

What are Hydrocarbon Refrigerants?

Hydrocarbon Refrigerants are natural, non-toxic refrigerants that have no ozone depleting properties and minimal global warming potential. There are only five natural refrigerants. The other four are Air, Water, Ammonia and Carbon Dioxide.

All existing Fluorocarbon Refrigerants will be phased out in some shape or form over the coming years because of their ozone depleting properties or global warming potential.

Hydrocarbon Refrigerants are not just good for the environment; they can also save you up to 35% on your energy bill. Airconditioning systems are the largest consumers of electricity for any building. The energy used in cooling generally accounts for 60% of buildings total energy consumption. By converting to hydrocarbon refrigerants, substantial energy savings can become a reality.

Hydrocarbon Refrigerants are 50% more efficient conductors of heat than Fluorocarbon Refrigerants. Their operating pressures are about 20% lower than that of Fluorocarbon Refrigerants. These lower operating discharge pressures reduce the work that the compressor has to do thus reducing wear and tear. There is less pressure on pipe work, joints, hoses, fittings and the like reducing the likelihood of leaks. This can and will extend the working life of your equipment.

All these advantages equate to an energy saving of between 17% and 35 % with an average of 25%.

Hydrocarbon Refrigerants are flammable but are safe to use if handled correctly. It should be remembered that millions of tonnes of hydrocarbons are used safely every year throughout the world for cooking, heating, powering vehicles, and as aerosol propellants for hairsprays, deodorants, whipped cream and cooking sprays etc.

In refrigeration and airconditioning systems which use chemical refrigerants, oil mixes with the refrigerants and travels around the system. All these chemical refrigerants become flammable due to the oil vapour content of the gases when being discharged from the systems. Most chemical refrigerants produce toxic by-products and poisonous gases following accidental release in the presence of an adequate heat source.

Hydrocarbon Refrigerants are recognised as proper refrigerants by the World's leading industry bodies such as ASHRAE (American Society Heating Refrigeration Airconditioning Engineers) and AIRAH (Australian Institute Refrigeration Airconditioning and Heating). These organisations have allocated designated numbers to Hydrocarbon Refrigerants. e.g. R290, R600, & R170.

Procedures and standards have been developed and adopted to ensure the safe use of Hydrocarbon Refrigerants. Australian Standard AS 1677-1998 includes comprehensive procedures for the safe use of all refrigerants including hydrocarbons.

Hydrocarbon Refrigerants do not spontaneously combust on contact with air. Three elements need to coincide. 1) There needs to be a release of hydrocarbons. 2) The Hydrocarbon needs to mix with the correct proportion of air, the range of flammability being between 2 and 10%. Outside of these limits combustion cannot occur. 3) An ignition source exceeding 440 degrees C must be present. If one of these three elements is eliminated, combustion cannot occur.

Many European manufacturers of commercial and domestic refrigeration equipment have changed to hydrocarbon technology. Every year approximately 8 million hydrocarbon based refrigerators are produced in Europe, each using around 30% less energy than refrigerators using fluorocarbon refrigerants. These include companies such as Bosch, Electrolux, Miele, Whirlpool and AEG. The large supermarket chain in the UK called Sainsburys has built six new stores using hydrocarbon refrigerants to refrigerate the entire store.

In Asia LG produces over 11000 refrigerators per day using hydrocarbon refrigerant. In China, hydrocarbon refrigerants are used by 3 out of 4 of the largest refrigerator manufacturers.

The technology to convert existing refrigeration or airconditioning systems to hydrocarbon refrigerants has been available for the last 20 years. Properly trained Technicians and Engineers can ensure adequate control of health and safety risks associated with any use of hydrocarbon refrigerants.

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