

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.



**PERSONAL PROTECTIVE EQUIPMENT**

**SKIN PROTECTION:**

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed 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 release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, 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:**

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

**EXPOSURE GUIDELINES**

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

\* = Workplace Environmental Exposure Level (AIHA)

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

Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5 ppm TLV-TWA

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE:</b>	Clear, colorless liquid and vapor
<b>PHYSICAL STATE:</b>	Gas at ambient temperatures
<b>MOLECULAR WEIGHT:</b>	102
<b>CHEMICAL FORMULA:</b>	F <sub>3</sub> CCH <sub>2</sub> F
<b>ODOR:</b>	Faint ethereal odor
<b>SPECIFIC GRAVITY (water = 1.0):</b>	<1.22
<b>SOLUBILITY IN WATER (weight %):</b>	0.15 wt%
<b>pH:</b>	Neutral
<b>BOILING POINT:</b>	-26.2°C (-15.1°F)
<b>FREEZING POINT:</b>	-92.5°C (-141.9°F)
<b>VAPOR PRESSURE:</b>	85.8 psia @ 70°F 213.4 psia @ 130°F
<b>VAPOR DENSITY (air = 1.0):</b>	3.5
<b>EVAPORATION RATE:</b>	>1 <b>COMPARED TO:</b> CC1 <sub>4</sub> = 1
<b>% VOLATILES:</b>	100



---

<b>ODOR THRESHHOLD:</b>	Not established
<b>FLAMMABILITY:</b>	Not applicable
<b>LEL/UEL:</b>	None/None
<b>RELATIVE DENSITY:</b>	1.21g/cm <sup>3</sup> at 25°C
<b>PARTITION COEFF (n-octanol/water)</b>	Log Pow: 1.06
<b>AUTO IGNITION TEMP:</b>	>750°C
<b>DECOMPOSITION TEMPERATURE:</b>	>250°C
<b>VISCOSITY:</b>	Not applicable
<b>FLASH POINT:</b>	Not applicable

(Flash point method and additional flammability data are found in Section 5.)

---

## **10. STABILITY AND REACTIVITY**

---

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

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

### **INCOMPATIBILITIES:**

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

### **HAZARDOUS DECOMPOSITION PRODUCTS:**

Halogens, halogen acids and possibly carbonyl halides.

### **HAZARDOUS POLYMERIZATION:**

Will not occur.

---

## **11. TOXICOLOGICAL INFORMATION**

---

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

LC<sub>50</sub> :Inhalation 4 hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) 80,000 ppm. NOEL – 50,000 ppm

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

Not mutagenic in four tests

Teratogenic NOEL (rat and rabbit) – 40,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm

Chronic NOEL – 10,000 ppm

### **REPEATED DOSE TOXICITY:**

Lifetime inhalation exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

### **FURTHER INFORMATION:**

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

### **OTHER DATA:**

Metabolism <0.5% as CO<sub>2</sub> in tests at 50,000 ppm, late developing benign tumors were found.

---



**12. ECOLOGICAL INFORMATION**

**Degradability (BOD):** R-134a is a gas at room temperature; therefore, it is unlikely to remain in water.  
**Octanol Water Partition Coefficient:** See Section 9

**13. DISPOSAL CONSIDERATIONS**

**RCRA**

**Is the unused product a RCRA hazardous waste if discarded?** Not a hazardous waste  
**If yes, the RCRA ID number is:** Not applicable

**OTHER DISPOSAL CONSIDERATIONS:**

Disposal must comply with federal, state, and local disposal or discharge laws. R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

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**

**US DOT ID NUMBER:** UN3159  
**US DOT PROPER SHIPPING NAME:** 1,1,1,2-Tetrafluoroethane or Refrigerant Gas R 134a  
**US DOT HAZARD CLASS:** 2.2  
**US DOT PACKING GROUP:** Not applicable  
For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

**15. REGULATORY INFORMATION**

**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

**TSCA INVENTORY STATUS:** Listed on the TSCA inventory  
**OTHER TSCA ISSUES:** Subject to Section 12(b) export notification. May contain 0-10 ppm Ethane, 2-chloro-1,1,1-trifluoro, CAS# 75-88-7

**SARA TITLE III / CERCLA**

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

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
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  
PRESSURE

**SARA 313 TOXIC CHEMICALS:**  
The following ingredients are SARA 313 “Toxic Chemicals”. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
No ingredients listed in this section	



**STATE RIGHT-TO-KNOW**

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

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section		

**ADDITIONAL REGULATORY INFORMATION:**

R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

**WARNING: DO NOT vent** to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains 1,1,1,2-Tetrafluoroethane (HFC-134a)**, a greenhouse gas which may contribute to global warming.

