Information for importers of equipment containing fluorinated greenhouse gases on their obligations under the EU F-gas Regulation

(October 2015)

This document is without prejudice to the obligations in the Regulation and should not be understood to have any legal status. The EU Member States are responsible for implementing Regulation (EU) No 517/2014. For enforcement issues, please contact the relevant person in your Member State.

Acknowledgement
This document is based on work by Barbara Gschrey and Bastian Zeiger from Öko-Recherche GmbH (Germany) as well as Wolfram Jörß and Graham Anderson from Öko-Institut (Germany).

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Contents

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1. Who is this brochure aimed at?

1.1. Is this guidance relevant to my company?

This guidance covers the requirements under the new Regulation (EU) No 517/2014 on fluorinated greenhouse gases[1] ('the [F-gas] Regulation') for companies importing equipment (incl. products) containing the gases listed in Annexes I and II to the Regulation. Keep in mind that the term 'equipment' in this document refers to **both stationary and mobile[2]** equipment, unless noted otherwise.

Ask yourself these questions to see if this document concerns your company:

1) Is your company the importer (see 'who is the importer' in section 2.1)?

2) Is the equipment imported for free circulation in the EU?

3) Does the imported equipment contain[3] gases listed in Annex I and/or Annex II of the Regulation?

If you answer '**yes**' to all three questions, your company will have certain obligations under the F-gas Regulation.

The aim of this document is to help you **understand** and **comply** with those obligations.

If, after reading it, you still have questions, please contact your national contact point for F-gases. You will also find the list of contact points on the website of the Directorate-General for Climate Action (DG Clima).[4]

If you are a **manufacturer of equipment producing outside the EU** (and do not import the equipment to the EU yourself), this document should also be useful to you, as it gives you a better understanding of the rules for importing equipment into the EU[5]. Furthermore, **obligations for EU manufacturers of equipment** are summarised in the box at the end of section 4.

This document has no legal status and is without prejudice to the obligations in the Regulation.

1.2. What are the obligations for importers of equipment containing Annex I and/or Annex II gases?

The main obligations for importers of equipment:

- Importers of stationary and mobile refrigeration, air conditioning and heat pumps (RACHP) need to make sure that any hydrofluorocarbons (HFCs) pre-charged into equipment is accounted for under the HFC quota system. They also need to register in the HFC Registry and to produce a certificate of conformity at the time of import (Articles 14 and 17) and ensure that compliance is fully documented.

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.150.01.0195.01.ENG
[2] Such as air-conditioning in vehicles.
[3] The equipment is considered to contain F-gases even if those gases are only found in specific parts of the equipment (e.g. in insulation foams of appliances). However, for Article 14 compliance only the HFCs charged into the refrigeration circuits are relevant.
[4] http://ec.europa.eu/clima/policies/f-gas/documentation_en.htm.
[5] See also box on p. 14

- Importers must report yearly on imports of gases in stationary and mobile equipment containing Annex I and/or Annex II gases by 31 March of the year following the import (Article 19).[6]
- Restrictions of placing on the market apply to certain types of equipment containing Annex I gases. The specific conditions are listed in Annex III of the Regulation (Article 11).
- Equipment containing Annex I gases needs to be labelled[7] (Article 12 and Commission Implementing Regulation on labelling format).

This document focuses, in particular, on **obligations under the HFC quota system** related to imports of RACHP equipment pre-charged with HFCs.

2. General information and clarifications

2.1. Who is the importer?

The importer is the legal person importing the gas or the equipment when it clears EU customs. For complying with the F-gas Regulation, the paper documentation at customs is relevant as it provides proof of the importing entity. **The importer is identified in this documentation as the 'consignee'** (Field 8 of the customs declaration document or Single Administrative Document (SAD)).

Importers are usually EU-based companies, but non-EU companies can also import. In this case, the non-EU company should be listed as the 'consignee' (see above).[8]

Companies are only considered to be importers if they import equipment from countries outside the EU. Companies are not considered to be importers if they only buy or sell pre-charged equipment from or to companies in other Member States. Shipments between Member States are not considered to be imports/exports.

2.2. What does 'placing on the market' mean?

Article 2 of the Regulation defines 'placing on the market' as: '*supplying or making available to another party in the Union for the first time, for payment or free of charge, or using for its own account in the case of a producer, and includes customs release for free circulation in the EU*.'

For importers of equipment this means that **once the equipment is released for free circulation, it is considered to have been placed on the market.** However, if, for example, the equipment is imported under the inward processing procedure, it has not been placed on the market. Other customs procedures that are not considered placing on the market are import for transit, temporary storage, customs warehousing or duty free zone procedures.[9]

The same applies to bulk gases. If bulk gases are bought in the EU they are considered to have been placed on the market by the vendor. If gases are imported into the EU, they are considered to have been placed on the market when they are released for free circulation.

[6] The same applies to importers of products, such as foams.
[7] Labelling will usually be carried out by the manufacturer of equipment
[8] For the import of bulk gases, non-EU companies need an "only representative" established in the EU and subject to the obligations of the Regulation on behalf of the non-EU company.
[9] Unless such imports remain in the customs territory of the Community longer than 45 days or that they are subsequently presented for release for free circulation in the Community or processed

2.3. What are fluorinated greenhouse gases and hydrofluorocarbons (HFCs)?

Fluorinated greenhouse gases are man-made chemicals used in several sectors and applications. In most cases they are used to substitute certain ozone-depleting substances, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) that are being phased-out globally under the Montreal Protocol. Although fluorinated greenhouse gases do not have substantial ozone-depleting properties, they still contribute significantly to climate change. The climate impact of these gases across all applications is equivalent to that of the entire aviation sector.

The term '**F-gases**' refers to the gases listed in **Annex I** to the F-gas Regulation. They are:

1. hydrofluorocarbons (HFCs)
2. perfluorocarbons (PFCs)
3. sulfur hexafluoride (SF_6).

Annex II to the Regulation lists **'other fluorinated greenhouse gases' (Annex II gases)**. These include unsaturated hydro(chloro)fluorocarbons, fluorinated ethers and alcohols and other perfluorinated compounds.

The terms 'F-gases', `HFC´ and 'Annex II gases' also cover **any mixture containing any of these fluids.** Gases and mixtures may be commonly known by multiple names. For example, HFC-134a is also known as R134a, and R404A is a mixture of R125, R143a and R134a, all of which are HFCs.

The different F-gases (including HFCs) and Annex II gases are also listed in Chapter 5 and a list of the most commonly used mixtures containing HFCs can be found in Chapter 6 of this document.

The scope of the different obligations in the F-gas Regulation that is relevant for equipment importers varies. Some apply only to HFCs, others to F-gases or to both F-gases and Annex II gases (see Table 1). The obligations regarding equipment under the HFC phase-down concern only specific RAC equipment that is pre-charged with the **HFCs** (listed in Section 1 of Annex I to the Regulation) including mixtures that contain at least one HFC.

Table 1: Scope of obligations concerning equipment by type of gas

	HFCs (Annex I, Section 1)	PFCs and SF_6 (Annex I, Section 2 and 3)	Annex II gases
HFC phase-down	X		
Reporting	X	X	X
Product Bans	X	X	
Product Labelling	X	X	

2.4. What is pre-charged equipment?

Pre-charged equipment in the context of the Regulation[10] refers to equipment that is already (at least partially) charged with an HFC refrigerant or a mixture containing at least one HFC at the time of import. Often the pre-charging occurs during the manufacture of the equipment. During installation, it may also be necessary to add an additional charge to the equipment e.g. to accommodate for on-site conditions, such as pipes exceeding the standard length.

Other obligations on reporting and labelling, and restrictions on placing equipment on the market apply more generally to **equipment containing** F-gases and/or Annex II gases. This concerns both gas contained in the circuits of a piece of equipment and gases used in other parts of the equipment, such as insulation foams.

[10] In the F-gas Regulation, the term 'pre-charged equipment' refers only to RACHP equipment pre-charged with HFCs, e.g. in Article 14.

