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Regulation (EU) No 517/2014 of the European Parliament and of the Council

of 16 April 2014

on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006

(Text with EEA relevance)

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Regulation (EU) No 517/2014 of the European Parliament and of the Council

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on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee,

After consulting the Committee of the Regions,

Acting in accordance with the ordinary legislative procedure,

Whereas:

- (1) The Fourth Assessment Report of the Intergovernmental Panel on Climate Change ('IPCC') of the United Nations Framework Convention on Climate Change ('UNFCCC'), to which the Union is party, stated that, on the basis of existing scientific data, developed countries would need to reduce greenhouse gas emissions by 80 % to 95 % below 1990 levels by 2050 to limit global climate change to a temperature increase of 2 °C and thus prevent undesirable climate effects.
- (2) To reach this target, the Commission adopted a Roadmap for moving to a competitive low carbon economy in 2050, which was noted by the Council in its Conclusions of 17 May 2011, and endorsed by the European Parliament in its Resolution of 15 March 2012. In that Roadmap, the Commission laid out a cost-effective way of achieving the necessary overall emission reductions in the Union by 2050. That roadmap establishes the sectoral contributions needed in six areas. Non-CO₂ emissions, including fluorinated greenhouse gases but excluding non-CO₂ emissions from agriculture, should be reduced by 72 % to 73 % by 2030 and by 70 % to 78 % by 2050, compared to 1990 levels. If based on the reference year 2005, a reduction in non-CO₂ emissions, except those from agriculture, of 60 % to 61 % by 2030 is required. Fluorinated greenhouse gas emissions were estimated at 90 million tonnes (Mt) of CO₂ equivalent in 2005. A 60 % reduction means that emissions would have to be reduced to approximately 35 Mt of CO₂ equivalent by 2030. Given estimated emissions of 104 Mt of CO₂ equivalent in 2030 based on the full application of current Union legislation, a further decrease of approximately 70 Mt of CO₂ equivalent is required.
- (3) The Commission report of 26 September 2011 on the application, effects and adequacy of Regulation (EC) No 842/2006 of the European Parliament and of the Council concluded that the current containment measures, if fully applied, have the potential to reduce emissions of fluorinated greenhouse gases. Those measures should therefore be maintained and clarified on the basis of the experience gained in implementing them. Certain measures should also be extended to other appliances in which substantial quantities of fluorinated greenhouse gases are used, such as refrigerated trucks and trailers. The obligation to establish and maintain records of equipment that contains such gases should also cover electrical switchgear. Given the importance of containment measures at the end of life of products and equipment containing fluorinated greenhouse gases, Member States should take account of the value of producer responsibility schemes and encourage their establishment, based on existing best practices.
- (4) That report also concluded that more can be done to reduce emissions of fluorinated greenhouse gases in the Union, in particular by avoiding the use of such gases where there are safe and energy-efficient alternative technologies with no impact or a lower impact on the climate. A decrease of up to two thirds of the 2010 emissions by 2030 is cost-effective because proven and tested alternatives are available in many sectors.
- (5) The European Parliament Resolution of 14 September 2011 on a comprehensive approach to non-CO₂ climate-relevant anthropogenic emissions welcomed the Union's commitment to support action on hydrofluorocarbons under the Montreal Protocol on substances that deplete the ozone layer ('Montreal Protocol') as a prime example of a non-market based approach to reducing greenhouse gas emissions. That Resolution also called for the exploration of ways to promote an immediate phase down of hydrofluorocarbons at international level through the Montreal Protocol.
- (6) To encourage the use of technologies with no impact or lower impact on the climate, the training of natural persons who carry out activities involving fluorinated greenhouse gases should cover information on technologies that serve to replace and reduce the use of fluorinated greenhouse gases. Given that some alternatives to fluorinated greenhouse gases used in products and equipment to replace and reduce the use of fluorinated greenhouse gases can be toxic, flammable or highly pressurised, the Commission should examine existing Union legislation covering the training of natural persons for the safe-handling of alternative refrigerants and, if appropriate, should submit a legislative proposal to the European Parliament and to the Council to amend the relevant Union legislation.
- (7) Certification and training programmes should be established or adapted taking account of those established under Regulation (EC) No 842/2006 and may be integrated into the vocational training systems.
- (8) To ensure coherence with monitoring and reporting requirements under the UNFCCC and with Decision 4/CMP.7 of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol to the UNFCCC, adopted by the seventh Conference of the Parties of the UNFCCC meeting in Durban on 11 December 2011, global warming potentials should be calculated in terms of the 100-year global warming potential of one kilogram of a gas relative to one kilogram of CO₂. The calculation should, where possible, be based on the Fourth Assessment Report adopted by the IPCC.

