

Genetron Performax[®] LT (R407F)

Honeywell



**First Choice Solution
for Commercial Refrigeration**

Genetron Performax[®] LT (R407F)

Solution of Choice for Supermarket and Coldstore Refrigeration



Product Description

Honeywell's Performax[®] LT (R407F) is a highly efficient and innovative mixture of conventional hydrofluorocarbon refrigerants (R-32, R-125, R-134a). It can be used in Medium and Low Temperature applications for new commercial installations and to retrofit existing R404A, R-407A and R-22 installations with only minor adaptations.

Supermarkets around the world are coming under intense scrutiny to prove their credentials when it comes to environmental impact and sustainability. The cooling gases used in their refrigeration systems account for around one quarter of their carbon footprint – and that is before energy for powering equipment is taken into account.

Honeywell has responded by developing a new, lower GWP refrigerant blend – Performax[®] LT (R407F) which is delivering outstanding results across key metrics linked to energy efficiency, carbon footprint reduction, running costs and safety.

Applications Genetron Performax[®] LT (R407F) – it's cool for new build and retrofit alike

Performax[®] LT (R407F) can be used for new commercial installations and with minimal change, can also be used to retrofit existing R404A, R407A and R22 installations.

It is the best performing lower global-warming-potential (GWP) refrigerant for supermarket installations with improved energy efficiency compared to other HFCs and is well suited for new installations as a replacement for R404A in both low- and medium-temperature supermarket applications. Converting existing R404A supermarket systems to Genetron Performax[®] LT will result in significant reduction in their carbon footprint and increase in overall performance.

Cool Tips Things To Consider When Using Genetron Performax[®] LT (R407F)

- Performax[®] LT must only be liquid charged into a system to ensure proper refrigerant composition and system performance
- Evaluate the Expansion Device used. Due to difference in mass flow with many existing HFC refrigerants, there may be a need to adjust the superheat of the evaporator

- Ensure correct Lubricant is used. In most instances, the lubricant in use with R-404 or R-507 is also suitable for use with Honeywell Performax[®] LT (R-407F). Honeywell recommends using a miscible lubricant approved by the compressor manufacturer
- Polymers and Elastomers. If using as a replacement for R22 with oil change from mineral, seals must be replaced due to possible shrinkage
- Always check with Compressor manufacturers specifications to ensure full compatibility

(Refer to Genetron Performax[®] LT Guidelines for more details)

Benefits of Genetron Performax[®] LT (R407F)

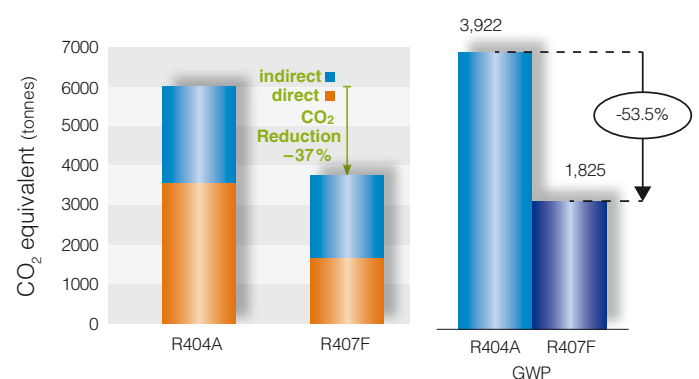
Performax[®] LT has been proved and tested by many European and Global Retailers who have identified R407F (Performax[®] LT) as their 'Refrigerant of Choice'. When comparing R407F to existing Commercial Refrigeration refrigerants, it offers a variety of significant environmental and operational benefits:

Energy Improvement

According to the industry testing, systems using Performax[®] LT (R-407F), can consume up to 15% less energy than systems using R404A.

Carbon Benefit

Use of Performax[®] LT can also reduce carbon dioxide emissions by up to **40%**. Its global warming potential (GWP 1,824) is around **53%** less than existing refrigerant R404A (3,922), and lower than any other HFC alternative used in commercial refrigeration.