2.5. What type of equipment (or product) could be pre-charged or contain F-gases and Annex II gases

List of equipment (and products) that could be pre-charged or contain F-gases (non-exhaustive):

- Hermetically sealed[11] RAC equipment containing HFCs:
  - domestic refrigerators and freezers;
  - stand-alone ('plug-in') refrigeration units for commercial/other uses;
  - heat pump tumble dryers;
  - movable air conditioning (AC) units (monoblocs);
  - …

- Non-hermetically sealed RAC equipment, or components thereof, using HFCs:
  - split AC units;
  - heat pumps;
  - multi-split AC units;
  - chillers;
  - mobile AC equipment (used e.g. in cars, buses, trains, ships);
  - mobile refrigeration equipment (used e.g. in refrigerated trucks and trailers);
  - …

- Other equipment (non-RAC) and products using HFCs:
  - fire protection equipment (incl. in vehicles);
  - foam products (e.g. extruded polystyrene (XPS), polyurethane (PU), one component foam (OCF);
  - aerosol products
  - solvents;
  - …

- Equipment and products using F-gases or Annex II gases (excluding HFCs):
  - switchgear;
  - fire protection equipment (incl. in vehicles);
  - solvent dispensers;
  - …

[11] Distributors and end-users of pre-charged equipment must distinguish between hermetically sealed and non-hermetically sealed equipment, as the latter can only be installed by certified individuals (Articles 10, 11(4), and 11(5)).

2.6. What does 'global warming potential' (GWP) mean?

Each F-gas and Annex II gas has a 'global warming potential' (GWP) assigned to it. For a mixture, the GWP is calculated on the basis of the individual components of that mixture[12]). The GWP is used to indicate the extent to which a gas warms the atmosphere. It is calculated based on the 100-year warming potential of one kilogram of an F-gas/Annex II gas relative to one kilogram of CO_2.

The GWP of F-gases and mixtures commonly used today is in the thousands. R404A (GWP 3 922) for example is 3 922 times more potent than CO_2. Preventing F-gases from entering the atmosphere is a very effective way of reducing emissions.

Table 1: Global warming potentials of common greenhouse gases, refrigerants and other fluorinated compounds

Gas	GWP (AR4[13], 100 year)
CO_2	1
Methane	25
Nitrous oxide	298
R134a	1 430
R407C (mixture)	1 774
R410A (mixture)	2 088
R404A (mixture)	3 922
HFC-125	3 500
PFC-14	7 390
SF_6	22 800

2.7. How much F-gas is contained in the equipment

To comply with the HFC phase-down requirements or the reporting obligations for F-gases and Annex II gases, importers must know the quantity of gas pre-charged in the imported equipment, measured in tonnes CO_2 equivalent. From 1 January 2017 onwards, this quantity must be indicated on the equipment label in CO_2 equivalent, which must be affixed when the item is placed on the market (i.e. released for free circulation after import).

Example:

To calculate the HFC pre-charged in a shipment of 1 000 split residential air conditioning units, you must first calculate the amount of HFCs in each unit.

Let's assume that each unit contains 1 kg of R410a. R410a has a GWP of 2088.

This means that:

=> Each unit is pre-charged with an amount of HFCs equal to:

0.001 tonnes x 2088 = 2.088 tonnes CO_2 equivalent

[12] The calculation method is explained in Annex IV to the Regulation. A simplified version can be found at the end of Chapter 5 of this document.
[13] AR4: Fourth Assessment Report of the International Panel on Climate Change (IPCC)

=> The total imported quantity pre-charged in the equipment is equal to:

1000 x 2.088 tonnes CO_2 equivalent = 2088 tonnes CO_2 equivalent.

It is also important to identify the type of refrigerant used. If the air conditioning units were charged with 1 kg of R32 (GWP=675) instead, the total imported quantity for a shipment of 1 000 units would amount to 675 tonnes CO_2 equivalent (0,001 tonnes x 675 x 1000).

For non-HFCs, such as hydrocarbons, there are no import restrictions under the phase-down. However, there are restrictions for mixtures containing HFCs and other substances, including hydrocarbons. Consider the mixture R-431A consisting of 71% R-290 (propane, GWP=3) and 29% R-152a (GWP=124). The total imported quantity for a shipment of 1000 units with 1 kg of R-431A would amount to only 38 tonnes CO_2 equivalent (0.001 tonnes x (71%*3 + 29% * 124) * 1000) due to the low GWP of this mixture.

2.8. What does 'HFC phase-down' and 'HFC quota system' mean?

The Regulation requires that the amount of HFCs placed on the market in the EU must be reduced (or 'phased down') by 79 % between 2015 and 2030. HFC amounts are calculated as CO_2 equivalent (Article 15). The phase-down is carried out using an HFC quota system (Article 16), as part of which producers and importers of **bulk gases** (only!) are given quotas that limit their right to place bulk gases on the market (see 2.9).

2.9. Quota holders, incumbents and new entrants

Producers and importers of **bulk** HFCs must have a quota in order to place bulk HFCs on the market. 'Incumbents' are companies that reported placing bulk gases on the market during the period 2009-2012 (Article 16(1)). These companies are allocated a quota by the European Commission on the basis of their historic market share.

A list of incumbents for 2015-2017 can be found here http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2014_318_R_0008.[14] The Commission will update this list, which is based on the market players in 2015, every three years.

'New entrants' are companies that did not report placing on the market of bulk HFCs during a specific reporting period (or the reference period initially), but intend to do so in the coming year. The Commission has allocated them a quota based on their declaration stating their intent to place bulk HFCs on the market (Article 16(2)). The quota comes from a reserve set aside for this purpose, and is allocated on a pro-rata basis.

Importers of equipment pre-charged with HFCs are not importing bulk gases, they are neither incumbents nor new entrants. These terms relate only to producers and importers placing bulk gases on the market.

Importers of equipment do not hold quotas but are still affected by the phase-down (see section 3).

[14] Commission Implementing Decision of 31 October 2014 determining, pursuant to Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases, reference values for the period 1 January 2015 to 31 December 2017 for each producer or importer who has reported placing on the market hydrofluorocarbons under Regulation (EC) No 842/2006 of the European Parliament and of the Council (notified under document C(2014) 7920).

3. Compliance with the HFC phase-down and quota system

Regulation (EU) No 517/2014 sets out a number of mandatory rules for importers of refrigeration, air conditioning and heat pump (RACHP) equipment pre-charged with HFCs that will apply from 2017.

The Regulation introduces an HFC phase-down and a quota system for producers and importers of bulk HFCs. Note that importers and EU manufacturers of equipment pre-charged with HFCs do not place **bulk gases** on the EU market**. Therefore, they do not have an HFC quota.** But they are affected by the phase-down nonetheless.

The aim of the HFC phase-down is to gradually reduce the use of HFCs. If HFCs inside imported equipment could be imported without any restriction, it would not be possible to meet the environmental objective. However, the import of equipment pre-charged with HFCs has not been banned, it can still be carried out subject to certain conditions.

From 1 January 2017 onwards, **importers[15] of RACHP equipment pre-charged with HFCs need to ensure and document that the HFCs charged into the equipment are accounted for under the quota system before the equipment can be placed on the EU market (Article 14)**.[16]

So, for importers of equipment it is important to distinguish between RACHP equipment pre-charged with HFCs, and equipment other than RACHP or equipment not charged with HFCs (see also section 2.5).

3.1. Accounting for HFCs in pre-charged equipment (complying with Article 14)

There are three ways an importer of RACHP equipment can ensure compliance with the obligation under the EU quota system to account for the HFCs in pre-charged equipment:

Option 1: Avoid importing equipment pre-charged with HFCs.

Option 2: Obtain an authorisation from a quota holder matching the quantity of HFCs in the pre-charged equipment. This authorisation should be introduced by the quota holder, and accepted by the importer, in the HFC Registry.

Option 3: Demonstrate that the pre-charged HFCs were placed on the EU market previously.

› Option 1 — Avoid HFCs and avoid the obligations:

The most straightforward option is to avoid, where possible, importing RACHP equipment relying on HFCs altogether. For many types of equipment, comparable HFC-free models using e.g. hydrocarbons are already available.

Alternatively, importers could also import HFC equipment that is not pre-charged with HFCs ("empty"). The equipment could be imported with an HFC-free holding charge such as nitrogen and then charged with EU-bought (and thus accounted for under the quota system) HFCs in the EU (e.g. during installation). This would enable the importer to avoid having to obtain authorisations (see option 2 below) and the reporting requirements, but the "empty" equipment would still have to be labelled according to Art. 12 of the F-gas Regulation.