- (9) Effective monitoring of fluorinated greenhouse gas emissions is critical for tracking progress towards the achievement of emission reduction targets and for assessing the impact of this Regulation. The use of consistent, high-quality data to report on fluorinated greenhouse gas emissions is essential to ensuring the quality of emissions reporting. The establishment of reporting systems by Member States of emissions of fluorinated greenhouse gases would provide coherence with Regulation (EU) No 525/2013 of the European Parliament and of the Council. Data on leakage of fluorinated greenhouse gases from equipment collected by companies under this Regulation could significantly improve those emission reporting systems. In that way, it should be possible to check the consistency of the data used to derive emissions and to improve approximations based on calculations, leading to a better estimation of emissions of fluorinated greenhouse gases in the national greenhouse gases inventories.
- (10) Given that there are suitable alternatives available, the current ban on using sulphur hexafluoride in magnesium die-casting and the recycling of magnesium die-casting alloys should be extended to facilities that use less than 850 kg of sulphur hexafluoride per year. Similarly, with an appropriate transitional period, the use of refrigerants with a very high global warming potential of 2 500 or more to service or maintain refrigeration equipment with a charge size of 40 tonnes of CO₂ equivalent or more should be banned.
- (11) Where suitable alternatives to the use of specific fluorinated greenhouse gases are available, bans on the placing on the market of new equipment for refrigeration, air-conditioning and fire protection that contains, or whose functioning relies upon, those substances should be introduced. Where alternatives are not available or cannot be used for technical or safety reasons, or where the use of such alternatives would entail disproportionate costs, it should be possible for the Commission to authorise an exemption to allow the placing on the market of such products and equipment for a limited period. In the light of future technical developments, the Commission should further assess bans on the placing on the market of new equipment for medium-voltage secondary switchgear and new small single split air-conditioning systems.
- (12) Equipment containing fluorinated greenhouse gases should be allowed to be placed on the market if the overall greenhouse gas emissions of that equipment, taking into account realistic leakage and recovery rates, are lower, during its lifecycle, than those that would result from equivalent equipment without fluorinated greenhouse gases, which has the maximum allowed energy consumption set out in relevant implementing measures adopted under Directive 2009/125/EC of the European Parliament and of the Council. The regular and timely review of those implementing measures, in accordance with that Directive would help to ensure that those implementing measures continue to be effective and appropriate.
- (13) Gradually reducing the quantities of hydrofluorocarbons that can be placed on the market has been identified as the most effective and cost-efficient way of reducing emissions of those substances in the long term.
- (14) To implement the gradual reduction of the quantities of hydrofluorocarbons that can be placed on the Union market, the Commission should allocate quotas to individual producers and importers for the placing of hydrofluorocarbons on the market in order that the overall quantitative limit for the placing of hydrofluorocarbons on the market is not exceeded. To protect the integrity of the gradual reduction of the quantities of hydrofluorocarbons placed on the market, hydrofluorocarbons contained in equipment should be accounted for under the Union quota system. Where hydrofluorocarbons contained in equipment have not been placed on the market prior to the charging of the equipment, a declaration of conformity should be required to prove that those hydrofluorocarbons are accounted for under the Union quota system.
- (15) Initially, the calculation of reference values and the allocation of quotas to individual producers and importers should be based on the quantities of hydrofluorocarbons that they reported as having been placed on the market during the reference period from 2009 to 2012. However, in order not to exclude small undertakings, eleven per cent of the overall quantitative limit should be reserved for importers and producers who have not placed on the market 1 tonne or more of fluorinated greenhouse gases in the reference period.
- (16) By regularly recalculating the reference values and quotas, the Commission should ensure that undertakings are allowed to continue their activities on the basis of the average volumes they placed on the market in recent years.
- (17) The manufacturing process for some fluorinated gases can result in significant emissions of other fluorinated greenhouse gases produced as by-products. Such by-product emissions should be destroyed or recovered for subsequent use as a condition for the placing of fluorinated greenhouse gases on the market.

