

Refrigerant Prices on the Increase

Fluorinated gases ('F-gases') are a family of man-made gases used in a range of applications throughout the refrigeration & air conditioning industry. Because they do not damage the atmospheric ozone layer, they are often used as substitutes for ozone-depleting substances.

However, F-gases are powerful greenhouse gases, with a global warming effect up to 23,000 times greater than carbon dioxide (CO₂), and their emissions are rising strongly.

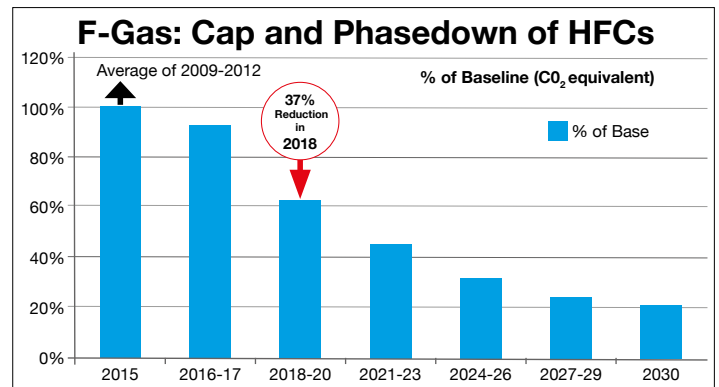
The European Union is therefore taking regulatory action to control F-gases as part of its policy to combat climate change.

A first F-gas Regulation was adopted in 2006 and succeeded in stabilising EU F-gas emissions at 2010 levels. A new Regulation, which replaces the first and applies from 1 January 2015, strengthens the existing measures and introduces a number of far-reaching changes. By 2030 it will cut the EU's F-gas emissions by two-thirds compared with 2014 levels.

The 2014 regulations use 'CO₂ Equivalents' as thresholds for meeting these targets (quotas). GWP (Global Warming Potential) compares the global warming impact of the gas compared to CO₂ (which has a GWP of 1). F-Gas refrigerants have high GWP factors, for example R404A has a GWP of 3,922.

The use of the CO₂ thresholds creates a lower kg threshold for F-Gases with high GWP's.

Refrigerants with a high GWP (greater than 2,500) will be affected within a short period. Servicing (topping up) equipment with a charge size of 40 tonnes of CO₂ equivalent (for example 10.2kg of R404A) will be banned from 2020.



2017 is seeing the first stages of the phase down in levels. Additionally, from 1st January the F-Gas content of all imported pre charged equipment must use HFC's from the EU quota. It is estimated that this will use 11% of total available quota.

If the current mix of F-Gases continues the market will suffer a shortage of nearly 40% of product by 2018. The market must change rapidly to lower GWP F-Gases to ensure that product is available for future service and installation.

One manufacturer has already declared that they will no longer manufacture R404A from the beginning of 2018. Other manufacturers are likely to follow suit as accelerated phase out of high GWP will be required to meet the phase down timing.



More inside - Fluorspar?

Alternatives - The Race is Run for R404A

R32 - We Tell You All You Need To Know

Refrigerant Price Increases

2017 has already seen high increases on F-Gas refrigerants these will continue further as the product becomes scarcer. In Spain there is already a tax on HFC's, France are likely to follow with a reported levy of 120 euros/Kg.

Is it a matter of time before the UK sees similar taxes?

In addition to these quota driven increases manufacturers have also been hit with high increases of one of HFC's main constituents hydrofluoric acid.

China currently supply 50% of the worlds demand for the mineral Fluorspar from which hydrofluoric acid is produced.

Since the end of 2016 China's environmental laws have changed significantly.



As a result the production of fluorspar and other highly corrosive products such as hydrofluoric acid have come under new protection and safety requirements.

The changes have resulted in the value of the mineral reaching a four year high. In addition to these environmental increases the demand for fluorspar and its products has risen rapidly due to

growth in both processes for the production of steel and the high growth in aluminium production.