[15] Please see description of "importer" in 2.1
[16] Important to note: The reporting obligations under Art. 19 for importers of pre-charged equipment already apply since 1 January 2015

› Option 2 — Obtaining an authorisation from a quota holder

Under this option the importer of RACHP equipment pre-charged with HFCs obtains **an authorisation from a quota-holding company** (i.e. producer or importer of gas) **to use its quota** to comply with Article 14.

Important: Equipment importers should not try to obtain quotas themselves for the purpose of importing precharged equipment!

- What is an authorisation?

An authorisation is a (contractual) agreement between the quota holder (i.e. producer or importer of gas) and the importer of equipment. It allows the importer to use a specified amount of the quota (in CO_2 equivalent), held by the quota holder, to import its pre-charged equipment.

Authorisations are always given to another company (see Article 18(2)), i.e. a quota holder cannot authorise itself to import equipment. Authorisation also should not be given to the manufacturer of the equipment, unless it plans to import the pre-charged equipment itself.[17] A company that has received an authorisation from a quota holder cannot subsequently re-authorise or transfer some part of it or all of the authorisation to another company.

When the quota holder authorises part of its quota, that part of the quota is considered as used up and cannot be used any longer, e.g. for imports of bulk gas. In other words quota holders must ensure that the total quantities they place on the market in a given year, including the quantities they authorised to others in that year, do not exceed their annual quota. Exceeding your quota is illegal and punishable under the F-gas Regulation (Art. 25) and national law of the Member State concerned.

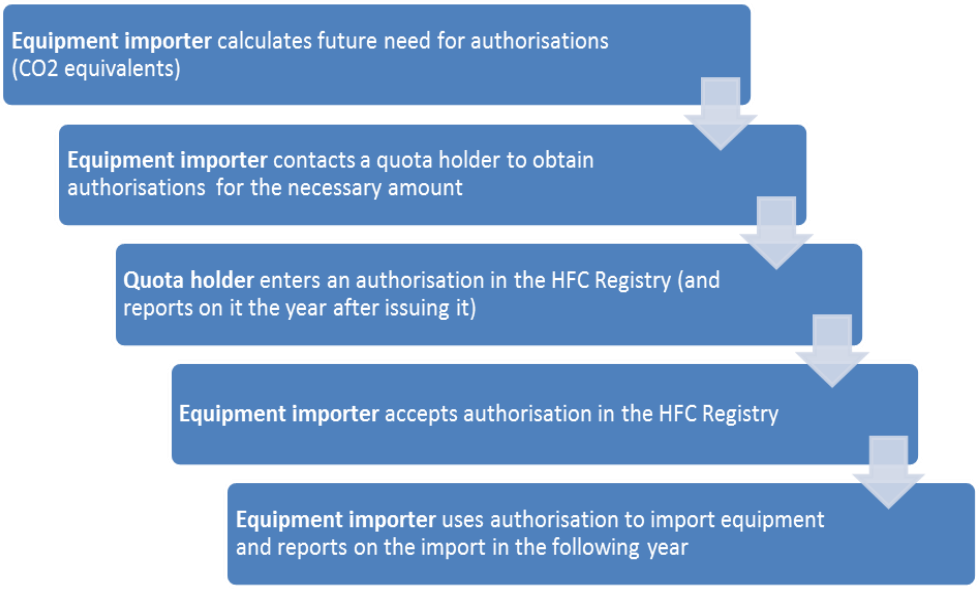
- How can I obtain an authorisation?

The equipment importer should approach a quota holder in order to request authorisations in good time. **Authorisations are not time-limited, i.e. an authorisation obtained from a quota holder in 2015 can be used for importing pre-charged equipment in 2017 or later.**

Importers should obtain sufficient authorisations to cover all the quantity of HFCs in the equipment at the time of import (release for free circulation). This quantity is calculated in CO_2 equivalent.

Companies should record their authorisations in the HFC registry (see also Chapter 3.3.1). Equipment importers are able see the authorisations and amounts (in CO_2 equivalent) that have been authorised to them by quota holders. Quota holders are able see the amounts (in CO_2 equivalent) that they have authorised to equipment importers, by year. The following flow chart illustrates the procedure for obtaining authorisations:

[17] See explanation of importer in 2.1



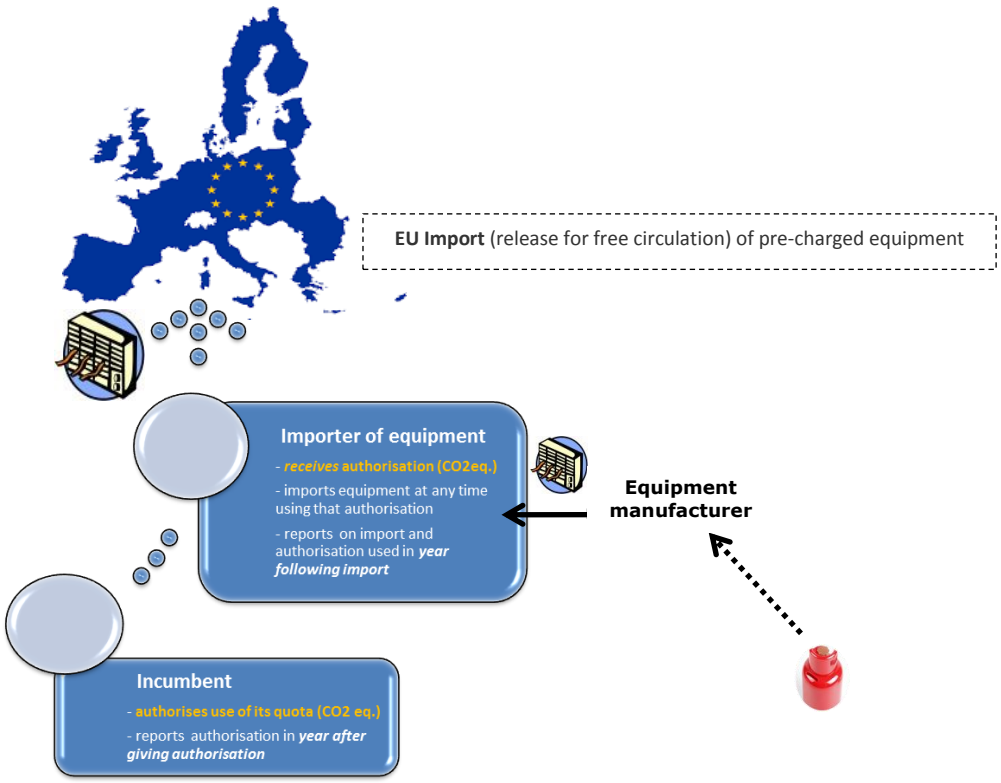
- Can authorisations be obtained from new entrant companies?

Quota holding companies are divided into incumbents and new entrants (see section 2.9). Both types of companies can grant an authorisation, **but new entrants must also physically sell the corresponding amount of gas when the authorisation is made** (which is not the case for incumbents). The new entrant or its only representative, in case of non-EU companies, must provide proof that this has been done (Article 18(2)).