- (18) The Commission should ensure that a central electronic registry is in place to manage quotas, for the placing of hydrofluorocarbons on the market, and the reporting, including the reporting on equipment placed on the market, in particular where the equipment is pre-charged with hydrofluorocarbons that have not been placed on the market prior to the charging, thus requiring verification, through a declaration of conformity and subsequent third party verification, that the quantities of hydrofluorocarbons are accounted for under the Union quota system.
- (19) To maintain the flexibility of the market in bulk hydrofluorocarbons, it should be possible to transfer quotas allocated on the basis of reference values to another producer or importer in the Union or to another producer or importer which is represented in the Union by an only representative.
- (20) To enable the monitoring of the effectiveness of this Regulation, the scope of the current reporting obligations should be extended to cover other fluorinated substances that have significant global warming potential or that are likely to replace the fluorinated greenhouse gases listed in Annex I. For the same reason the destruction of fluorinated greenhouse gases and the importation into the Union of those gases when contained in products and equipment should also be reported. De minimis thresholds should be set to avoid disproportionate administrative burden, in particular for small and medium-sized enterprises and micro-enterprises.
- (21) The Commission should continuously monitor the effects of reducing the quantities of hydrofluorocarbons placed on the market, including its effects on the supply for equipment where the use of hydrofluorocarbons would result in lower life-cycle emissions than if an alternative technology was used. The Commission should produce a report on the availability of hydrofluorocarbons on the Union market by the end of 2020. A comprehensive review should be carried out by the Commission by the end of 2022 in time to adapt the provisions of this Regulation, in the light of its implementation and of new developments and international commitments, and to propose, if appropriate, further reduction measures.
- (22) In order to ensure uniform conditions for the implementation of this Regulation, implementing powers should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council.
- (23) In order to amend certain non-essential elements of this Regulation, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union ('TFEU') should be delegated to the Commission. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level. The Commission, when preparing and drawing up delegated acts, should ensure a simultaneous, timely and appropriate transmission of relevant documents to the European Parliament and to the Council.
- (24) Since it is adopted pursuant to Article 192(1) TFEU, this Regulation does not prevent Member States from maintaining or introducing more stringent protective measures that are compatible with the TFEU. Pursuant to Article 193 TFEU, Member States are to notify the Commission of any such measures.
- (25) This Regulation amends and complements the subject matter of Regulation (EC) No 842/2006, which should therefore be repealed. However, in order to ensure a smooth transition from the old regime to the new regime, it is appropriate to provide that Commission Regulations (EC) No 1493/2007, (EC) No 1494/2007, (EC) No 1497/2007, (EC) No 1516/2007, (EC) No 303/2008, (EC) No 304/2008, (EC) No 305/2008, (EC) No 306/2008, (EC) No 307/2008 and (EC) No 308/2008 should remain in force and continue to apply unless and until repealed by delegated or implementing acts adopted by the Commission pursuant to this Regulation.
- (26) Since the objectives of this Regulation cannot be sufficiently achieved by the Member States but can rather, by reason of the transboundary nature of the environmental problem addressed and the effects of this Regulation on the intra-Union and external trade, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve those objectives,

HAVE ADOPTED THIS REGULATION:

CHAPTER I

GENERAL PROVISIONS

Article 1

Subject-matter

The objective of this Regulation is to protect the environment by reducing emissions of fluorinated greenhouse gases. Accordingly, this Regulation:

- (a) establishes rules on containment, use, recovery and destruction of fluorinated greenhouse gases, and on related ancillary measures;
- (b) imposes conditions on the placing on the market of specific products and equipment that contain, or whose functioning relies upon, fluorinated greenhouse gases;
- (c) imposes conditions on specific uses of fluorinated greenhouse gases; and
- (d) establishes quantitative limits for the placing on the market of hydrofluorocarbons.