What can we do?

Convert to Low GWP alternative refrigerants.

Simplistically under the regulations each cylinder of R404A used could be replaced by 2.8 cylinders of lower GWP equivalents like R448A or R449A. (See graphic right)

For advice on selecting the correct alternatives please contact your local **FSW** branch or our technical department for advice on which product will meet with your application.

Low GWP Refrigerants

**Eg R448A
GWP 1387**

=

High GWP Refrigerants

**Eg R404A
GWP 3922**

A greater quantity of lower GWP refrigerants can be sold compared to those with higher GWP

F-Gas 2014 - Leak Testing Regulations

Leak Testing

The 2014 regulations changed the threshold limits for the frequency of leak detection of systems. The limits are now based on the CO2 equivalent of the system charge:

Requirement	Tonnes CO2 Threshold	Kg Equivalent R404A	Kg Equivalent R134a
Annual Leak Test	5 Tonnes	1.3 Kg	3.5 Kg
6 Monthly Leak Test	50 Tonnes	12.7 Kg	35.0 Kg
Automatic Leak Detection	500 Tonnes	127.0 Kg	350 Kg
Record Keeping	5 tonnes	1.3 Kg	3.5 Kg
Service Ban (2020)	40 Tonnes	10.2Kg	28.0Kg



LOW-GWP R404A Alternative Refrigerant Guide

The R404A refrigerants below are all A1 classification (toxicity & flammability) and fall below the 2,500 GWP 2020 target. For new equipment check with the compressor manufacturers for approval as not all refrigerants are approved by manufacturers.

R452A, (Opteon XP44)
GWP 2140 (HFO Blend)

The closest match to R404A in terms of properties. Selected for Transport refrigeration applications and by hermetic compressor manufacturers such as Tecumseh, Embraco and Danfoss, where they need a very close match to R404A with discharge temperature almost the same as R404A.

Due to its GWP being higher than other alternatives its use should be restricted to those applications where other lower GWP alternatives cannot be used.

R449A, (Opteon XP40)
GWP 1397 (HFO Blend)

Popular low GWP replacement for R404A in both new and existing equipment. Approved by major compressor manufacturers including Bitzer, Emerson Frascold, Dorin, Tecumseh and Danfoss who all have selection software for their equipment. Improved energy efficiency over R404A.

R448A, (Solstice N40)
GWP 1387 (HFO Blend)

Very similar to R449A in terms of properties and is similarly approved by major compressor manufacturers including Bitzer, Emerson Frascold and now Dorin. Selection software is available for their equipment. R448A is not approved by Tecumseh. Please consult manufacturers guidelines.

R407F, (Performax LT)
GWP 1825 (HFC Blend)

Has been around a lot longer than R448A and R449A and has approvals from many compressor manufacturers.

Is more energy efficient than R404A and is currently lower in price than both R448A and R449A.

Not approved for small hermetic compressors such as Tecumseh and Embraco due to higher discharge temperatures than R404A. LT is more likely to be an issue with discharge temperatures than MT.

Ultra LOW-GWP R404A alternative refrigerants

R454A (HFO Blend)
(GWP = 246)

This refrigerant has a very low GWP rating of 246 but comes under the A2L (mildly flammable) classification. It is suitable for both low & medium temperature application.

What About R407C and R410A alternative refrigerants

R407C (HFC Blend)
(GWP = 1774)

Due to the relatively low GWP of R407C, and the fact that it was a very short lived refrigerant, there are no replacement refrigerants available. Most contractors will tend to replace the R407C split system with a New R32 system.

R410A (HFC Blend)
(GWP = 2088)

The race to find alternative refrigerants to replace R410A in existing equipment has already began Chemours already have ASHRAE approval for Opteon XL-41 and XL-55 and Honeywell with L41 (ASHRAE approval pending) However R410A wont be banned from use in new split style ac equipment until 2025, and in portables from 2020. So by that time you could see more customers deciding to replace the system rather than recharge the system with a lower GWP refrigerant. Only time will tell.