**WHMIS CLASSIFICATION (CANADA):**

This product has been evaluated in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

**FOREIGN INVENTORY STATUS:**

Canada – Listed on DSL  
EU - EINECS # 223770

---

**16. OTHER INFORMATION**

---

**CURRENT ISSUE DATE:** January 04, 2021  
**PREVIOUS ISSUE DATE:** April, 2018

**OTHER INFORMATION:** HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0  
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0  
ANSI/ASHRAE 34 Safety Group – A1  
UL Classified

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

**DISCLAIMER:**

National Refrigerants, Inc. believes that the information and recommendations contained herein (including data and statements are accurate as of the date hereof. **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN.** The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other methods of use of the product and of the information referred to herein are beyond the control of National Refrigerants. National Refrigerants expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

## Safety Data Sheet

### ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

#### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** : ANTIFRZ 50/50 MIX

#### Recommended use of the chemical and restrictions on use

Recommended use : Industrial chemical

#### Manufacturer or supplier's details

**Company** : Univar Solutions USA, Inc.  
**Address** : 3075 Highland Pkwy Suite 200  
Downers Grove, IL 60515  
United States of America (USA)

#### Emergency telephone number:

Transport North America: CHEMTREC (1-800-424-9300)  
CHEMTREC INTERNATIONAL Tel # 703-527-3887

**Additional Information:** : Responsible Party: Product Compliance Department  
E-mail: SDSNA@univarsolutions.com  
SDS Requests: 1-855-429-2661  
Website: www.univarsolutions.com

#### SECTION 2. HAZARDS IDENTIFICATION

##### GHS Classification

Acute toxicity (Oral) : Category 4

Specific target organ toxicity  
- repeated exposure : Category 2 (Kidney)

##### GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H302 Harmful if swallowed.  
H373 May cause damage to organs (Kidney) through prolonged  
or repeated exposure.

Precautionary statements : **Prevention:**  
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
**Response:**  
P301 + P312 + P330 IF SWALLOWED: Call a POISON  
CENTER/doctor if you feel unwell. Rinse mouth.  
P314 Get medical advice/ attention if you feel unwell.  
**Disposal:**  
P501 Dispose of contents/ container to an approved waste dis-



**Safety Data Sheet**  
**ANTIFRZ 50/50 MIX**

Version 1.0

Revision Date: 12/10/2020

posal plant.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

CAS-No.	Chemical name	Weight percent
107-21-1	Ethylene glycol	50 - 70
111-46-6	Diethylene glycol	1 - 5

Actual concentration is withheld as a trade secret

Any Concentration shown as a range is due to batch variation.

**SECTION 4. FIRST AID MEASURES**

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : Wash off with soap and plenty of water.  
Remove contaminated clothing and shoes.  
If symptoms persist, call a physician.
- In case of eye contact : Flush eyes with water as a precaution.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Do not induce vomiting without medical advice.  
Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.

**SECTION 5. FIREFIGHTING MEASURES**

- Suitable extinguishing media : Dry chemical  
Foam  
Carbon dioxide (CO<sub>2</sub>)

## Safety Data Sheet

### ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

Unsuitable extinguishing media	: High volume water jet
Hazardous combustion products	: Carbon oxides Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke). toxic fumes
Further information	: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

#### SECTION 6. ACCIDENTAL RELEASE MEASURES

Environmental precautions	: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

#### SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	: Normal measures for preventive fire protection.
Advice on safe handling	: Do not breathe vapours/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Conditions for safe storage	: Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

#### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

##### Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis

## Safety Data Sheet

### ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

107-21-1	Ethylene glycol	C	50 ppm 125 mg/m <sup>3</sup>	OSHA P0
		C	100 mg/m <sup>3</sup>	ACGIH
		TWA (Vapour)	25 ppm	ACGIH
		STEL (Vapour)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m <sup>3</sup>	ACGIH
		C (Vapour)	40 ppm 100 mg/m <sup>3</sup>	CAL PEL
111-46-6	Diethylene glycol	TWA	10 mg/m <sup>3</sup>	US WEEL

#### Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

#### Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

#### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : No data available

Odour : No data available

Odour Threshold : No data available

**Safety Data Sheet**  
**ANTIFRZ 50/50 MIX**

Version 1.0

Revision Date: 12/10/2020

pH	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash point	: > 94 °C (201 °F)
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: 1.044 - 1.066 @ 20 °C (68 °F) Reference substance: (water = 1)
Density	: 1.055 g/cm <sup>3</sup> @ 20 °C (68 °F)
Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Thermal decomposition	: No data available

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No hazards to be specially mentioned.
Conditions to avoid	: Keep away from heat, flame, sparks and other ignition sources.
Incompatible materials	: Aldehydes Reducing agents Strong acids Strong bases

**Safety Data Sheet**  
**ANTIFRZ 50/50 MIX**

Version 1.0

Revision Date: 12/10/2020

Strong oxidizing agents  
Aluminium**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity****Components:****107-21-1:**

Acute oral toxicity : Assessment: The component/mixture is moderately toxic after single ingestion.