Application in already existing installations

There is no need to replace refrigeration systems in order to use R407F. With a series of minor adjustments, Performax® LT or R407F can be used with no problem in existing systems. In this way, the necessary remodelling of gas refrigeration installation groups that commercial and industrial establishments face has a major ally in this new refrigerant.

Approved by major manufacturers of components and engineer friendly

R407F is approved by major manufacturers of compressors, valves and other components, and there is no significant difference in its handling for regular technicians and contractors, so that it can be handled safely and with no major changes.

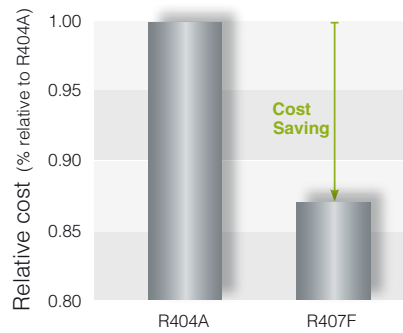
Supply security

Thanks to Honeywell's multi-channel distribution network Performax® LT (R407F) is widely available.

Proven Savings

Don't just take our word for it – there are many published case / field studies on Genetron Performax® LT (R407F) compared to R404A and R22. These 3rd party / independent assessments, validate both theoretical and laboratory testing and add to the confidence in the performance of the product. Available to download at:

<http://www.honeywell-refrigerants.com/europe>



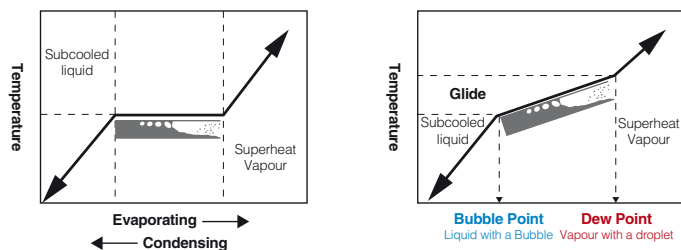
Blends with Glide

Performax® LT (R407F) is a blend which has glide. For the system to operate efficiently, consideration must be given to correct Suction and Condenser set points must be given to review Suction and Condenser Set Points as well as recalibrate Evaporator Superheat.

ASHRAE classifies blends in azeotropic (R500 series) and non-azeotropic (R400 series). Single refrigerants and azeotropic blends evaporate or condense at constant temperature, in a process at constant pressure.

Non-azeotropic blends or just “Blends” have two distinct points:

- When the first droplet of vapor occurs (Dew Temp), and
- When the first bubble of vapor occurs (Bubble Temp)
- Difference between these temps is called the “Glide”



This Glide Effect must be taken into consideration when setting up system controllers, as the Mean or Average temperature must be used as opposed to the Dew or Bubble point temperature. More detailed information on this topic can be obtained from our web site or through any of our distributors.

Safety

Performax LT (R407F) is classified A1 (non flammable).

Available Literature/Technical Assistance

Honeywell has a wide range of literature available for all of its environmentally safer Genetron® products, covering such topics as reclamation, retrofitting guidelines, product specifications and technical properties. Much of this information is available online at www.genetron.com. In addition, Honeywell technical specialists are available to assist you in all phases of using Performax® LT (R407F) – especially retrofitting, handling and storage and applications assistance.

