

R407F – Genetron[®] Performax[™] LT.

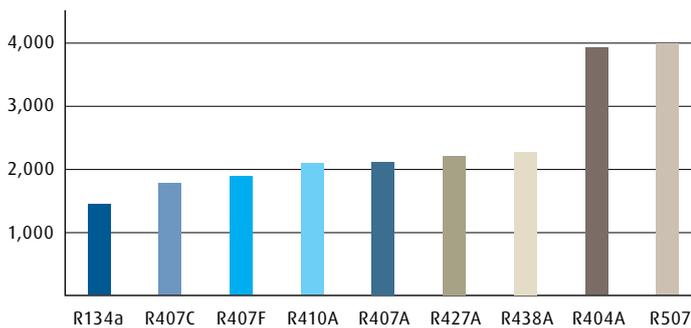
Zero ozone depletion potential replacement
for R22 and lower global warming potential
replacement for R404A.



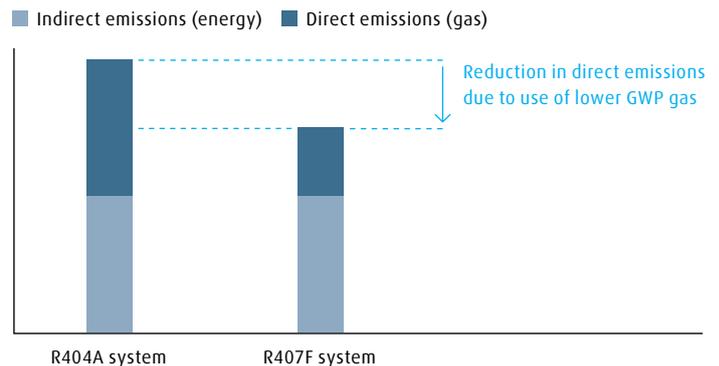
R407F – Genetron® Performax™ LT.

Lower-GWP replacement for R404A.

GWP** of some common HFC refrigerants



Total emissions in an example system*



The environmental challenge

For over twenty years, both R22 and R404A has been an extremely useful refrigerant gas in a number of applications, including commercial refrigeration systems such as those often used in supermarkets.

Like all HCFCs, R22 has been shown to deplete the ozone layer and is being phased out globally under the Montreal Protocol.

Although an effective refrigerant, R404A has one of the highest global warming potentials (GWPs) of any refrigerant gas, often leading to high direct greenhouse gas emissions and therefore high CO₂ equivalent (CO₂e) emissions over the equipment lifetime.

A growing focus on the environmental impact of refrigerants is fuelling demand for refrigeration solutions that can provide satisfactory cooling performance with zero ozone depletion potential and a lower global warming impact. This is propelling environmentally friendly refrigeration solutions to the top of the corporate sustainability agenda.

The zero-ODP, low-GWP solution

Developed by Honeywell, R407F (Genetron® Performax™ LT) is the ideal retrofit solution for many existing R22 and R404A systems. This lower-GWP alternative has been shown to be more efficient than R404A in many systems, thus combining environmental gains with lower energy costs. A straightforward retrofit process adds to the appeal of this solution.

R407F can also be used as a retrofit solution for R22. It has an extremely good capacity match to R22 in medium and low temperature commercial applications such as in supermarkets.

	R22	R404A	R407F
Constituents	R22	R143a/R125/ R134a	R134a/R125/R32
Preferred oil	Mineral (MO) or Alkylbenzene (AB)	Polyolester (POE)	Polyolester (POE)
ASHRAE safety classification	A1 – non-toxic & non-flammable	A1 – non-toxic & non-flammable	A1 – non-toxic & non-flammable
Boiling point @ 1atm	-41.0°C	-46.5°C	-45.5°C
Critical temperature	96.0°C	72.0°C	82.7°C
Critical pressure	49.9 bar(a)	37.3 bar(a)	47.5 bar(a)
ODP	0.055	0	0
GWP	1810	3922	1824

Benefits at a glance

Lower environmental impact

- Zero ozone depletion potential
- Non-toxic and non-flammable
- 50% or higher reduction in GWP compared with R404A

* Systems will vary. Example assuming R404A system with equal direct and indirect emissions is retrofitted to operate on R407F. Energy use and refrigerant leakage assumed the same in both cases.

** GWP IPCC revision 4.



Easy retrofit process

- No need to change TXV valve for R22 on most systems
- Approved for use by many compressor manufacturers
- Compatible with the same oils, elastomers and plastics as R404A

Impressive performance

- Efficient R22 retrofit option
- Lower discharge temperature than R22
- Similar cooling capacity to R404A
- Energy savings of up to 10% in many R404A systems

Retrofit made easy

R407F (like other gases such as R407C) is a zeotrope. Therefore it must be charged in the liquid phase to prevent fractionation. R407F does have a moderate glide, although this can be easily managed by a minor adjustment to the expansion device.

We recommend that you overhaul your refrigeration system during the retrofit operation. This should include replacing the filter drier, and replacement of seals and gaskets. This is especially important when retrofitting from R22 to R407F.

R22 Retrofit

R407F may require some system modifications such as changing the lubricant to POE oil. It may be necessary to carry out multiple lubricant flushes in some systems.

Most R22 systems with either expansion valves or capillary tubes will operate satisfactorily with R407F.

R404A Retrofit

R407F is fully compatible with the POE lubricants used in an R404A system. In many cases, the original oil can be used.

R407F has a lower mass flow than R404A, therefore we recommended that you check existing piping to ensure compatibility.

R407F has higher discharge temperatures than R404A. It is thus advisable to consult compressor manufacturers to confirm acceptable discharge temperatures.

Trusted partner

The Gases Division of The Linde Group is one of the largest and most global distributors of refrigerants. For more than 40 years, we have been a trusted partner of refrigeration and air conditioning companies around the world. We operate throughout Europe, Africa, Asia-Pacific and the Americas.

Our broad product range spans both traditional fluorocarbon and natural refrigerants in a wide range of packages. R407F is commonly available in cylinders and drum tanks. For larger volumes, it is also available in bulk ISO containers in some markets.

Our high-quality operations and vast distribution networks ensure the quality and availability of our products. We also offer a range of complementary services, including technical support, legislative compliance assistance and environmental audits.

Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more. We create added value, clearly discernible competitive advantages, and greater profitability. Each concept is tailored specifically to meet our customers' requirements – offering standardised as well as customised solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimisation, and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

Linde – Ideas become solutions.



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