Article 2

Definitions

For the purposes of this Regulation the following definitions apply:

- (1) ‘fluorinated greenhouse gases’ means the hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and other greenhouse gases that contain fluorine, listed in Annex I, or mixtures containing any of those substances;
- (2) ‘hydrofluorocarbons’ or ‘HFCs’ means the substances listed in section 1 of Annex I, or mixtures containing any of those substances;
- (3) ‘perfluorocarbons’ or ‘PFCs’ means the substances listed in section 2 of Annex I, or mixtures containing any of those substances;
- (4) ‘sulphur hexafluoride’ or ‘SF₆’ means the substance listed in section 3 of Annex I, or mixtures containing that substance;
- (5) ‘mixture’ means a fluid composed of two or more substances, at least one of which is a substance listed in Annex I or in Annex II;
- (6) ‘global warming potential’ or ‘GWP’ means the climatic warming potential of a greenhouse gas relative to that of carbon dioxide (‘CO₂’), calculated in terms of the 100-year warming potential of one kilogram of a greenhouse gas relative to one kilogram of CO₂, as set out in Annexes I, II and IV or in the case of mixtures, calculated in accordance with Annex IV;
- (7) ‘tonne(s) of CO₂ equivalent’ means a quantity of greenhouse gases, expressed as the product of the weight of the greenhouse gases in metric tonnes and of their global warming potential;
- (8) ‘operator’ means the natural or legal person exercising actual power over the technical functioning of products and equipment covered by this Regulation; a Member State may, in defined, specific situations, designate the owner as being responsible for the operator’s obligations;
- (9) ‘use’ means the utilisation of fluorinated greenhouse gases in the production, maintenance or servicing, including the refilling, of products and equipment, or in other processes referred to in this Regulation;
- (10) ‘placing on the market’ means 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 Union;
- (11) ‘hermetically sealed equipment’ means equipment in which all fluorinated greenhouse gas containing parts are made tight by welding, brazing or a similar permanent connection, which may include capped valves or capped service ports that allow proper repair or disposal, and which have a tested leakage rate of less than 3 grams per year under a pressure of at least a quarter of the maximum allowable pressure;
- (12) ‘container’ means a product which is designed primarily for transporting or storing fluorinated greenhouse gases;

- (13) 'a non-refillable container' means a container which cannot be refilled without being adapted for that purpose or is placed on the market without provision having been made for its return for refilling;
- (14) 'recovery' means the collection and storage of fluorinated greenhouse gases from products, including containers, and equipment during maintenance or servicing or prior to the disposal of the products or equipment;
- (15) 'recycling' means the reuse of a recovered fluorinated greenhouse gas following a basic cleaning process;
- (16) 'reclamation' means the reprocessing of a recovered fluorinated greenhouse gas in order to match the equivalent performance of a virgin substance, taking into account its intended use;
- (17) 'destruction' means the process of permanently transforming or decomposing all or most of a fluorinated greenhouse gas into one or more stable substances that are not fluorinated greenhouse gases;
- (18) 'decommissioning' means the final shut-down and removal from operation or usage of a product or piece of equipment containing fluorinated greenhouse gases;
- (19) 'repair' means the restoration of damaged or leaking products or equipment that contain, or whose functioning relies upon, fluorinated greenhouse gases, involving a part containing or designed to contain such gases;
- (20) 'installation' means joining two or more pieces of equipment or circuits containing or designed to contain fluorinated greenhouse gases, with a view to assembling a system in the location where it will be operated, that entails joining together gas carrying conductors of a system to complete a circuit irrespective of the need to charge the system after assembly;
- (21) 'maintenance or servicing' means all activities, excluding recovery in accordance with Article 8 and leak checks in accordance with Article 4 and point (b) of Article 10(1) of this Regulation, that entail breaking into the circuits containing or designed to contain fluorinated greenhouse gases, in particular supplying the system with fluorinated greenhouse gases, removing one or more pieces of circuit or equipment, reassembling two or more pieces of circuit or equipment, as well as repairing leaks;
- (22) 'virgin substance' means a substance which has not previously been used;
- (23) 'stationary' means not normally in transit during operation and includes moveable room air-conditioning appliances;
- (24) 'mobile' means normally in transit during operation;
- (25) 'one-component foam' means a foam composition contained in a single aerosol dispenser in unreacted or partly reacted liquid state and that expands and hardens when it leaves the dispenser;
- (26) 'refrigerated truck' means a motor vehicle with a mass of more than 3,5 tonnes that is designed and constructed primarily to carry goods and that is equipped with a refrigeration unit;
- (27) 'refrigerated trailer' means a vehicle that is designed and constructed to be towed by a truck or a tractor, primarily to carry goods and that is equipped with a refrigeration unit;
- (28) 'technical aerosol' means an aerosol dispenser used in maintaining, repairing, cleaning, testing, disinsecting and manufacturing products and equipment, installing equipment, and in other applications;
- (29) 'leakage detection system' means a calibrated mechanical, electrical or electronic device for detecting leakage of fluorinated greenhouse gases which, on detection, alerts the operator;
- (30) 'undertaking' means any natural or legal person who:
 - (a) produces, uses, recovers, collects, recycles, reclaims, or destroys fluorinated greenhouse gases;
 - (b) imports or exports fluorinated greenhouse gases or products and equipment that contain such gases;
 - (c) places on the market fluorinated greenhouse gases or products and equipment that contain, or whose functioning relies upon, such gases;
 - (d) installs, services, maintains, repairs, checks for leaks or decommissions equipment that contains, or whose functioning relies upon, fluorinated greenhouse gases;
 - (e) is the operator of equipment that contains, or whose functioning relies upon, fluorinated

