

Comfortable Words

a comfort group fact sheet



comfort

"a state of ease or wellbeing"

Refrigerants

no 4 in a series of helpful facts for comfort clients

What's an ODP or a GWP?

Why Refrigerant

Heat Pumps and Air conditioning has to use refrigerants and although there are many types of refrigerants, including air and water, it is necessary to use chemicals for reasons of efficiency and ultimately to conserve energy.

We hope that this brief fact sheet will give you a better understanding of some of the most common refrigerants in use today for heating and cooling and answer any queries you may have.

We have not made this too technical, we could show you the exact chemical compositions, but you will gain more information by viewing refrigerant manufacturer sites on the web.

Details are given for the following reference terms with a brief explanation, such as its effect on the Ozone layer and Greenhouse effect.

ODP's & GWP's

ODP - The ODP or Ozone Depletion Potential, is the potential for a single molecule of the refrigerant to destroy the Ozone Layer. All of the refrigerants use R11 as a datum reference and thus R11 has an ODP of 1.0. The less the value of the ODP the better the refrigerant is for the ozone layer and therefore the environment.

GWP - The GWP, or Global Warming Potential, is a measurement of how much effect the given refrigerant will have on Global Warming in relation to Carbon Dioxide, where CO₂ has a GWP of 1. This is usually measured over a 100-year period. In this case the lower the value of GWP the better the refrigerant is for the environment.

General Notes

Refrigerants should only be handled and used by competent and trained persons. The design, application and safe use of all refrigerant based systems, together with control measures is covered by BS EN378. This standard supersedes BS4434. It is a criminal offence to release refrigerants to atmosphere and all existing system charges must be reclaimed or recovered by approved companies for either re-use, recycling or controlled destruction.

REFCOM is the register of competent companies assessed to safely handle and manage refrigerants correctly.

Refrigerants

R11 is a single chlorofluorocarbon or CFC compound. It has a high chlorine content and ozone depletion potential (ODP) and high global warming potential (GWP). The use and manufacture of R11 and similar CFC refrigerants is now banned within the European Union even for servicing. - ODP = 1, GWP = 4000

See over the page for more refrigerants

R22

R407C

R134A

R410A

R417A

R290

R290 is flammable

comfort advises

Legislation is constantly changing and therefore Comfort cannot be held responsible for inaccuracies in the information published. For the latest information regarding refrigerants contact us.

Or visit DTI or other Government web sites

The phasing out of HFC and HCFC refrigerants is explained in a downloadable pdf booklet issued by the UK Government, covering the use and phasing out of CFC and HCFC refrigerants.

Advice on Alternatives and Guidelines for Users

<http://www.berr.gov.uk/files/file29101.pdf>

Refrigerants continued

Note: Although the use of R11 is banned, it was used as the datum for ODP therefore having an ODP of 1. The ODP of all other refrigerants are compared to R11

R22 is a single hydrochlorofluorocarbon or HCFC compound. It has low chlorine content and ozone depletion potential and only a modest global warming potential. R22 can still be used in small heat pump systems, but no more new systems can be manufactured for use in the EU after late 2003. From 2010 only recycled or saved stocks of R22 can be used, as it will no longer be manufactured. - ODP = 0.05, GWP = 1700

Phase out dates for R22

From 1 July 2002 no more cooling only air conditioning equipment can be manufactured that uses refrigerant R22.

From 1 January 2004 no more heat pump equipment can be manufactured that uses refrigerant R22.

After 31 December 2009 no more virgin refrigerant R22 can be used in existing systems.

From 2015 no more recycled refrigerant R22 can be used in existing systems.

If you have an R22 air conditioning system now is the time to seriously consider if you need continuity or should you now upgrade your system/s? The phase out dates may cause you concern. Your system will only require additional refrigerant should a leak or major repair be required and this can be effected within current legislation until 2015. However, new systems are extremely energy efficient and you will save money in running and repair costs with payback periods of 3 years or better.

'Drop Ins' and other common refrigerants

There are "drop in" replacement refrigerants for R22 with zero ODP - R417A for example – But the costs and work involved to do this may not prove beneficial.

R134A is a single hydrofluorocarbon or HFC compound. It has no chlorine content, no ozone depletion potential, and only a modest global warming potential. - ODP = 0, GWP = 1300

R407C is a ternary blend of hydrofluorocarbon or HFC compounds, comprising 23% of R32, 25% of R125 and 52% of R134a. It has no chlorine content, no ozone depletion potential, and only a modest direct global warming potential. - ODP = 0, GWP = 1610

R410A is a binary blend of hydrofluorocarbon or HFC compounds, comprising 50% of R32 and 50% of R125) it has no chlorine content, no ozone depletion potential, and only a modest global warming potential. - ODP = 0, GWP 1890

R417A is a zero ODP replacement for R22 suitable for some new equipment and as a drop-in replacement for existing systems.

There are currently no restrictions on equipment or use of the following refrigerants: R134A, R407C, R410A, and R417A.

R290 - Pure propane, a hydrocarbon (HC) an efficient naturally occurring refrigerant with similar properties to R22, but has no ozone depletion potential and an extremely low global warming potential. Whilst it is environmentally safe, it is also highly flammable and must only be used after careful consideration is given to safety. - ODP = 0, GWP = 3.

Ammonia - A highly efficient refrigerant, that has been used in industrial applications for many years and with success. It is however, highly toxic and very careful consideration must be given to any design or application.



We are always pleased to help

Whether it's impartial advice, professional help or assistance we are always pleased to advise you. Simply call us, or e-mail as below

comfort has a wealth of experience in all areas of the air conditioning, refrigeration, heat pump, ventilation & heating industry. Please do not hesitate to contact us for any design, installation, systems, repairs, service and maintenance, projects or applications (or just to just ask us a question).

Our people are skilled, practical, professional and friendly

For service and maintenance related issues please call **01342 830610** or e-mail **service@comfort.uk.com**

For systems, design or installation issues please call **01342 830600** or e-mail **sales@comfort.uk.com**


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