R134A REFRIGERANT

Introduction

DSP 134a Refrigerant (also known as 1,1,1,2-Tetrafluoroethane) is a hydrofluorocarbon (HFC-134a) and a nonflammable, clear vapor at ambient temperatures. It is a common replacement for R12 (CFC-12) due to its zero-ozone depletion potential and lower global warming potential, which makes it better for the environment. This brochure offers more technical information about DSP 134a.

Uses

DSP 134a Refrigerant is commonly used in many air-conditioning applications, especially for Applied Product Systems such as chillers. This refrigerant is usually used with various air-conditioning and refrigeration compressors, such as centrifugal, rotary, screw, scroll and reciprocating compressors.

Physical Properties

The table below shows selected physical properties of DSP 134a Refrigerant.

Table 1 Selected Physical Properties of DSP 134a Refrigerant

Chemical Formula	-	CH_2FCF_3
Molecular Weight	-	102.03
Boiling Point	°C(°F)	-26.2 (-15.1)
Freezing Point	°C(°F)	-92.5 (-141.9)
Critical Temperature	°C	101.1
Critical Pressure	MPa	4.05
Vapor Pressure at 70°F at 130°F	psia	85.8 213.4
Vapor Density (Air = 1.0)		3.5
Specific Heat of Liquid at 30°C	kj/(kg°C)	1.51
Solubility in Water	wt%	0.15
Viscosity	-	Not Applicable
Flammability Limits in Air	vol%	None* (Nonflammable)
Appearance	-	Colourless, Not Turbid
Odour	-	Faint ethereal odour
Ozone Depletion Potential	-	0
Global Warming Potential	-	1300

*Based on ASHRAE Standard 34 with match ignition

Quality Index

The table below shows the quality index of DSP 134a Refrigerant.

Table 2 Quality Index of DSP 134a Refrigerant

Purity	%	≥ 99.9
Moisture	ppm	≤ 10
Acidity	ppm	≤ 0.1
Vapor Residue	ppm	≤ 100

FLAMMABILITY

DSP 134a Refrigerant is not flammable at ambient temperatures and atmospheric pressure. Hence, it is safe to use under normal working circumstances. However, DSP 134a becomes combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain chemically reactive metals may also result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/ or appropriate pressures).

CHEMICAL STABILITY

DSP 134a Refrigerant is normally stable, making it usable in most of its refrigeration applications. However, there are certain conditions to avoid. The refrigerant should 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.

COMPATIBILITY WITH OTHER CHEMICALS/ MATERIALS

Under very high temperatures and/or appropriate pressures, DSP 134a Refrigerant is incompatible with freshly abraded aluminum surfaces (may cause strong exothermic reaction) and other chemically reactive metals such as potassium, calcium, powdered aluminum, magnesium and zinc.

TOXICITY

DSP 134a Refrigerant has a low order of toxicity based on toxicity tests as per PAFT Testing. Results show that DSP 134a is not mutagenic and there is no teratogenic effect in animals, including no adverse effects after repeated inhalation exposure. Regardless, as a standard precaution for all chemicals, unnecessary exposure of DSP 134a should be minimised.

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