

# ColdAir

## Automotive Refrigerant Agent

### Technology Description

**Benefits of use**

- Produces colder air vent temperatures due to increased efficiency of the A/C system.
- Drastically reduces friction & wear in the compressor-particularly dry start-up wear
- Increases oil lubricating capability
- Increases oxidation resistance of refrigeration oil
- Inhibits corrosion/rust and leaves no deposits
- Increases protection of compressor seals
- Reduces maintenance and down time
- Protects mechanical parts with a molecular bonded lubricant layer
- Will not affect manufacturer's warranty

**What is ColdAir and what are its unique features?** ColdAir is classified as a molecular bonding, *Polarized Refrigerant Oil Additive (PROA)*, with *activated polar molecules* which have been combined with synthetic components into a concentrated oil form. This concentrate is compatible with conventional AC lubricants, refrigerant gases, and ferrous/non-ferrous metals and is characterized by superior anti-friction, extreme pressure, load carrying, anti-corrosive and boundary lubrication properties. The ColdAir formula's *activated polar agent* does not include chemical elements of the "Halogen" group—chlorine, fluorine, sulfur or phosphorous, any of which may combine with hydrogen and form highly undesired (corrosive) acid. ColdAir does not contain PTFE (Teflon®) or any other particulate that could either cause corrosion or change mechanical tolerances in an air conditioning system.

**How does a "Polarized Refrigerant Oil Additive" (PROA) work?** The ColdAir *PROA* technology is specifically designed for the strict requirements of AC lubrication due to the ability of a *PROA* to form a protective molecular layer, described as: "a microscopic electro-chemical layer, without the introduction of solid particles. The technology, especially developed for air-conditioning compressors, forms a boundary film on metal parts and provides lubrication while protecting parts from friction degradation. A *PROA* "contains an activated polar molecule (highly electrically charged at one end). The charged molecule has a strong affinity for metal, and coats metal surfaces in the compressor with an essentially single-molecule thin layer. This layer not only increases the ability of oil to lubricate moving parts in the compressor, but also displaces the build-up of refrigerant oil in condenser and evaporator coils thus improving heat transfer of heat exchangers."<sup>1</sup>

**How does oil build up affect the efficiency of an AC system?** The long term effect of refrigeration oil build-up is significant to the energy efficiency of an AC unit and is described as: "Oil fouling of the heat transfer surfaces of airconditioning systems, will cause a loss of about 7% efficiency the first year, and 2% per year the following years"<sup>2</sup>

### Directions for Use

**To treat vehicular air- conditioning systems,** ColdAir is added to the specified refrigeration system oil that lubricates the compressor motor. Once inside the AC system, ColdAir will continue to boost performance and provide protection for the life of the unit. Retreatment is only needed if you lose or replace the refrigeration oil or gas.

In older AC units, results are typically seen quickly, however, ColdAir may take one to two weeks of normal operation to completely treat the AC system.

**•If the AC system is discharged,** introduce the ColdAir treatment, at the correct ratio (see: AC Ratio Usage below), to the refrigeration oil of the AC unit before charging the system.

- If the AC system is charged, 1.** Start the AC unit and keep it running throughout the ColdAir treatment installation.
- 2.** Add ColdAir to the system by the exact same procedures that are normally employed to add refrigerant leak detection dye to an AC system. Standard refrigerant dye injector equipment or AC technician pressure gauges can be used to introduce the ColdAir treatment at the correct ratio(see AC ratio usage below), into the unit's cool gas suction line valve or low-pressure port on the refrigerant line.
- 3.** It is important that the ColdAir fluid be injected very slowly into the unit and that no air or moisture be allowed to enter the refrigerant gas system.

**AC Ratio Usage:** AC systems with single or multiple compressors, **1oz per Compressor Unit**

#### Characteristics of ColdAir

Base Oil..... Refrigeration Oil  
 Lubricant Miscibility..... (No Change)  
 \*ASHRAE 97- Metal Compatability... (No Issues)  
 \*ASHRAE 86- FLOC Point..... (No Issues)  
 \*\*ASTM 130- Copper Corrosion..... 1A (Non-Corrosive)  
 \*\*\*OSHA CFR 1910.1200..... (Non-Hazardous)

\*American Society of Heating, Refrigerating and Air Conditioning Engineers

\*\*American Society for Testing and Materials

\*\*\*Occupational Safety and Health Administration

<sup>1</sup> United States Department of Energy—1995 Federal Technology Alert -"Polarized Refrigerant Oil Additives"

<sup>2</sup> American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbook 1998 -"Effects on Heat Transfer"