**111-46-6:**Acute oral toxicity : LD50 (Human): Calculated 1,120 mg/kg  
Assessment: The component/mixture is moderately toxic after single ingestion.**Carcinogenicity****IARC**

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA**

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**STOT - repeated exposure****Components:****107-21-1:**

Target Organs: Kidney

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

**Further information****Product:**

Remarks: No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity**

No data available

## Safety Data Sheet

### ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

#### Persistence and degradability

No data available

#### Bioaccumulative potential

No data available

#### Mobility in soil

No data available

#### Other adverse effects

##### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues : Dispose of in accordance with all applicable local, state and federal regulations.  
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Univar Solutions ChemCare: 1-800-909-4897

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

---

## SECTION 14. TRANSPORT INFORMATION

#### DOT (Department of Transportation):

UN3082, Environmentally hazardous substances, liquid, n.o.s., (ETHYLENE GLYCOL), 9, III

**IATA (International Air Transport Association):** Not regulated as a dangerous good

**IMDG-Code:** Not regulated as a dangerous good

# Safety Data Sheet

## ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know Act

##### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Ethylene glycol	107-21-1	5000	10000

##### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : Acute toxicity (any route of exposure)  
Specific target organ toxicity (single or repeated exposure)

**SARA 302** : This material does not contain any components with a section 302 EHS TPQ.

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

107-21-1 Ethylene glycol

##### Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

107-21-1 Ethylene glycol

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMII Intermediate or Final VOC's (40 CFR 60.489):

107-21-1 Ethylene glycol  
111-46-6 Diethylene glycol

##### Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307


##### Massachusetts Right To Know

107-21-1 Ethylene glycol

##### Pennsylvania Right To Know

107-21-1 Ethylene glycol  
7732-18-5 Water  
111-46-6 Diethylene glycol

##### California Prop 65

 **WARNING:** This product can expose you to chemicals including Ethylene glycol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

# Safety Data Sheet

## ANTIFRZ 50/50 MIX

Version 1.0

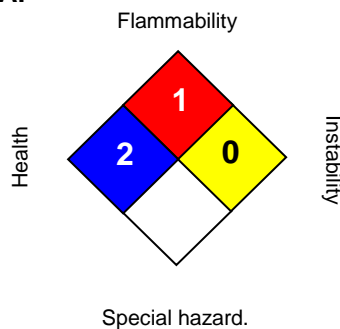
Revision Date: 12/10/2020

**The components of this product are reported in the following inventories:**

- TSCA : On TSCA Inventory
- DSL : All components of this product are on the Canadian DSL
- AICS : On the inventory, or in compliance with the inventory
- NZIoC : On the inventory, or in compliance with the inventory
- ENCS : On the inventory, or in compliance with the inventory
- KECI : On the inventory, or in compliance with the inventory
- PICCS : On the inventory, or in compliance with the inventory
- IECSC : On the inventory, or in compliance with the inventory

### SECTION 16. OTHER INFORMATION

**NFPA:**



**HMIS III:**

<b>HEALTH</b>	<b>2*</b>
<b>FLAMMABILITY</b>	<b>1</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

0 = not significant, 1 = Slight,  
 2 = Moderate, 3 = High  
 4 = Extreme, \* = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Univar Solutions Product Compliance Department (1-855-429-2661) [SDSNA@univarsolutions.com](mailto:SDSNA@univarsolutions.com).

**Revision Date** : 12/10/2020

**Material number:**  
 16160456, 16152978, 16152688



## Safety Data Sheet

### ANTIFRZ 50/50 MIX

Version 1.0

Revision Date: 12/10/2020

<b>Key or legend to abbreviations and acronyms used in the safety data sheet</b>			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

---

# MATERIAL SAFETY DATA SHEET

## 76 Transformer Oil

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** 76 Transformer Oil  
**Product Code:** 1041410  
**Intended Use:** Insulating Oil  
**Synonyms:** Conoco Transformer Oil  
Phillips Transformer Oil  
**Chemical Family:** Petroleum Hydrocarbon

**Responsible Party:** Conoco Lubricants  
A Division of ConocoPhillips  
600 N. Dairy Ashford  
Houston, Texas  
77079-1175

**Customer Service:** 800-255-9556  
**Technical Information:** 800-255-9556

The intended use of this product is indicated above. If any additional use is known, please contact us at the Technical Information number listed.

