coolconcerns
Training | Consultancy | Technical Support

Revised F Gas Regulation

This guide outlines the key changes in the Fluorinated Gas regulations. The revision was agreed in April 2014 and will come into force on 1st January 2015. The new regulation EU 517 / 2014 replaces EC 842 / 2006.

Leak testing

In EU517/2014 the requirement for leak testing existing systems is based on the charge size in tonnes of CO_2 equivalent. So systems with higher GWP refrigerants will need to be leak tested more frequently than those with the same charge weight of a lower GWP refrigerant.

The GWP of single substance refrigerants is provided in an Annex to EU 517 / 2014 and for blended refrigerants it must be calculated from the GWP of the individual components (see later section for information on this).

The leak test frequency is given in table 1, with some example charge sizes for different refrigerants.

Table 1, Leak test frequency

System charge	Leak test frequency No fixed leak detection	Leak test frequency With fixed leak detection
5* to < 50 tonnes CO_2 equiv. *e.g. 1.27 to < 12.7 kg R404A* *e.g. 2.37 to < 23.7 kg R407A* *e.g. 3.49 to < 34.9 kg R134a*	1 / year (every 12 months)	1 / 2 years (every 24 months)
50 to < 500 tonnes CO_2 equiv. *e.g. 12.7 to < 127 kg R404A* *e.g. 23.7 to < 237 kg R407A* *e.g. 34.9 to < 349 kg R134a*	2 / year (every 6 months)	1 / year (every 12 months)
> 500 tonnes CO_2 equiv. Fixed leak detection must be fitted *e.g. > 127 kg R404A* *e.g. > 237 kg R407A* *e.g. > 349 kg R134a*	Not applicable	2 / year (every 6 months)

*10 tonnes CO_2 equivalent for hermetically sealed systems (e.g. 2.54 kg R404A, 6.98 kg R134a). This is applicable from 1st January 2017.

Fixed leak detection must alert the operator of the system or the service company and must be checked once a year.

The requirement for maintaining system logs changes from 3kg HFC to 5 tonnes CO_2 equivalent (see table 1 for examples of charge size for different refrigerants).

F Gas Revision, 2014 / 2015, © Cool Concerns Ltd

Cool Stuff from Cool Concerns

Training and certification

The current F Gas qualification such as City and Guilds 2079-11 is still the acceptable qualification. However, there is an additional requirement that certification programmes and training should include:

Information on relevant technologies to replace or to reduce the use of fluorinated greenhouse gases and their safe handling.

This is likely to include hydrocarbon refrigerants, R744 and HFOs, but the UK has not yet determined how this is to be provided. We will provide information on this as soon as possible.

Service

From 1st January 2020 the use of F Gases with GWP > 2500 for service will be prohibited for systems which contain more than 40 tonnes CO_2 equivalent. The most common HFC affected by this ban is R404A. A charge of 10.2 kg R404A is equivalent to 40 tonnes CO_2.

There is an exclusion - recycled or reclaimed refrigerant can be used until 1st January 2030.

Placing on the Market Bans

There is a gradual phase out of the use of some HFCs, dependent on GWP and application. The most applicable are shown in table 2 below.

Table 2, Bans for application of some HFCs

Ban effective from 1st Jan …	Application	Ban effective for refrigerants with a GWP greater than …
2015	Domestic fridges, freezers	150
2020	Commercial fridges, freezers	2500
2022	Commercial fridges, freezers	150
2020	Most stationary HFC equipment	2500
2022	Central plant greater than 40 kW cooling capacity Except as the high stage of a cascade	150 1500
2020	Moveable room air conditioning	150
2025	Single split air conditioning with less than 3kg charge	750

Note – this is for new systems sold from the dates shown, not existing systems.

Cool Stuff from Cool Concerns

Pre Charged Systems

Non hermetically sealed pre charged unit will only be able to be installed by a company which employs engineers who hold an F Gas qualification (e.g. City and Guilds 2079-11 or Construction Skills J11). An example of such a system is a split air conditioning unit where the outdoor unit is pre charged with the refrigerant.

Supply, Phase Down and Quotas

Suppliers of refrigerant will only be able to sell to F Gas registered companies. The supplier must check and record the buyer's certification and record the amount of refrigerant purchased.

A phase down of HFC starts in 2016 from a baseline of the amount placed on the market in 2015. The table below shows the phase down schedule, based on CO_2 equivalent.

Table 3, Phase down schedule

Year	Phase down percentage
2015	100%
2016 – 2017	93%
2018 – 2020	63%
2021 – 2023	45%
2024 – 2026	31%
2027 – 2029	24%
2030	21%

A quota system will be applied to all companies who import or produce refrigerant, or who import pre charged systems. Companies will receive an initial quota of 89%, leaving 11% for new companies. An electronic register will be set up by the EC. If the current rate of refrigerant use (in terms of weight) is to be maintained the effect of the phase down will be to move the industry towards the lower GWP refrigerants.

Global Warming Potential (GWP)

The GWPs of the commonly used HFCs are provided in table 3 below.

Table 4, GWPs

Refrigerant	Type	GWP
R134a	Single substance	1430
R404A	Blend	3922
R407A	Blend	2107
R407C	Blend	1774
R407F	Blend	1825
R410A	Blend	2088
R422D	Blend	2729
R1234ze	Single substance	7

Cool Stuff from Cool Concerns

See the regulation for a full list of GWPs for single substance refrigerants. The GWP for blends is calculated from the GWP of the individual components and their relative proportion in the blend. An example is given below for R404A.

R404A is a blend of the following components[1]:

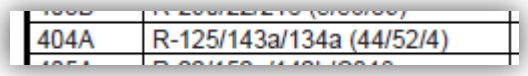

Table 5, R404A components

Component	GWP (from the F Gas reg)	% (From EN378[1])
R125	3500	44%
R143a	4470	52%
R134a	1430	4%

The GWP of R404A is:

(0.44 x 3500) + (0.52 x 4470) + (0.04 x 1430) = 1540 + 2324 + 57 = 3921

The CO_2 equivalent is simply GWP x weight.

Full Regulation

EU 517 / 2014 can be downloaded from:

http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2014:150:TOC

Disclaimer

Every effort has been made to ensure the accuracy of the information in this document, but the content is subject to change and Cool Concerns Ltd cannot guarantee its accuracy or currency. No legal responsibility is accepted for any errors, omissions or misleading statements.

[1] Information from EN378-1:2008+A2:2012. Table E2 – Refrigerant designations of R400 blends

Cool Stuff from Cool Concerns