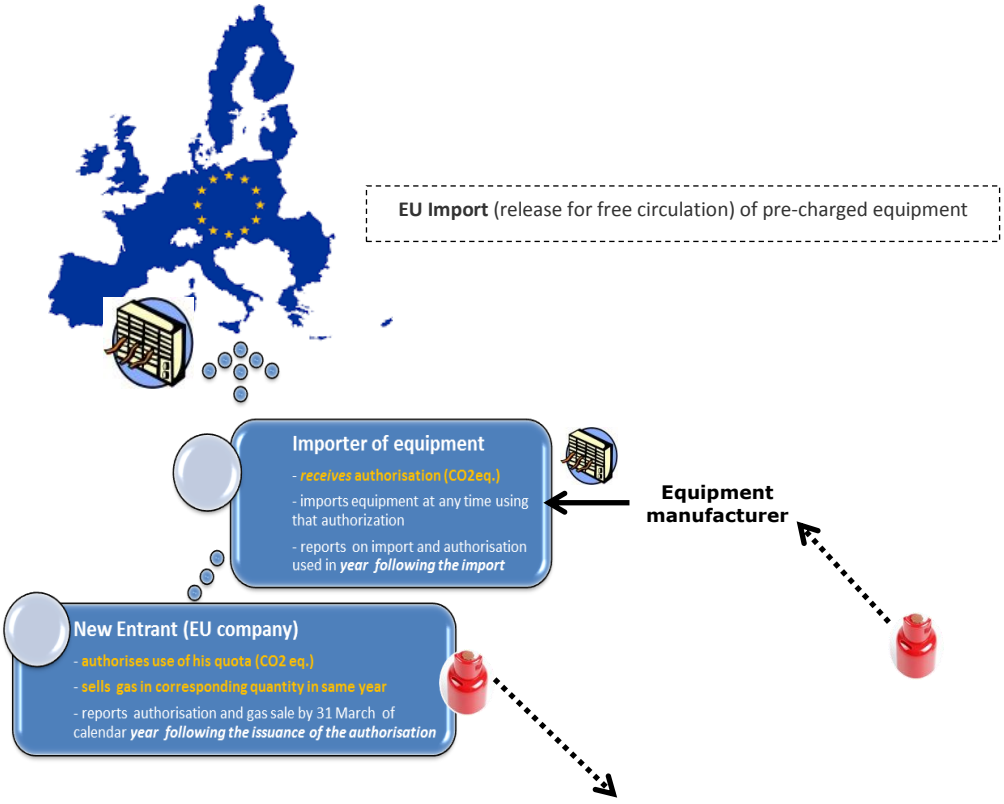
The physical sale of the gas does not necessarily have to be to the recipient of the authorisation (i.e. the importer of equipment). For instance, the new entrant could sell the relevant amounts of gas to the manufacturer of equipment, which supplies the pre-charged units to the importer that receives the authorisation. This requirement to physically supply the gas prevents companies that are not in the F-gas business requesting quotas from the reserve for new entrants with the sole purpose of trading these rights.

The flow diagrams below show the process of obtaining authorisations from (i) incumbents, (ii) EU-based new entrants and (iii) non-EU-based new entrants.

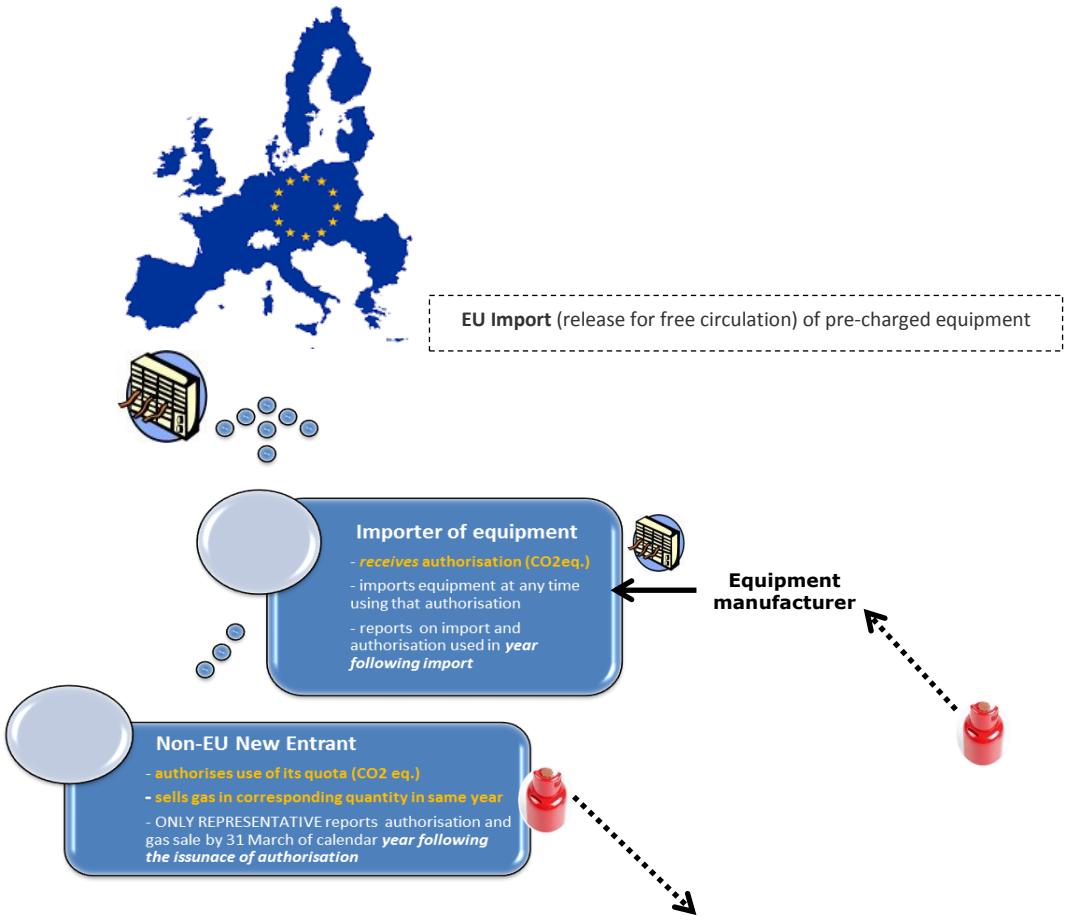
(i) Process for authorisations obtained from an incumbent quota holder:



(ii) Process for authorisation obtained from a new entrant quota holder in the EU:



(iii) Process for authorisation obtained from a non-EU new entrant quota holder:



Essentially, there is no difference for the importer of equipment using an EU or a non-EU based new entrant companies when obtaining an authorisation. The new entrant, if not based in the EU, uses its Only Representative to comply with the obligations of the F-gas Regulation, such as regarding reporting on authorisations, gas sales and imports.

- How should I report on my authorisations?

For compliance purposes, **it is extremely important that both parties (the quota holder and the equipment importer) report on the authorisation amounts,** however not necessarily in the same year**.** The equipment importer must report the use of the authorisation in the calendar year following the year of import of the equipment (e.g. by 31 March 2018 for equipment imported in 2017). The equipment importer will state who issued the authorisation and when it was issued.

For the quota holder, the date of issuing the authorisation is considered to be the time of the placing on the market, i.e. the year in which the quota is used. Therefore, the quota holder issuing the authorisation needs to report by 31 March in the subsequent calendar year (e.g. 31 March 2016 for an authorisation issued in 2015).

The data entered by both parties can be matched for control purposes by the European Commission and the responsible national authorities.

More information on reporting can be found in Chapter 4.1 below and in the special guidance document on reporting ('FAQ reporting').[18]

[18] http://ec.europa.eu/clima/policies/f-gas/docs/faq_reporting_en.pdf

› Option 3: Filling equipment with gases that were placed on the EU market previously (in special cases)

In principle, it is possible for an importer to use HFCs that have already been placed on the EU market in the past, prior to their (re-)import into the EU inside the pre-charged equipment. In other words, the HFC is placed on the EU market, exported, inserted into the equipment outside the EU, then re-imported into the EU inside the equipment. The bulk gases should be supplied directly by the exporting undertaking to the manufacturers of equipment outside the EU and relevant proof must be provided in this case.

As this is a rather unusual business pattern it is likely to be relevant only in a very small number of cases. Moreover, it requires accurate annual reporting of bulk gas exporters and equipment importers: The importer of equipment will need to specify the quantities imported in equipment in section 12 of the reporting sheets and identify the undertaking that exported the bulk gas and the year of export. The exporter of bulk gas must have counted the exported quantity against his quota and must not have claimed the phase-down export exemption (Article 15(2)(c)) in Section 5 of the reporting sheets for exporters of bulk gases.

More information on reporting can be found in Chapter 4.1 below and in the special guidance document on reporting ('FAQ reporting').[19]

[19] http://ec.europa.eu/clima/policies/f-gas/docs/faq_reporting_en.pdf

3.2. Documentation, declaration of conformity and third-party verification

The burden of proof that the HFCs contained in pre-charged equipment are accounted for under the EU HFC phase-down **lies with the importer of the equipment**, as it is required to provide evidence at the time of placing on the market (i.e. release for free circulation after import). Unless it provides the necessary proof, the importer cannot place the equipment on the market. From 1 January 2017, importers of RACHP equipment containing HFCs have to provide a Declaration of Conformity when they import a shipment of equipment and release it for free circulation, as well as ensuring full documentation of compliance. Such a Declaration of Conformity should therefore accompany any shipment of pre-charged units that is released for free circulation. Declarations of Conformity are commonly used in other pieces of EU legislation, e.g. RoHS,[20] Ecodesign[21] or on product safety.[22]

The Declaration of Conformity and associated documentation has to be retained by the importer for a minimum of five years after the equipment is placed on the market.