### EMERGENCY OVERVIEW

**24 Hour Emergency Telephone Numbers:**

Spill, Leak, Fire or Accident Call CHEMTREC:  
North America: (800) 424-9300  
Others: (703) 527-3887 (collect)

California Poison Control System: (800) 356-3219

**Health Hazards/Precautionary Measures:** Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

**Physical Hazards/Precautionary Measures:** Keep away from all sources of ignition.

**Appearance:** Clear brown  
**Physical Form:** Liquid  
**Odor:** Mild petroleum

**NFPA 704 Hazard Class:**

**Health:** 1 (Slight)  
**Flammability:** 1 (Slight)  
**Instability:** 0 (Least)

**HMIS Hazard Class:**

**Health:** 1 (Slight)  
**Flammability:** 1 (Slight)  
**Physical Hazards:** 0 (Least)

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

NON-HAZARDOUS COMPONENTS					
Component / CAS No:	Percent (%)	ACGIH:	OSHA:	NIOSH:	Other:
Hydrotreated Distillate, Light Naphthenic ..C15-30 64742-53-6	> 99	5 mg/m <sup>3</sup> TWA 10 mg/m <sup>3</sup> STEL	5 mg/m <sup>3</sup> TWA	2500 mg/m <sup>3</sup> IDLH	as Oil Mist, if Generated  5 mg/m <sup>3</sup> NOHSC TWA
Additives PROPRIETARY	< 1	NE	NE	NE	

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

1%=10,000 PPM.  
NE=Not Established

All components are listed on the TSCA inventory.

## 3. HAZARDS IDENTIFICATION

### Potential Health Effects:

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Contact may cause mild skin irritation including redness, and a burning sensation. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin leading to dermatitis (inflammation). No harmful effects from skin absorption are expected.

**Inhalation (Breathing):** No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

**Ingestion (Swallowing):** No harmful effects expected from ingestion.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea and diarrhea.

**Cancer:** Inadequate data available to evaluate the cancer hazard of this material.

**Target Organs:** Inadequate data available for this material.

**Developmental:** No data available for this material.

**Pre-Existing Medical Conditions:** Conditions aggravated by exposure may include skin disorders.

## 4. FIRST AID MEASURES

**Eye:** If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** Wipe material from skin and remove contaminated shoes and clothing. Cleanse affected area(s) thoroughly by washing with mild soap and water and, if necessary, a waterless skin cleanser.

**Inhalation (Breathing):** If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

**Ingestion (Swallowing):** First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

**Notes to Physician:** High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. Often these injuries require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury.

Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

## 5. FIRE-FIGHTING MEASURES

### Flammable Properties:

<b>Flash Point:</b>	> 293°F / > 145°C
<b>Test Method:</b>	(COC)
<b>OSHA Flammability Class:</b>	Not applicable
<b>LEL%:</b>	0.9
<b>UEL%:</b>	7.0
<b>Autoignition Temperature:</b>	No data

**Unusual Fire & Explosion Hazards:** This material may burn, but will not ignite readily. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

**Fire Fighting Instructions:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

## 6. ACCIDENTAL RELEASE MEASURES

This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

---

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

## 7. HANDLING AND STORAGE

**Handling:** Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Use good personal hygiene practices.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

**Storage:** Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat and all sources of ignition. Storage temperatures above 113°F may lead to thermal decomposition, resulting in the generation of hydrogen sulfide and other sulfur containing gases. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional engineering controls may be required.

### Personal Protective Equipment (PPE):

**Respiratory:** A NIOSH certified air purifying respirator with a Type 95 (R or P) particulate filter may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a NIOSH approved self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact and possible irritation (see manufacturers literature for information on permeability).

**Eye/Face:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Other Protective Equipment:** A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

Suggestions for the use of specific protective materials are based on readily available published data. Users should check with specific manufacturers to confirm the performance of their products.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

<b>Appearance:</b>	Clear brown
<b>Physical Form:</b>	Liquid
<b>Odor:</b>	Mild petroleum
<b>Odor Threshold:</b>	No data
<b>pH:</b>	Not applicable
<b>Vapor Pressure (mm Hg):</b>	<0.1
<b>Vapor Density (air=1):</b>	> 5
<b>Boiling Point:</b>	No data
<b>Melting/Freezing Point:</b>	No data
<b>Solubility in Water:</b>	Negligible
<b>Partition Coefficient (n-octanol/water):</b>	No data
<b>Specific Gravity:</b>	0.88 - 0.89
<b>Bulk Density:</b>	7.33 - 7.41 lbs/gal
<b>Viscosity cSt @ 100°C:</b>	2.2 - 3.0
<b>Viscosity cSt @ 40°C:</b>	9.4 - 12.0
<b>Percent Volatile:</b>	Negligible
<b>Evaporation Rate (nBuAc=1):</b>	< 0.01
<b>Flash Point:</b>	> 293°F / > 145°C
<b>Test Method:</b>	(COC)
<b>Flammable/Explosive Limits:</b>	No data
<b>Autoignition Temperature:</b>	No data
<b>Decomposition Temperature:</b>	No data

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Conditions to avoid:** Extended exposure to high temperatures can cause decomposition.