greenhouse gases;

(f) produces, imports, exports, places on the market or destroys gases listed in Annex II;

(g) places on the market products or equipment containing gases listed in Annex II;

- (31) 'feedstock' means any fluorinated greenhouse gas, or substance listed in Annex II, that undergoes chemical transformation in a process in which it is entirely converted from its original composition and its emissions are insignificant;
- (32) 'commercial use' means used for the storage, display or dispensing of products, for sale to end users, in retail and food services;
- (33) 'fire protection equipment' means the equipment and systems utilised in fire prevention or suppression applications and includes fire extinguishers;
- (34) 'organic Rankine cycle' means a cycle containing condensable fluorinated greenhouse gas converting heat from a heat source into power for the generation of electric or mechanical energy;
- (35) 'military equipment' mean arms, munitions and war material intended specifically for military purposes which are necessary for the protection of the essential interests of the security of Member States;
- (36) 'electrical switchgear' means switching devices and their combination with associated control, measuring, protective and regulating equipment, and assemblies of such devices and equipment with associated interconnections, accessories, enclosures and supporting structures, intended for usage in connection with the generation, transmission, distribution and conversion of electric energy;
- (37) 'multipack centralised refrigeration systems' means systems with two or more compressors operated in parallel, which are connected to one or more common condensers and to a number of cooling devices such as display cases, cabinets, freezers or to chilled store rooms;
- (38) 'primary refrigerant circuit of cascade systems' means the primary circuit in indirect medium temperature systems where a combination of two or more separate refrigeration circuits are connected in series such that the primary circuit absorbs the condenser heat from a secondary circuit for the medium temperature;
- (39) 'single split air conditioning systems' means systems for room air conditioning that consist of one outdoor unit and one indoor unit linked by refrigerant piping, needing installation at the site of usage.

CHAPTER II

CONTAINMENT

Article 3

Prevention of emissions of fluorinated greenhouse gases

1. The intentional release of fluorinated greenhouse gases into the atmosphere shall be prohibited where the release is not technically necessary for the intended use.
2. Operators of equipment that contains fluorinated greenhouse gases shall take precautions to prevent the unintentional release ('leakage') of those gases. They shall take all measures which are technically and economically feasible to minimise leakage of fluorinated greenhouse gases.
3. Where a leakage of fluorinated greenhouse gases is detected, the operators shall ensure that the equipment is repaired without undue delay.

Where the equipment is subject to leak checks under Article 4(1), and a leak in the equipment has been repaired, the operators shall ensure that the equipment is checked by a certified natural person within one month after the repair to verify that the repair has been effective.

4. Natural persons carrying out the tasks referred to in points (a) to (c) of Article 10(1) shall be certified in accordance with Article 10(4) and (7) and shall take precautionary measures to prevent leakage of fluorinated

greenhouse gases.

Undertakings carrying out the installation, servicing, maintenance, repair or decommissioning of the equipment listed in points (a) to (d) of the Article 4(2) shall be certified in accordance with Article 10(6) and (7) and shall take precautionary measures to prevent leakage of fluorinated greenhouse gases.