Pressure vs. Temperature

Bubble Pressure psig	Dew Pressure psig	Temp °C	Bubble Pressure bar-g	Dew Pressure bar-g
4.9	0.4	-40	0.3	0.0
7.5	1.9	-38	0.5	0.1
10.4	4.2	-36	0.6	0.2
13.6	6.8	-34	0.8	0.3
17.1	9.7	-32	0.9	0.4
20.9	12.9	-30	1.1	0.6
25.1	16.4	-28	1.3	0.7
29.6	20.2	-26	1.5	0.9
34.5	24.4	-24	1.7	1.1
39.8	28.9	-22	1.9	1.3
45.6	33.9	-20	2.1	1.4
51.8	39.3	-18	2.4	1.7
58.5	45.1	-16	2.6	1.9
65.6	51.4	-14	2.9	2.1
73.3	58.2	-12	3.2	2.4
81.6	65.5	-10	3.5	2.6
90.4	73.4	-8	3.8	2.9
99.7	81.8	-6	4.1	3.2
109.7	90.8	-4	4.5	3.5
120.4	100.5	-2	4.9	3.9
131.7	110.8	0	5.3	4.2
143.7	121.8	2	5.7	4.6
156.4	133.5	4	6.1	5.0
169.9	146.0	6	6.6	5.4
184.1	159.2	8	7.1	5.8
199.1	173.3	10	7.6	6.3
215.0	188.2	12	8.1	6.7
231.7	203.9	14	8.6	7.2
249.3	220.6	16	9.2	7.8
267.8	238.3	18	9.8	8.3
287.2	256.9	20	10.4	8.9
307.6	276.6	22	11.1	9.5
329.0	297.4	24	11.8	10.1
351.5	319.3	26	12.5	10.8
375.0	342.4	28	13.2	11.4
399.7	366.8	30	13.9	12.1
425.4	392.4	32	14.7	12.9
452.4	419.5	34	15.6	13.7
480.6	448.0	36	16.4	14.5

*inches of mercury vacuum

More information about R407F

You can find all the information about Genetron Performax® LT (R407F) at:
<http://www.honeywell-refrigerants.com/europe>

Honeywell also provides 'GENEPRO' refrigerant calculation software (available for free download) to help calculate and compare the use of different refrigerants, their properties as well as line sizing for new installations.

Download the free software from Honeywell Genetron Properties Suite at:

<https://www.honeywell-refrigerants.com>

Download the **PT retrofit calculator applications for iOS and Android** free



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Physical Properties

Chemical Name	Difluoromethane/Pentafluoroethane/Tetrafluoroethane
Molecular Formula	CH ₂ F ₂ /CHF ₂ CF ₃ /CH ₂ FCF ₃
Appearance	Colourless
Molecular Weight	82.1 (kg/mol)

Units	English	SI
Bubble Point Temperature	-50.9°F @ 1 Atm	-46.1°C @ 101.3 kPa
Dew Point Temperature	-39.4°F @ 1 Atm	-39.7°C @ 101.3 kPa
Bubble Point Pressure†	190.2 (Psia)	1311 (kPa)
Dew Point Pressure†	165.9 (Psia)	1144 (kPa)
Critical Temperature	180.8°F	82.6°C
Critical Pressure	689.5 (Psia)	4754 (kPa)
Critical Volume	0.0336 (ft ³ /lb)	0.0021 (m ³ /kg)
Critical Density	29.8 (lb/ft ³)	477.37 (kg/m ³)
Vapour Density	0.279 (lb/ft ³) @ 1 Atm	4.465 (kg/m ³) @101.3 kPa
Liquid Density†	69.73 (lb/ft ³)	1117 (kg/m ³)
Liquid Heat Capacity†	0.38 (Btu/lb °F)	1.57 (KJ/kg K)
Vapour Heat Capacity†	0.28 (Btu/lb °F)	1.18 (KJ/kg K)
Heat of Vaporization	110.66(Btu/lb) @ 1 Atm	257.21 (KJ/kg) @101.3 kPa
Liquid Thermal Conductivity†	0.052 (Btu/hr ft °F)	89.71 (mW/m ² K)
Vapour Thermal Conductivity†	0.0084 (Btu/hr ft °F)	14.51 (mW/m ² K)
Liquid Viscosity†	0.348 (lbm/ft hr)	143.99 (μPa.s)
Vapour Viscosity†	0.032 (lbm/ft hr)	13.20 a (μPa.s)
Flammability Limits in Air (vol%)	None*	
Ozone Depletion Potential (ODP)	0.0	
ASHRAE Safety Group Classification	A1/A1	

* Based on ASHRAE Standard 34 with match ignition.

† All data are at 77°F (25°C) unless otherwise noted.

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