**Materials to Avoid (Incompatible Materials):** Avoid contact with strong acids, strong bases, oxidizing agents.

**Hazardous Decomposition Products:** Combustion can yield and carbon, nitrogen and sulfur oxides.

**Hazardous Polymerization:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Hydrotreated Distillate, Light Naphthenic ..C15-30 - 64742-53-6

**Target Organs:** Administration of certain mineral hydrocarbon white oils in the diet to Fischer rats at 1500 mg/kg/day for 90 days resulted in the formation of microgranulomas in the liver. However, this response was not observed in studies conducted with other rat strains or dogs. Microgranulomas like those observed in the Fischer 344 rat studies have not been observed in humans.

**Acute Data:**

Hydrotreated Distillate, Light Naphthenic ..C15-30 - 64742-53-6

**Dermal LD50** = No information available

**LC50** = No information available

**Oral LD50** = No information available

Additives - PROPRIETARY

**Dermal LD50** = No information available

**LC50** = No information available

**Oral LD50** = No information available

## 12. ECOLOGICAL INFORMATION

Not evaluated at this time.

## 13. DISPOSAL CONSIDERATIONS

This material under most intended uses would become used oil due to contamination by physical or chemical impurities. RECYCLE ALL USED OIL. While being recycled, used oil is regulated by 40 CFR 279. Use resulting in chemical or physical change or contamination may also subject it to regulation as hazardous waste. Under federal regulations, used oil is a solid waste managed under 40 CFR 279. However, in California, used oil is managed as hazardous waste until tested to show it is not hazardous. Consult state and local regulations regarding the proper handling of used oil. In the case of used oil, the intent to discard it may cause the used oil to be regulated as hazardous waste.

Contents should be completely used and containers emptied prior to discard. Rinsate may be considered a RCRA hazardous waste and must be disposed of with care and in compliance with federal, state and local regulations. Large empty containers, such as drums, should be returned to the distributor or a drum reconditioner. To assure proper disposal of small empty containers, consult with state and local regulations and disposal authorities.

## 14. TRANSPORTATION INFORMATION

**DOT Shipping Description:** Not regulated

**Note:** Material is unregulated unless in container of 3500 gal or more then provisions of 49 CFR Part 130 apply for land shipment.

**IMDG Shipping Description:** Not regulated

**ICAO/IATA Shipping Description:** Not regulated

---

## 15. REGULATORY INFORMATION

### U.S. Regulations:

#### EPA SARA 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

#### SARA - Section 313 and 49 CFR 372:

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

--None Known--

#### EPA (CERCLA) Reportable Quantity:

#### CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs

This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372:

-- None Known --

#### California Proposition 65:

Warning: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

-- None Known --

#### Carcinogen Identification:

This material has not been identified as a carcinogen by NTP, IARC, or OSHA.

#### TSCA:

All components are listed on the TSCA inventory.

### **Canadian Regulations:**

#### Domestic Substances List:

Listed

#### WHMIS Classification:

Not regulated

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.



---

## 16. OTHER INFORMATION

**Issue Date:** 19-Jan-2004  
**Previous Issue Date:** 10/17/2000  
**Product Code:** 1041410  
**Reason for revision:** Changed responsible party from Conoco to ConocoPhillips. Other formatting changes.  
**MSDS Code:** 775852

### **Disclaimer of Expressed and implied Warranties:**

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

RELi<sup>3</sup>ON<sup>®</sup>

LITHIUM IRON PHOSPHATE  
SAFETY DATA SHEET (SDS)

## SECTION 1 - COMPANY AND PRODUCT IDENTIFICATION

Product Name: Lithium Iron Phosphate Rechargeable Battery  
 Common Name: Lithium Iron Phosphate Battery LiFePO4)  
 Product Use: Electric Storage Battery  
 Distributed By: RELiON Battery, LLC  
 Address: 4868 Harrisburg Rd, Fort Mill, SC 29707 USA  
 Phone Number: 803-547-3522  
 Fax Number: 803-547-3526  
 Email: powerpros@reliombattery.com  
 Emergency Number: 803-547-3522  
 Revision Date: December 19, 2017

## SECTION 2 - HAZARDS IDENTIFICATION

**Emergency Overview:** This product contains a chemical substance. Safety information is given for exposure to the product as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture, the below hazards exist.

**CAS# 1333-86-4**

### Classification According to GHS

Self-heating substances and mixtures (1)  
 Carcinogenicity (2)  
 Specific target organ toxicity, repeated exposure (1) (lung)

### Label Elements

#### Hazard Images:



Signal Word: Danger

#### Hazard Statements:

H251 Self-heating; may catch fire  
 H351 Suspected of causing cancer  
 H372 Causes damage to organs through prolonged or repeated exposure (lung)

### Precautionary Statements:

#### Prevention:

P235 Keep cool.  
 P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P280 Wear protective gloves, protective clothing, eye protection and face protection.  
 P260 Do not breathe dust.  
 P264 Wash skin and clothing thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.