For imports released for free circulation from 1 January 2017, importers are required to have their documentation and Declaration of Conformity verified by an external auditor by 31 March of the following year. For example, the first verification of imports in 2017 should be completed by 31 March 2018.

The auditor for the independent verification must be either accredited under Directive 2003/87/EC (for the verification of emission reports under the European Emission Trading Scheme) or accredited to verify financial statements in the Member State in which the importer is located.

A Commission Implementing Regulation that is expected to be adopted in 2016 will set out the detailed arrangements relating to the declaration of conformity and verification by the independent auditor (Article 14(4)).

Role of non-EU manufacturer:

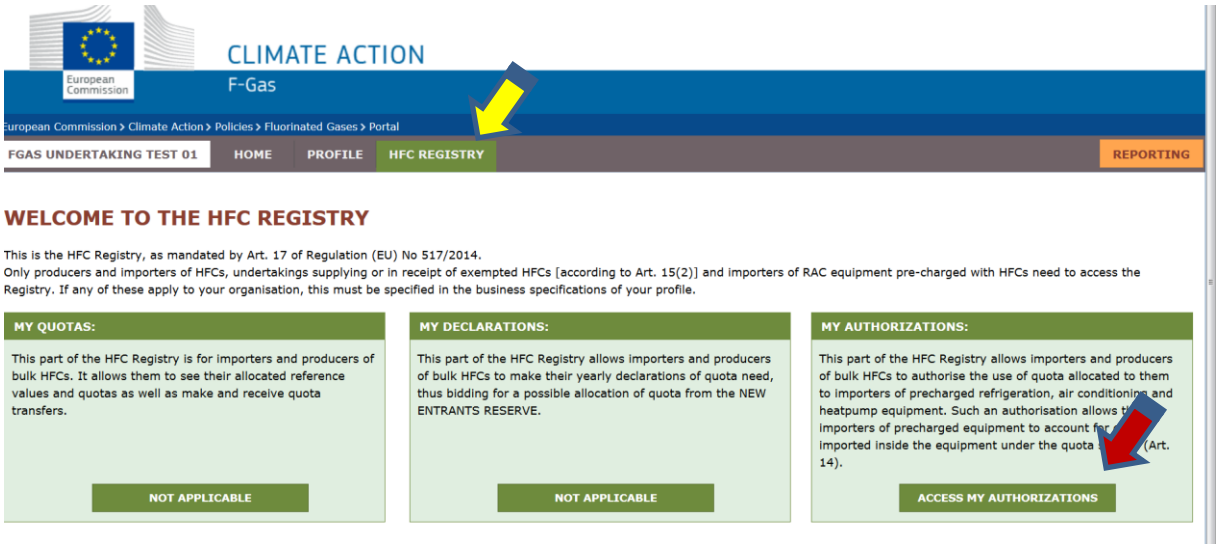
Compliance with the phase-down must be demonstrated at the time of placing on the market, which is why importers are so strongly affected by this obligation. However, there is a role to play for the manufacturer of equipment (producing outside the non-EU) by e.g. raising awareness among its importers to comply with the Article 14 obligations (obtaining authorisations or other options as explained above), as well as by enabling the importers to comply by providing the relevant paperwork required for the certificate of conformity, in addition to ensuring labelling of equipment according to Article 12. For the role of EU manufacturers see box on p. 20.

[20] Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
[21] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products.
[22] Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products.

3.3. Registration in the HFC Registry

The phase-down and the quota system is implemented using an electronic HFC Registry (Article 17) operated by the European Commission. The Registry contains the HFC quotas allocated to incumbents and new entrants. It also records transfers of quotas made between quota holders and authorisations from quota holders to equipment importers. All companies holding quotas, companies supplying or receiving exempted HFCs (Article 15(2)), **and importers of equipment placing pre-charged RAC equipment containing HFCs on the market[23] have a legal obligation to register in the HFC registry**.
The HFC registry forms part of the electronic **F-gas Portal** found on the website of DG CLIMA (https://webgate.ec.europa.eu/ods2/resources/domain). The F-gas Portal is the entry point for both the HFC Registry and the annual company reporting. It is relevant for equipment importers of both F-gases and Annex II gases. The first step of the reporting procedure is registering on the F-gas portal. Guidance on how to register is available here: http://ec.europa.eu/clima/policies/f-gas/docs/guidance_document_en.pdf.

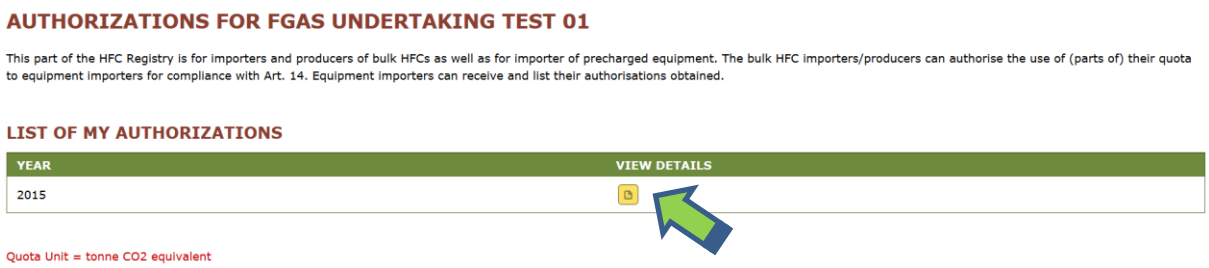
When equipment importers acquire authorisations, these should be recorded in the HFC registry by the quota holder.
The following screenshots provide an overview over the 'authorisations' section of the HFC registry:



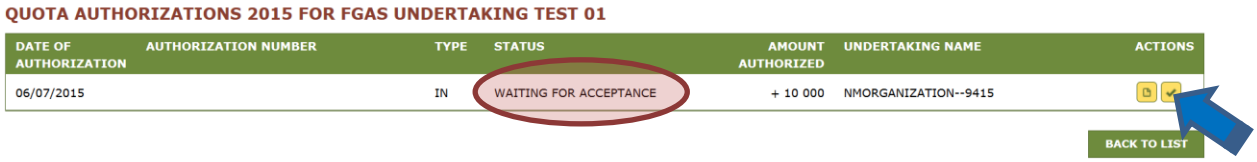
Importers can see the authorisations granted to them and accept new ones: first, click on the green '**HFC registry**' button (see yellow arrow) > then click on the '**access my authorisations**' button (see red arrow above).

[23] Importers of other types of equipment must also register in the F-gas Portal in order to carry out their annual reporting.

