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2014 F-Gas Regulation and GWP Values

Introduction

GWP values of various refrigerants are important for a number of reasons, not least as a means of comparing their relative effect when they are released to atmosphere.

As science progresses and reviews take place the GWP values of some refrigerants have altered slightly, which has led to a number of different values being quoted. For instance the F-Gas Regulation (EC) 842/2006 referred to the 3rd IPCC assessment. The new F-Gas Regulation (EC) 517/2014 which will come into effect on 1st January 2015 will use the 4th IPCC assessment values.

New F-Gas Regulation

One of the requirements of the new regulation relates to leak check requirements which are based upon the GWP CO_2 equivalent Tonnes. This means that the threshold level for leak checking different refrigerants varies dependent upon the GWP of the refrigerant that is used.

The new regulation uses the 4th assessment values which are listed in annex 1 for the single component F-Gases. Annex 2 covers other fluorinated greenhouse gases. Whilst annex 4 states the method for calculating the total GWP of a mixture or blend. It also lists the GWP value to be used for non-fluorinated substances that are used in mixtures or blends.

The GWP values of relevance from Annex 1 are given in Table 1 below;

Table 1

Refrigerant	
HFC 23	14800
HFC32	675
HFC 125	3500
HFC 134a	1430
HFC 143a	4470
HFC 152a	124
HFC 227ea	3220
HFC 236fa	9810

The GWP of relevant refrigerant mixtures and blends are shown in table 2.

Leak Checking Requirements

The new F-Gas regulation sets leak checking requirements based upon 5, 50 and 500 CO_2 Equivalent Tonnes. With the most significant changes affecting high GWP refrigerants for the 500 CO_2 Equivalent Tonnes as fixed leak detection is required for this threshold.

The different requirements are shown in table 2 for current refrigerants. The new requirements will take effect from 1st January 2015, except for systems with a charge below 3kg (6kg for hermetic systems) where it will apply from 1st January 2017.

Table 2 Refrigerant Charge - Kg

Refrigerant	Other Names	GWP	5 T CO2 Eq.	50 T CO2 Eq.	500 T CO2 Eq.
23		14800	0.3	3.4	34
32		675	7.4	74.1	741
134a		1430	3.5	35.0	350
125		3500	1.4	14.3	143
245fa		1030	4.9	48.5	485
404A		3922	1.3	12.7	127
407A		2107	2.4	23.7	237
407C		1774	2.8	28.2	282
407D		1627	3.1	30.7	307
407F	Performax LT ™	1825	2.7	27.4	274
410A		2088	2.4	23.9	239
417A	ISCEON® MO59	2346	2.1	21.3	213
422A	ISCEON® MO79	3143	1.6	15.9	159
422D	ISCEON® MO29	2729	1.8	18.3	183
423A	ISCEON® 39TC ™	2280	2.2	21.9	219
424A	RS44	2440	2.0	20.5	205
426A	RS24	1508	3.3	33.2	332
427A	FX100	2138	2.3	23.4	234
428A	RS52	3607	1.4	13.9	139
434A	RS45	3245	1.5	15.4	154
437A	ISCEON® MO49plus	1805	2.8	27.7	277
438A	ISCEON® MO99	2265	2.2	22.1	221
442A	RS50	1888	2.6	26.5	265
507		3985	1.3	12.5	125
508A		13214	0.4	3.8	38
508B	Suva 95	13396	0.4	3.7	37
-	ISCEON® MO89	3805	1.3	13.1	131

References

- F-Gas Regulation (EC) 517/2014 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.150.01.0195.01.ENG
- 4th IPCC assessment values http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

ACRIB is an umbrella organisation for the UK RACHP industry comprising trade associations and professional institutes: AMDEA, ARC, B&ES, BFFF, CIBSE, CRT, FETA, FSDF, IOR. It provides the ACRIB Skillcard scheme for the recognition of individual operative qualifications in working with the full range of refrigerants. For more information see www.acrib.org.uk

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