#### Response:

P308 + P313 If exposed seek medical attention.  
 P314 Seek medical attention if you feel unwell.

#### Storage:

P407 Maintain air gap between stacks or pallets.  
 P413 Store bulk masses greater than ...kg/...lbs at temperatures not exceeding ...C  
 P420 Store separately.  
 P405 Store locked up.

#### Disposal:

P501 Contents require disposal at approved waste treatment plants.

**CAS# 7440-50-8**

### Classification according to GHS

Sensitisation skin (1, 1A, 1B)  
 Specific target organ toxicity, single exposure (1) (digestive system)  
 Specific target organ toxicity, single exposure; Respiratory tract irritation (30)

### Label Elements

#### Hazard Images:



Signal word: Danger

#### Hazard Statements:

H317 May cause allergic skin reaction.  
 H370 Causes damage to organs (digestive system).  
 H335 May cause respiratory irritation.



**Prevention:**

P260 Do not breathe dust, fume.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P280 Wear protective gloves, eye protection, face protection.  
P264 Wash skin and clothing thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.

**Response:**

P302+P352 IF ON SKIN: Wash with plenty of water.  
P333 + P313 If skin irritation or rash occurs: Seek medical attention.  
P321 Specific treatment (See additional emergency instructions).  
P362 + P364 Take off contaminated clothing and wash it before reuse  
P308 + P311 IF exposed or concerned: Call a POISON CONTROL CENTER.  
P312 Call a POISON CENTER if you feel unwell.

**Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.

**Disposal:**

P501 Contents handling to approved waste treatments.

**CAS# 7429-90-5****Classification according to GHS**

Substances and mixtures which, in contact with water, emit flammable gases (2, 3)  
Specific target organ toxicity, repeated exposure (1) (Lung)  
Hazardous to the aquatic environment, long-term hazard (4)

**Label Elements****Hazard Images:**

**Signal word:** Danger

**Hazard Statements:**

H261 In contact with water releases flammable gas.  
H372 Causes damage to organs through prolonged or repeated exposure (Lung).  
H413 May cause long lasting harmful effects to aquatic life.

**Prevention:**

P223 Do not allow contact with water.  
P231 + P232 Handle and store contents under inert gas, protect with moisture.  
P280 Wear protective gloves and clothing thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P273 Avoid release to the environment.

**Response:**

P302 + P335 + P334 IF ON SKIN: Brush off loose particles from skin and immerse in cool water.  
P370 \_ P378 In case of fire: use the appropriate media to put out the fire.  
P314 Seek medical attention if you feel unwell.

**Storage:**

P402 + P404 Store in a dry place. Store in a closed container.

**Disposal:**

P501 Contents handling to approved waste treatment plants.

**Other Hazards**

**Physical and Chemical hazards:** See Section 10

**Human Health Hazards:** See Section 11

**Environmental Hazards:** See Section 12



## SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

### Chemical Characterization: Mixture

Chemical Composition	CAS No.	EC#	Weight (%)
Ferrous Phosphate Litium	15365-14-7	476-700-9	38.09
Carbon Black	133-86-4	215-609-9	0.62
Rubber, styrene-butadiene, fume	61789-96-6	612-382-1	0.34
Polyvinylidene fluoride resin	24937-79-9	607-458-6	1.04
Graphite	7782-42-5	231-955-3	20.10
Phosphate (1-), hexafluoro-, lithium	21324-40-3	244-334-7	1.10
Copper	744-50-8	231-159-6	9.22
Aluminium	7429-9-5	231-072-3	4.00

## SECTION 4 - FIRST AID MEASURES

### Description of First Aid Measures

**General Information:** No special measures required.

#### After Eye Contact

Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

#### After Skin Contact

Remove contaminated clothing and shoes. Immediately wash with water and soap, rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

#### After Inhalation

Remove victim to non exposed area. Administer artificial respiration if breathing is difficult. Seek medical attention.

#### After Swallowing

Do not induce vomiting. Get medical attention.

**Personal protective equipment for first-aid responders:** No data available

**Most important symptoms/effects, acute and delayed:** No data available

**Indication of immediate medical attention and special treatment needs:** No data available

## SECTION 5 - FIRE FIGHTING MEASURES

### Suitable extinguishing media:

Use extinguishing agent suitable for local conditions and the surrounding environment, such as dry powder, CO<sub>2</sub>.

**Unsuitable extinguishing media:** No data available.

### Specific Hazards Arising from the Chemical:

Special hazards arising from the substance or mixture

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium ion batteries contain flammable electrolytes that may vent, ignite and spark when subjected to high temperature (>150°C (302°F), when damaged or abused (e.g.) mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in close proximity.