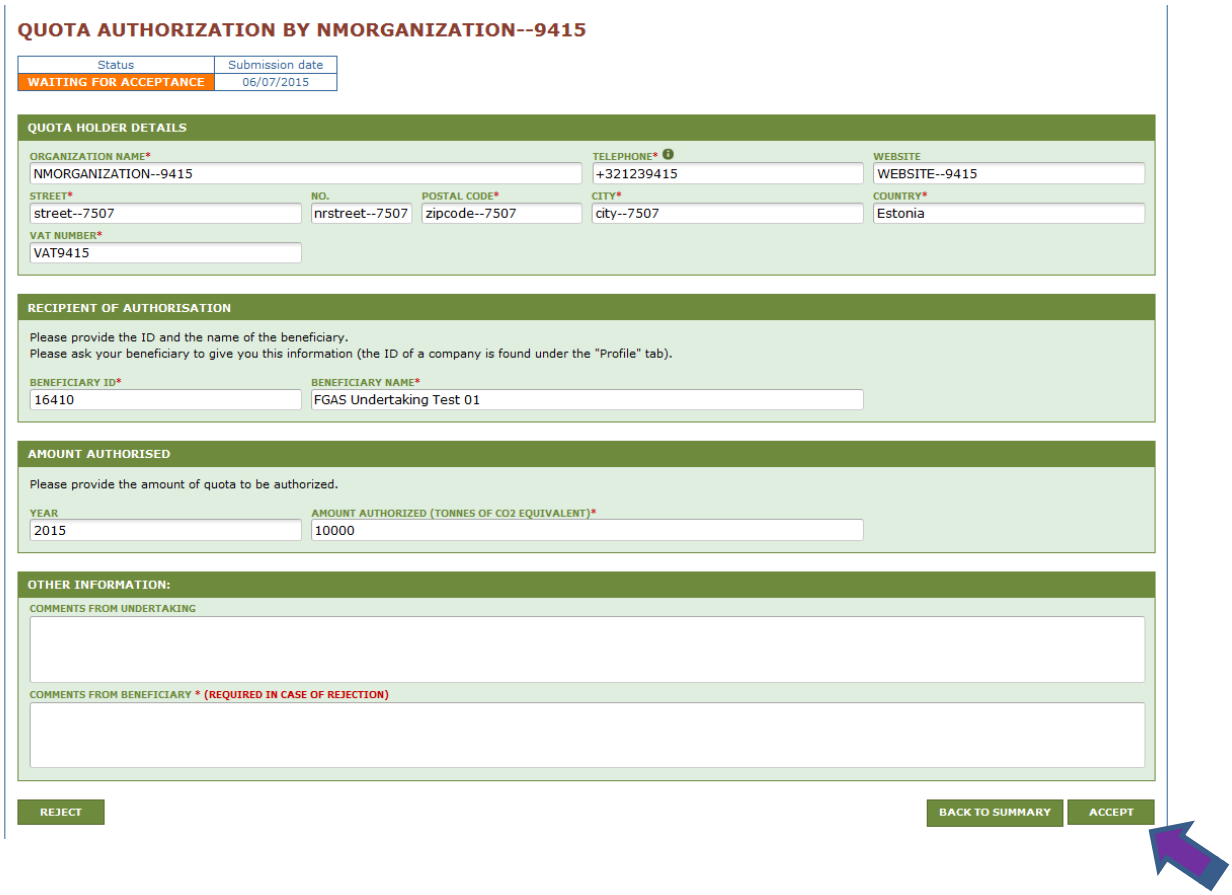
Authorisations are listed by the year in which they were obtained. To see more details on the authorisations granted (e.g. authorisation amounts measured in CO_2 equivalent) click '**view details**' (green arrow below).



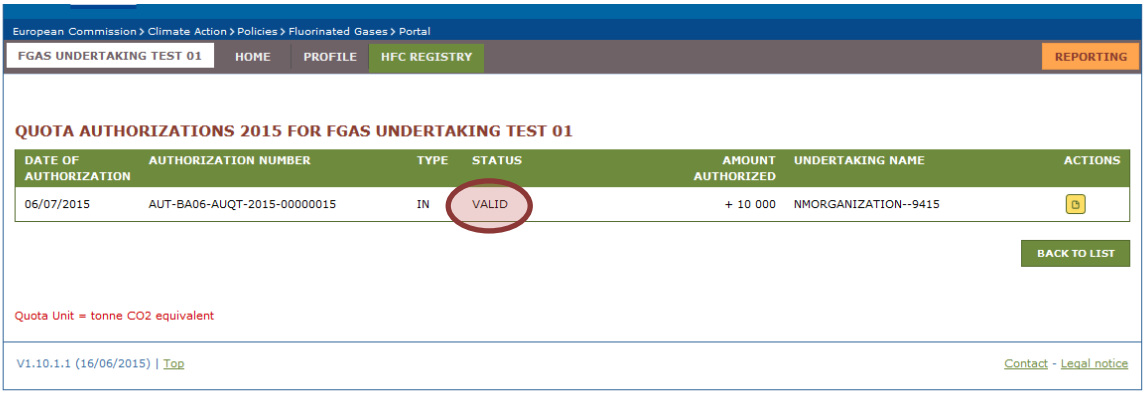
Incoming authorisations (i.e. those that have been submitted by a quota holder) are marked as 'waiting for acceptance'. Click on the tick (see blue arrow below) to see the detailed authorisation entered by the quota holder.



The authorising entity (quota holder) is identified along with the authorised amount (10000 CO_2 eq. in this example). Equipment importers simply click '**accept**' (see purple arrow below) to validate the authorisation.



The authorisations obtained (status: 'valid') are listed with amounts of CO_2 equivalent (10000 CO_2 eq. in this example).



4. Other obligations on importers of equipment and for manufacturers of equipment in the EU

4.1. Reporting obligation

The reporting obligations (Article 19) cover all importers of products and equipment[24] containing F-gases and Annex II gases. Each undertaking importing 500 t CO_2 equivalent or more per year in products or equipment containing such gases (including mixtures) is obliged to report the following information (Section 11 of the Annex to Implementing Decision 1191/2014[25]):

- quantity in metric tonnes of F-gases and Annex II gases contained in the equipment/products, by category;
- number of units per category;
- documentation confirming that any HFC quantity has been accounted for under the HFC phase-down (Article 19 (5)) for the reporting period 2017 and onwards.

This report is due by 31 March of the subsequent calendar year. The first reporting deadline was 31 March 2015 for transactions in 2014.

Converted into physical amounts of HFCs and mixtures commonly used as refrigerants, the reporting threshold of 500 t CO_2 equivalent corresponds to 350 kg of HFC-134a, 127 kg of R404A, 240 kg of R410A, or 282 kg of R407C.

Importers authorised to use a quota holder's quota must report the following information by 31 March 2018 for the 2017 reporting period (Section 13 of the Annex to Implementing Decision 1191/2014[10]):

- the quantity of HFC (pure or in mixture) contained in imported RACHP equipment in tonnes CO_2 equivalent subject to authorisations;
- the name of the authorising company and year of authorisation.

A guidance document on reporting can be found on the DG CLIMA website.[26]

Similarly, importers of equipment charged with HFCs that were placed on the EU market prior to being exported and inserted into the equipment (option 3 in section 3.1) must for the first time by 31 March 2018 report the following (see Section 12 of the Annex to Implementing Decision 1191/2014):

- the quantity of HFC (pure or in mixture) contained in equipment in metric tonnes; and
- the name of the exporting company and year of original export of HFC in question. A direct transfer to the equipment manufacturer must be evidenced.

4.2. Placing on the market prohibitions for F-gas equipment

The new F-gas Regulation includes a number of **new** restrictions on placing equipment on the market of F-gas products and equipment (Article 11 and Annex III). Among the new restrictions are prohibitions to place on the market:

- domestic refrigerators and freezers that contain HFCs with GWP of 150 or more (from 1 January 2015);
- refrigerators and freezers for commercial use (hermetically sealed equipment):

[24] Not limited to RAC equipment.
[25] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2014_318_R_0004
[26] http://ec.europa.eu/clima/policies/f-gas/docs/faq_reporting_en.pdf.

    - containing HFCs with GWP of 2 500 or more (from 1 January 2020)
    - containing HFCs with GWP of 150 or more (from 1 January 2022)
- any stationary refrigeration equipment that contains HFCs with a GWP of 2 500 or more (from 1 January 2020);
- movable room air conditioning equipment (hermetically sealed equipment which can be moved between rooms by the end-user) that contain HFCs with a GWP of 150 or more (from 1 January 2020);
- single split air conditioning systems containing less than 3 kg of fluorinated greenhouse gases, that contain, or whose functioning relies upon, fluorinated greenhouse gases with a GWP of 750 or more (from 1 January 2025);
- fire protection equipment with HFC-23 (from 1 January 2016);
- technical aerosols that contain HFCs with a GWP of 150 or more (from 1 January 2018);
- XPS foams (banned from 1 January 2020) and other foams (from 1 January 2023) that contain HFCs with a GWP of 150 or more.

Some exemptions apply (e.g. for safety reasons, medical use, very low temperatures). Please refer to Annex III to the Regulation for the full list of prohibitions and further details.

4.3. Labelling

Labelling requirements for products and types of equipment containing F-gases have been updated in the new Regulation to *inter alia* include foams (Article 12). The label must indicate that the equipment or product contains F-gases and the industry designation of the F-gas. From 2017 onwards, the quantity in weight and in CO_2 equivalent must also be included, along with the GWP of the gas. This information must also be included in instruction manuals and, in the case of F-gases with a GWP >150, also descriptions used for advertising. Furthermore, a Commission Implementing Regulation sets out the format for labelling[27].

While the importer is responsible for the correct labelling of equipment placed on the market, usually the equipment is labelled by the manufacturer.

4.4. Summary of obligations on manufacturer of F-gas equipment in the EU

In principle, the obligations on EU manufacturer are the same as those or importers of equipment. However, since often the HFC used in equipment by EU manufacturer have already been placed on the market, in practice there are some differences. The box below gives a short overview of the requirements related to EU manufacturer.