NEW

FSW
360 PAGE
PRODUCT
GUIDE

ASK FOR
YOUR COPY
NOW!



R32 Questions & Answers

Is R32 Flammable?

R32 has an A2L classification and is therefore considered to be 'mildly flammable'. If ignited, the risk of pressure rise (explosive force) is low due to its slow flame propagation (slow burning). Nonetheless it is flammable, meaning you need to treat R32 and other A2L refrigerants with respect and recognise the potential flammability risks involved when handling this classification of refrigerant

Do I need specialist training to handle R32

The current City & Guilds 2079 and/or valid F-Gas certificate are the qualifications required to work on equipment containing A2L refrigerants. **However, an awareness of handling A2L refrigerants should be high on your agenda. Most manufacturers using R32 will offer courses on awareness in handling R32 and selection criteria.**

Can I use R32 as a direct replacement refrigerant in R410A systems?

R32 is not a suitable replacement for other refrigerants in existing systems and must only be

used in systems specifically designed for R32.

Do R32 Cylinders have a different cylinder adaptor?

Yes, you will need to carry a left handed thread cylinder adaptor (M015) which is suitable for all red collared A3 & A2L cylinder valves.

Do I need specialist tools for R32

Currently there is NO legislation regarding the use of specific tools for R32, Most manufacturers have their own interpretation of what tools are required. There is no current legislation to force the use of so called A2L approved equipment.

However if an incident were to occur the HSE would undoubtedly look into the equipment used and see if enough care had been taken to mitigate any risks sufficiently.

For more detailed advice on what vacuum pumps, recovery machines and leak detectors are suitable for A2L refrigerants like R32, please contact your local **FSW**

High GWP Gas Restrictions

F-Gas regulation places restrictions on the use of some HFC refrigerants with high GWP.

The aim of the process is to reduce the contribution of refrigerant gases to global warming.

Refrigerants with a GWP greater than 2500 will be most affected within a short period (by 2020).

Service and Maintenance Ban

Servicing (topping up) equipment with a charge size greater than 40 tonnes of CO₂-equivalent containing a refrigerant with a GWP greater than 2500 will be banned from 2020.

Pre-charged Equipment

From 1 January 2017 onwards, all imported pre-charged equipment must use HFCs from the EU quota. It is estimated this will use 11% of the total available quota.

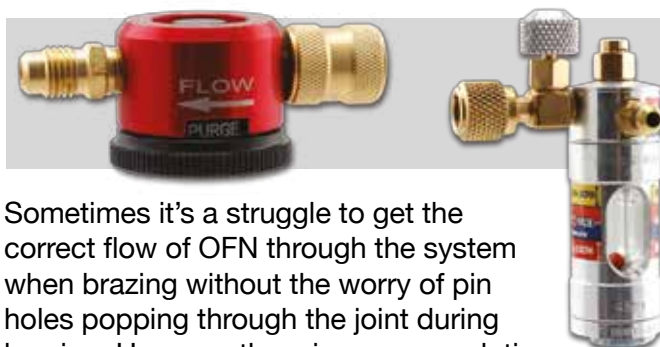
NEW Products

Testo Refrigeration Smart Probe Set



The Excellent Testo Smart Probe Refrigeration set is like having a manifold in your pocket. This compact and lightweight set can measure high & low side pressures and temperatures via a simple to use App on your smartphone, without the need for hoses! See Page 275 in our product guide for full details

OFN Purge and Braze Tools



Sometimes it's a struggle to get the correct flow of OFN through the system when brazing without the worry of pin holes popping through the joint during brazing. However there is an easy solution with these simple to use devices. The tools allow you firstly purge the air from within the pipework and then finely control the flow of OFN through the system avoiding those pesky pin holes.

See page 277 in our product guide for full details.