### Specific protective actions for fire-fighters:

Protective equipment: wear self-contained respirator. Wear fully protective impervious suit.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

**Protective Equipment:** No data available.

**Emergency Procedures:** Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, place the spilled material into a suitable container for disposal. Keep spilled material out of sewers, ditches and bodies of water.

**Environmental Precautions:** Do not allow material to be released into the environment without proper governmental permits.

### Methods and Materials for Containment and Cleaning Up:

All waste must refer to the United Nations, the national and local regulations for disposal.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.



## SECTION 7 - HANDLING AND STORAGE

### Precautions for Safe Handling:

Consumption of food and beverage should be avoided in work areas. Wash hands with soap and water before eating or drinking. Ground containers when transferring liquid to prevent static accumulation and discharge. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

### Conditions for safe storage, including any incompatibilities:

#### Requirements to be met by storerooms and receptacles

Store in a cool, dry, well-ventilated place.

#### Information about storage in one common storage facility

Keep away from heat, avoiding long exposure to sunlight.

#### Further information about storage conditions

Keep container tightly sealed

**Specific and use:** No data available

## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

CAS No.	ACGIH	NIOSH	OSHA
15365-14-7	N/A	N/A	N/A
1333-86-4	TVL-TWA 3mg/m <sup>3</sup>	REL-TWA 3.5mg/m <sup>3</sup>	PEL-TWA 3.5mg/m <sup>3</sup>
61789-96-6	N/A	N/A	N/A
24937-79-9	N/A	N/A	N/A
7782-42-5	TVL-TWA 2mg/m <sup>3</sup>	REL-TWA 2.5mg/m <sup>3</sup>	PEL-TWA 15mppcf PEL-TWA 20mppcf
21324-40-3	N/A	N/A	N/A
7440-50-8	TVL-TWA 0.2mg/m <sup>3</sup> TVL-TWA 1mg/m <sup>3</sup>	REL-TWA 1mg/m <sup>3</sup> REL-TWA 0.1mg/m <sup>3</sup>	PEL-TWA 0.1mg/m <sup>3</sup> PEL-TWA 1mg/m <sup>3</sup>
7429-90-5	TVL-TWA 1mg/m <sup>3</sup>	REL-TWA 2mg/m <sup>3</sup> REL-TWA 5mg/m <sup>3</sup> REL-TWA 10mg/m <sup>3</sup>	PEL-TWA 5mg/m <sup>3</sup> PEL-TWA 15mg/m <sup>3</sup>

**Appropriate engineering controls:** The usual precautionary measures for handling chemicals should be followed.

Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work.

### Personal Protective Equipment

**Respiratory protection:** Wear suitable protective mask in order to reduce the respiratory system. In case of leakage, wear chemical protective clothing, including self-contained breathing apparatus.

**Hand protection:** Wear appropriate protective gloves to reduce skin contact.

**Eyes protection:** Wear safety goggles or eye protection combined with respiratory protection.

**Skin and body protection:** Working environment required, wear suitable protective clothing to minimize contact with skin. The type of protective equipment must be according to the concentration and content of certain hazardous substances in the workplace.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

**Color:** Black

**Physical State:** Prismatic

**Odour:** Not available

**Odour Threshold:** Not available

**pH:** Not available

**Melting point/freezing point:** Not available

**Initial boiling point and boiling range:** Not available

**Flash Point:** Not available

**Evaporation Rate:** Not available

**Flammability (solid, gas):** Not available

**Explosion Limits (vol% in air):** Not available

**Vapour Pressure, kPa at 20°C:** Not available

**Vapor Density:** Not available

**Density/Relative Density (water=1):** Not available

**Solubility(ies):** Not available

**Partition Coefficient: n-octanal/water:** Not available

**Auto-ignition Temperature:** Not available

**Decomposition Temperature:** Not available

**Viscosity:** Not available

**Other Information:** Not available

**Voltage:** 12.8V

**Electric Capacity:** 16000mAh

**Electric Energy:** 204.8Wh



## SECTION 10 - STABILITY AND REACTIVITY

**Reactivity:** No data available

**Chemical Stability:** Stable

**Possibility of Hazardous Reactions:** No data available

**Conditions to Avoid:** Flames, sparks and other sources of ignition, incompatible materials

**Incompatibilities Materials:** Oxidizing agents, acid, base

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, lithium oxide fumes

## SECTION 11 - TOXICOLOGICAL INFORMATION

**Acute Toxicity:**

CAS No.	LC50/LD50
15365-14-7	No data available.
1333-86-4	LD50 Rat (oral): 15400 mg/kg
61789-96-6	No data available.
24937-79-9	No data available.
7782-42-5	No data available.
21324-40-3	No data available.
7440-50-8	No data available.
7429-90-5	No data available.