[27] See http://ec.europa.eu/clima/policies/f-gas/legislation/documentation_en.htm under implementing acts.

Requirements for EU equipment manufacturers

Equipment **manufacturers in the EU** have various obligations under the F-gas Regulation. These include:

- **Compliance with the HFC Phase-down and quota system**: Similar to importers EU manufacturers of RACHP equipment will need to issue a **Declaration of Conformity** from 2017 confirming that HFCs charged into the equipment were previously placed on the market in the EU (if acquired from a gas producer or distributor in the EU or a gas importer who released the gas for free circulation), and to keep the full supporting documentation, when putting the equipment on the market.
- **No HFC phase-down exemption for gases exported in pre-charged equipment**: Upon sale of the gas by EU gas producers or upon release for free circulation after import, quota is needed. This applies also if the HFCs are sold to an equipment manufacturer that subsequently intends to export the HFC equipment. However, no quota is needed if the bulk HFCs are imported under customs procedures different from "release for free circulation", and exported inside equipment without ever being released in the EU.
- **Placing on the market restrictions** apply to both importers and EU manufacturers placing product and equipment on the EU market (Article 11 and Annex III; see also Chapter 4.2 of this document);
- Requirements for the **labelling of equipment** apply to both importers and EU manufacturers (Article 12 and a Commission Implementing Regulation establishing the labelling format. See also Chapter 4.3 of this document).

5. Fluorinated greenhouse gases

5.1. F-gases listed in Annex I to the Regulation

Fluorinated Greenhouse Gases listed in Annex I of Regulation No 517/2014, along with their Chemical Abstracts Service (CAS) number and typical applications

Industrial designation	Chemical name (common name)	Chemical formula	GWP	CAS number	Typical applications
Section 1: Hydrofluorocarbons (HFCs)					
HFC-23	trifluoromethane (fluoroform)	CHF_3	14800	75-46-7	Low temperature refrigerant Fire extinguishant
HFC-32	difluoromethane	CH_2F_2	675	75-10-5	Refrigerant Blend component for refrigerants
HFC-41	fluoromethane (methyl fluoride)	CH_3F	92	593-53-3	Semiconductor manufacturing
HFC-125	pentafluoroethane	CHF_2CF_3	3500	354-33-6	Blend component for refrigerants Fire extinguishant
HFC-134	1.1.2.2-tetrafluoroethane	CHF_2CHF_2	1100	359-35-3	No typical applications at present
HFC-134a	1.1.1.2-tetrafluoroethane	CH_2FCF_3	1430	811-97-2	Refrigerant Blend component for refrigerants Extraction solvent Propellant for medical and technical aerosols Blowing agent component for extruded polystyrene (XPS) polyurethane (PUR) foams
HFC-143	1.1.2-trifluoroethane	CH_2FCHF_2	353	430-66-0	No typical applications at present
HFC-143a	1.1.1-trifluoroethane	CH_3CF_3	4470	420-46-2	Blend component for refrigerants
HFC-152	1.2-difluoroethane	CH_2FCH_2F	53	624-72-6	Not commonly used
HFC-152a	1.1-difluoroethane	CH_3CHF_2	124	75-37-6	Propellant for specialised technical aerosols Blowing agent component for extruded polystyrene (XPS) foams Refrigerant
HFC-161	fluoroethane(ethyl fluoride)	CH_3CH_2F	12	353-36-6	Not commonly used. Tested as alternative to R22, not used at commercial scale
HFC-227ea	1.1.1.2.3.3.3-heptafluoropropane	CF_3CHFCF_3	3220	431-89-0	Refrigerant Propellant for medical aerosols

Industrial designation	Chemical name (common name)	Chemical formula	GWP	CAS number	Typical applications
					Fire extinguishant Blowing agent for foams
HFC-236cb	1.1.1.2.2.3-hexafluoropropane	$CH_2FCF_2CF_3$	1340	677-56-5	Refrigerant Blowing agent
HFC-236ea	1.1.1.2.3.3-hexafluoropropane	CHF_2CHFCF_3	1370	431-63-0	Refrigerant Blowing agent
HFC-236fa	1.1.1.3.3.3-hexafluoropropane	$CF_3CH_2CF_3$	9810	690-39-1	Fire extinguishant Refrigerant
HFC-245ca	1.1.2.2.3-pentafluoropropane	$CH_2FCF_2CHF_2$	693	679-86-7	Refrigerant Blowing agent
HFC-245fa	1.1.1.3.3-pentafluoropropane	$CHF_2CH_2CF_3$	1030	460-73-1	Foam blowing agent for polyurethane (PUR) Solvent for specialised applications
HFC-365 mfc	1.1.1.3.3-pentafluorobutane	$CF_3CH_2CF_2CH_3$	794	406-58-6	Foam blowing agent for polyurethane (PUR) and phenolic foams Blend component for solvents
HFC-43-10 mee	1.1.1.2.2.3.4.5.5.5-decafluoropentane	$CF_3CHFCHFCF_2CF_3$	1640	138495-42-8	Solvent for specialised applications Blowing agent for foams
Section 2: Perfluorocarbons (PFCs)					
PFC-14	tetrafluoromethane (perfluoromethane, carbon tetrafluoride)	CF_4	7390	75-73-0	Semiconductor manufacturing Fire extinguishant
PFC-116	hexafluoroethane (perfluoroethane)	C_2F_6	12200	76-16-4	Semiconductor manufacturing
PFC-218	octafluoropropane (perfluoropropane)	C_3F_8	8830	76-19-7	Semiconductor manufacturing
PFC-3-1-10 (R-31-10)	decafluorobutane (perfluorobutane)	C_4F_{10}	8860	355-25-9	Physics research Fire extinguishant
PFC-4-1-12 (R-41-12)	dodecafluoropentane (perfluoropentane)	C_5F_{12}	9160	678-26-2	Precision cleaning solvent Low-use refrigerant
PFC-5-1-14 (R-51-14)	tetradecafluorohexane (perfluorohexane)	C_6F_{14}	9300	355-42-0	Coolant fluid in specialised applications Solvent
PFC-c-318	octafluorocyclobutane (perfluorocyclobutane)	c-C_4F_8	10300	115-25-3	Semiconductor manufacturing
Section 3: Other perfluorinated compounds					
	sulfur hexafluoride	SF_6	22800	2551-62-4	Insulating gas in high-voltage switchgear Blanket gas for magnesium production

Industrial designation	Chemical name (common name)	Chemical formula		GWP	CAS number	Typical applications
						Etching and cleaning in the semiconductors industry

5.2. Other fluorinated greenhouse gases listed in Annex II to the Regulation

Common name/industrial designation	Chemical formula	GWP
Section 1: Unsaturated hydro(chloro)fluorocarbons		
HFC-1234yf	$CF_3CF=CH_2$	4
HFC-1234ze	trans — $CHF=CHCF_3$	7
HFC-1336 mzz	$CF_3CH=CHCF_3$	9
HCFC-1233zd	$C_3:_2ClF_3$	4.5
HCFC-1233xf	C3:2ClF3	1
Section 2: Fluorinated ethers and alcohols		
HFE-125	CHF_2OCF_3	14900
HFE-134	CHF_2OCHF_2	6320
HFE-143a	CH_3OCF_3	756
HCFE-235da2 (isofluorane)	$CHF_2OCHClCF_3$	350
HFE-245cb2	$CH_3OCF_2CF_3$	708
HFE-245fa2	$CHF_2OCH_2CF_3$	659
HFE-254cb2	$CH_3OCF_2CHF_2$	359
HFE-347 mcc3 (HFE-7000)	$CH_3OCF_2CF_2CF_3$	575
HFE-347pcf2	$CHF_2CF_2OCH_2CF_3$	580
HFE-356pcc3	$CH_3OCF_2CF_2CHF_2$	110
HFE-449sl (HFE-7100)	$C_4F_9OCH_3$	297
HFE-569sf2 (HFE-7200)	$C_4F_9OC_2:_5$	59
HFE-43-10pccc124 (H-Galden 1040x) HG-11	$CHF_2OCF_2OC_2F_4OCHF_2$	1870
HFE-236ca12 (HG-10)	$CHF_2OCF_2OCHF_2$	2800
HFE-338pcc13 (HG-01)	$CHF_2OCF_2CF_2OCHF_2$	1500
HFE-347 mmy1	$(CF_3)_2CFOCH_3$	343
2.2.3.3.3-pentafluoropropanol	$CF_3CF_2CH_2OH$	42
bis(trifluoromethyl)-methanol	$(CF_3)_2CHOH$	195
HFE-227ea	$CF_3CHFOCF_3$	1540
HFE-236ea2 (desfluoran)	$CHF_2OCHFCF_3$	989
HFE-236fa	$CF_3CH_2OCF_3$	487
HFE-245fa1	$CHF_2CH_2OCF_3$	286

