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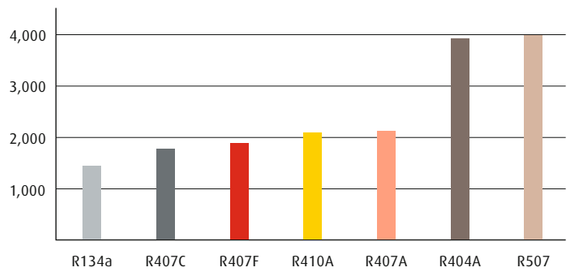
R407A.

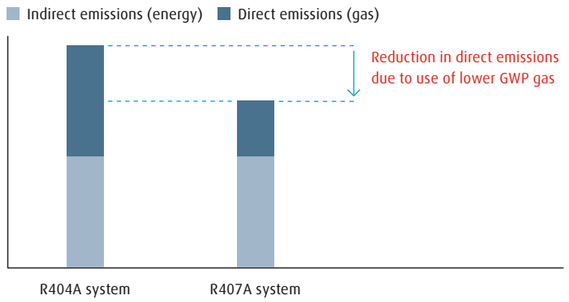
Lower Global Warming Potential replacement for R404A.

R407A. Lower-GWP replacement for R404A.

GWP of some common HFC refrigerants



Total emissions in an example system*



The environmental challenge

For over twenty years, R404A has been an extremely useful refrigerant gas in a number of applications, including commercial refrigeration systems such as those often used in supermarkets. However, refrigeration and air conditioning systems generate both direct and indirect CO_2 emissions during their lifetime.

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 CO_2 equivalent (CO_2e) 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 a lower global warming impact. This is propelling environmentally friendly refrigeration solutions to the top of the corporate sustainability agenda. In addition, local legislation is increasingly targeting refrigerant gases with a high GWP.

The low-GWP solution

R407A is the ideal retrofit solution for many existing R404A systems. Freely available on the market for over twenty years, this lower-GWP hydrofluorocarbon blend 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.

R407A can also be used as a retrofit solution for R22. Please contact your local AGA representative for more information if you wish to use it to replace R22.

	R404A	R407A
Constituents	R143a/R125/R134a	R134a/R125/R32
Preferred oil	Polyolester (POE)	Polyolester (POE)
ASHRAE safety classification	A1 – non-toxic & non-flammable	A1 – non-toxic & non-flammable
Boiling point @ 1atm	-46.5°C	-45.5°C
Critical temperature	72.0°C	82.3°C
Critical pressure	37.3 bar(a)	45.2 bar(a)
GWP	3922	2107
GWP as % of R404A	100%	54%

* Systems will vary. Example assuming R404A system with equal direct and indirect emissions is retrofitted to operate on R407A. Energy use and refrigerant leakage assumed the same in both cases.

Benefits at a glance

Lower environmental impact
- → Almost 50% reduction in GWP compared with R404A
- → Zero ozone depletion potential
- → Non-toxic and non-flammable

Easy retrofit process
- → Compatible with the same oils, elastomers and plastics as R404A
- → Approved for use by a wide number of compressor manufacturers
- → Widely available with many examples of long-term successful use

Impressive performance
- → Similar cooling capacity to R404A
- → Energy efficiency savings of up to 10% reported with many systems
- → Lower discharge temperatures than other R404A replacements – reducing the need for compressor heat protection (liquid injection)

Retrofit made easy

The changeover from R404A to R407A is a relatively easy process. R407A is fully compatible with the POE lubricants used in an R404A system. In many cases, the original oil can be used.

R407A (like other gases such as R407C) is a zeotrope. Therefore it must be charged in the liquid phase to prevent fractionation. R407A does have a moderate glide, although this can be easily managed by a minor adjustment to the expansion device.

We also recommend that you overhaul your refrigeration system during the retrofit operation, including the filter drier and seals.

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 (with AGA in Region Europe North), Africa, Asia-Pacific and the Americas. AGA is the leading industrial gas company in Northern Europe.

Our broad product range spans both traditional fluorocarbon and natural refrigerants in a wide range of packages. R407A 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, AGA is playing a pioneering role in the global market. As a technology leader, our task is to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

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

AGA – ideas become solutions.

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