**Skin Corrosion/Irritation:** No data available

**Serious Eye Damage/Irritation:** No data available

**Respiratory or Skin Sensitization:** No data available

**Germ Cell Mutagenicity:** No data available

**Carcinogenicity:** No data available

**Reproductive Toxicity:** No data available

**Specific Target Organ Toxicity-Single Exposure:** No data available

**Specific Target Organ Toxicity-Repeated Exposure:** No data available

**Aspiration Hazard:** No data available

**Information on the Likely Routes of Exposure:** No data available

**Eye:** No data available

**Skin:** No data available

**Ingestion:** No data available

**Inhalation:** No data available

## SECTION 12 - ECOLOGICAL INFORMATION

**Ecological Toxicity:** No data available

**Persistence and Degradability:** No data available

**Bioaccumulative Potential:** No data available

**Mobility in Soil:** No data available

**Other Adverse Effects:** No data available

## SECTION 13 - DISPOSAL CONSIDERATIONS

**Disposal Methods**


**Recommendation:** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned Packaging**

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

## SECTION 14 - TRANSPORT INFORMATION

**Acute Toxicity:**

<b>UN Number</b>	UN3480
<b>IATA</b>	UN3480
<b>IMDG</b>	UN3480
<b>Model Regulation</b>	UN3480
<b>UN Proper shipping name</b>	Lithium ion batteries
<b>IATA</b>	Lithium ion batteries
<b>IMDG</b>	Lithium ion batteries
<b>Model Regulation</b>	Lithium ion batteries
<b>Transport Hazard Class (es)</b>	
<b>IATA</b>	9
<b>IMDG</b>	9
<b>Model Regulation</b>	9
<b>Packing group</b>	N/A
<b>IATA</b>	N/A
<b>IMDG</b>	N/A
<b>Model Regulation</b>	N/A
<b>Packing Sign</b>	
<b>IATA</b>	
<b>IMDG</b>	
<b>Model Regulation</b>	
<b>Environmental Hazards Marine Pollutant:</b>	No
<b>Special precautions for user</b>	Not applicable



### Transport Information:

RELiON LiFePO4 Batteries have passed the test UN38.3, according to the Report ID: MLINHTU74733721.

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the packaging Instruction 965 Section IA of IATA DGR 58th Edition for transportation, Cargo aircraft only.

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the special provision 230, 348 of IMDG (37-14).

Watt-hour exceeds the standard, so it belongs to dangerous goods. The goods are packaged according to the <<Recommendations On The Transport of Dangerous Goods-Model Regulations>> (19th).

Separate batteries to prevent short-circuiting and they should be packed in a strong package during transport. Lithium cell or battery should incorporate a safety venting device or be designed to prevent a violent rupture under normal transport conditions. Keep away from high temperature and open flames. Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.

**Transport Fashion:** By air, by sea, by railway, by road.

## SECTION 15 - REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

CAS No.	LC50/LD50
15365-14-7	No data available.
1333-86-4	LD50 Rat (oral): 15400 mg/kg
61789-96-6	No data available.
24937-79-9	No data available.
7782-42-5	No data available.
21324-40-3	No data available.
7440-50-8	No data available.
7429-90-5	No data available.

## SECTION 16 - OTHER INFORMATION

Issue Time: 2017-02-21

Issue Department: Technical Department

Modification Record: Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above names supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although, certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Other Information:

CAS: (Chemical Abstracts Service)

EC: (European Commission)

ACGIH: (American Conference of Governmental Industrial Hygienists)

NIOSH: (US National Institute for Occupational Safety and Health)

OSHA: (US Occupational Safety and Health)

TLV: (Threshold Limit Value)

TWA: (Time Weighted Average)

STEL: (Short Term Exposure Limit)

PEL: (Permissible Exposure Average)

REL: (Recommended Exposure Limit)

PC-STEL: (Permissible concentration-time weighted average)

PC-TWA: (Permissible concentration-short time exposure limit)

LC50: (Lethal concentration, 50 percent kill)

LD50: Lethal dose, 50 percent kill)

IARC: (International Agency for Research on Cancer)

EC50: (Median effective concentration)

BCF: (Bio concentration Factor)

BOD: Biochemical Oxygen Demand)

NOEC: (No observed effect concentration)

NTP: (US National Toxicology Program)

RTECS: (Registry of Toxic Effects of Chemical Substances)

IATA: (International Air Transport Association)

IMDG: (International Maritime Dangerous Goods)

TDG: (Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations)

TOC: (Total Organic Carbon)

TSCA: (Toxic Substances Control Act of USA)

DSL: 9The Domestic Substances List of Canada)

NDSL: (The Non-Domestic Substances List of Canada)