Common name/industrial designation	Chemical formula	GWP
HFE 263fb2	$CF_3CH_2OCH_3$	11
HFE-329 mcc2	$CHF_2CF_2OCF_2CF_3$	919
HFE-338 mcf2	$CF_3CH_2OCF_2CF_3$	552
HFE-338 mmz1	$(CF_3)_2CHOCHF_2$	380
HFE-347 mcf2	$CHF_2CH_2OCF_2CF_3$	374
HFE-356 mec3	$CH_3OCF_2CHFCF_3$	101
HFE-356 mm1	$(CF_3)_2CHOCH_3$	27
HFE-356pcf2	$CHF_2CH_2OCF_2CHF_2$	265
HFE-356pcf3	$CHF_2OCH_2CF_2CHF_2$	502
HFE 365 mcf3	$CF_3CF_2CH_2OCH_3$	11
HFE-374pc2	$CHF_2CF_2OCH_2CH_3$	557
	- $(CF_2)_4CH(OH)$ -	73
Section 3: Other perfluorinated compounds		
perfluoropolymethylisopropylether (PFPMIE)	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10300
nitrogen trifluoride	NF_3	17200
trifluoromethyl sulfur pentafluoride	SF_5CF_3	17700
perfluorocyclopropane	c-C_3F_6	17340

5.3. Method for calculating the total GWP of a mixture

From Annex IV to Regulation (EU) No 517/2014. Method for calculating the total GWP of a mixture

The GWP of a mixture is calculated as a weighted average, derived from the sum of the weight fractions of the individual substances multiplied by their GWP, unless otherwise specified, including substances that are not fluorinated greenhouse gases.

Σ [(Substance X% x GWP) + (Substance Y% x GWP) + … (Substance N% x GWP)]
where % is the contribution by weight with a weight tolerance of +/- 1 %.

For example: applying the formula to a blend of gases (R404A) consisting of
44 % HFC-125 (GWP=3500), 52 % HFC-143a (GWP=4470) and 4 % HFC-134a (GWP=1430):

Σ (44 % x 3500) + (52 % x 4470) + (4 % x 1430)
→ Total GWP = 3922

6. Common mixtures

List of common mixtures taken from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Industrial Processes and Product Use Table 7.8, p. 7.44

Blend	Constituents	Composition (%)	GWP
R400	CFC-12/CFC-114	Should be specified[1]	
R401A	HCFC-22/HFC-152a/HCFC-124[28]	(53.0/13.0/34.0)	
R401B	HCFC-22/HFC-152a/HCFC-124	(61.0/11.0/28.0)	
R401C	HCFC-22/HFC-152a/HCFC-124	(33.0/15.0/52.0)	
R402A	HFC-125/HC-290/HCFC-22	(60.0/2.0/38.0)	
R402B	HFC-125/HC-290/HCFC-22	(38.0/2.0/60.0)	
R403A	HC-290/HCFC-22/PFC-218	(5.0/75.0/20.0)	
R403B	HC-290/HCFC-22/PFC-218	(5.0/56.0/39.0)	
R404A	**HFC-125/HFC-143a/HFC-134a**	**(44.0/52.0/4.0)**	**3922**
R405A	HCFC-22/ HFC-152a/ HCFC-142b/PFC-318	(45.0/7.0/5.5/42.5)	
R406A	HCFC-22/HC-600a/HCFC-142b	(55.0/4.0/41.0)	
R407A	**HFC-32/HFC-125/HFC-134a**	**(20.0/40.0/40.0)**	**2107**
R407B	**HFC-32/HFC-125/HFC-134a**	**(10.0/70.0/20.0)**	**2804**
R407C	**HFC-32/HFC-125/HFC-134a**	**(23.0/25.0/52.0)**	**1774**
R407D	**HFC-32/HFC-125/HFC-134a**	**(15.0/15.0/70.0)**	**1627**
R407E	**HFC-32/HFC-125/HFC-134a**	**(25.0/15.0/60.0)**	**1552**
R407F	**HFC-32/HFC-125/HFC-134a**	**(30.0/30.0/40.0)**	**1825**
R408A	HFC-125/HFC-143a/HCFC-22	(7.0/46.0/47.0)	
R409A	HCFC-22/HCFC-124/HCFC-142b	(60.0/25.0/15.0)	
R409B	HCFC-22/HCFC-124/HCFC-142b	(65.0/25.0/10.0)	
R410A	**HFC-32/HFC-125**	**(50.0/50.0)**	**2088**
R410B	**HFC-32/HFC-125**	**(45.0/55.0)**	**2229**
R411A	HC-1270/HCFC-22/HFC-152a	(1.5/87.5/11.0)	
R411B	HC-1270/HCFC-22/HFC-152a	(3.0/94.0/3.0)	
R411C	HC-1270/HCFC-22/HFC-152a	(3.0/95.5/1.5)	
R412A	HCFC-22/PFC-218/HCFC-142b	(70.0/5.0/25.0)	
R413A	**PFC-218/HFC-134a/HC-600a**	**(9.0/88.0/3.0)**	**2053**
R414A	HCFC-22/HCFC-124/HC-600a/HCFC-142b	(51.0/28.5/4.0/16.5)	
R414B	HCFC-22/HCFC-124/HC-600a/HCFC-142b	(50.0/39.0/1.5/9.5)	
R415A	HCFC-22/HFC-152a	(82.0/18.0)	
R415B	HCFC-22/HFC-152a	(25.0/75.0)	
R416A	**HFC-134a/HCFC-124/HC-600**	**(59.0/39.5/1.5)**	
R417A	**HFC-125/HFC-134a/HC-600**	**(46.6/50.0/3.4)**	**2346**
R418A	HC-290/HCFC-22/HFC-152a	(1.5/96.0/2.5)	
R419A	**HFC-125/HFC-134a/HE-E170**	**(77.0/19.0/4.0)**	**2967**
R420A	HFC-134a/HCFC-142b	(88.0/12.0)	

[28] All blends containing CFCs or HCFCs are banned under Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Blend	Constituents	Composition (%)	GWP
R421A	**HFC-125/HFC-134a**	**(58.0/42.0)**	**2631**
R421B	**HFC-125/HFC-134a**	**(85.0/15.0)**	**3190**
R422A	**HFC-125/HFC-134a/HC-600a**	**(85.1/11.5/3.4)**	**3143**
R422B	**HFC-125/HFC-134a/HC-600a**	**(55.0/42.0/3.0)**	**2526**
R422C	**HFC-125/HFC-134a/HC-600a**	**(82.0/15.0/3.0)**	**3085**
R500	CFC-12/HFC-152a	(73.8/26.2)	
R501	HCFC-22/CFC-12	(75.0/25.0)	
R502	HCFC-22/CFC-115	(48.8/51.2)	
R503	HFC-23/CFC-13	(40.1/59.9)	
R504	HFC-32/CFC-115	(48.2/51.8)	
R505	CFC-12/HCFC-31	(78.0/22.0)	
R506	CFC-31/CFC-114	(55.1/44.9)	
R507A	**HFC-125/HFC-143a**	**(50.0/50.0)**	**3985**
R508A	**HFC-23/PFC-116**	**(39.0/61.0)**	**13214**
R508B	**HFC-23/PFC-116**	**(46.0/54.0)**	**13396**
R509A	**HCFC-22/PFC-218**	**(44.0/56.0)**	
[1] R400 can have various proportions of CFC-12 and CFC-114. The exact composition needs to be specified, e.g. R400 (60/40).			

Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Industrial Processes and Product Use Table 7.8, p. 7.44

7. Further information

National Contact Points for F-gases:
http://ec.europa.eu/clima/policies/f-gas/documentation_en.htm

European Commission, Directorate General Climate Action (DG Clima):
http://ec.europa.eu/clima/policies/f-gas/index_en.htm