Article 4

Leak checks

1. Operators of equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO₂ equivalent or more and not contained in foams shall ensure that the equipment is checked for leaks.

Hermetically sealed equipment that contains fluorinated greenhouse gases in quantities of less than 10 tonnes of CO₂ equivalent, shall not be subject to leak checks under this Article, provided the equipment is labelled as hermetically sealed.

Electrical switchgear shall not be subject to leak checks under this Article provided it complies with one of the following conditions:

- (a) it has a tested leakage rate of less than 0,1 % per year as set out in the technical specification of the manufacturer and is labelled accordingly;
- (b) it is equipped with a pressure or density monitoring device; or
- (c) it contains less than 6 kg of fluorinated greenhouse gases.

2. Paragraph 1 applies to operators of the following equipment that contains fluorinated greenhouse gases:

- (a) stationary refrigeration equipment;
- (b) stationary air-conditioning equipment;
- (c) stationary heat pumps;
- (d) stationary fire protection equipment;
- (e) refrigeration units of refrigerated trucks and trailers;
- (f) electrical switchgear;
- (g) organic Rankine cycles.

As regards the equipment referred to in points (a) to (e) of the first subparagraph, the checks shall be carried out by natural persons certified in accordance with the rules provided for in Article 10.

By way of derogation from the first subparagraph of paragraph 1, until 31 December 2016, equipment that contains less than 3 kg of fluorinated greenhouse gases or hermetically sealed equipment, which is labelled accordingly and contains less than 6 kg of fluorinated greenhouse gases shall not be subject to leak checks.

3. The leak checks pursuant to paragraph 1 shall be carried out with the following frequency:

- (a) for equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO₂ equivalent or more, but of less than 50 tonnes of CO₂ equivalent: at least every 12 months; or where a leakage

detection system is installed, at least every 24 months;

- (b) for equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO₂ equivalent or more, but of less than 500 tonnes of CO₂ equivalent: at least every six months or, where a leakage detection system is installed, at least every 12 months;
- (c) for equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more: at least every three months or, where a leakage detection system is installed, at least every six months.

4. Obligations of paragraph 1 for fire protection equipment as referred to in point (d) of paragraph 2 shall be considered to be fulfilled provided the following two conditions are met:

- (a) the existing inspection regime meets ISO 14520 or EN 15004 standards; and
- (b) the fire protection equipment is inspected as often as is required under paragraph 3.

5. The Commission may, by means of implementing acts, specify requirements for the leak checks to be carried out in accordance with paragraph 1 of this Article for each type of equipment referred to in that paragraph, identify those parts of the equipment most likely to leak and repeal acts adopted pursuant to Article 3(7) of Regulation (EC) No 842/2006. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

Article 5

Leakage detection systems

1. Operators of the equipment listed in points (a) to (d) of Article 4(2) and containing fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more, shall ensure that the equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage.
2. Operators of the equipment listed in points (f) and (g) of Article 4(2) and containing fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more and installed from 1 January 2017, shall ensure that this equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage.
3. Operators of the equipment listed in points (a) to (d) and (g) of Article 4(2) that is subject to paragraph 1 or 2 of this Article shall ensure that leakage detection systems are checked at least once every 12 months to ensure their proper functioning.
4. Operators of the equipment listed in point (f) of Article 4(2) that is subject to paragraph 2 of this Article shall ensure that leakage detection systems are checked at least once every 6 years to ensure their proper functioning.

Article 6

Record keeping

1. Operators of equipment which is required to be checked for leaks pursuant to Article 4(1), shall establish and maintain records for each piece of such equipment specifying the following information:

- (a) the quantity and type of fluorinated greenhouse gases installed;
- (b) the quantities of fluorinated greenhouse gases added during installation, maintenance or servicing or due to leakage;
- (c) whether the quantities of installed fluorinated greenhouse gases have been recycled or reclaimed, including the name and address of the recycling or reclamation facility and, where applicable, the certificate number;
- (d) the quantity of fluorinated greenhouse gases recovered;
- (e) the identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate;
- (f) the dates and results of the checks carried out under Article 4(1) to (3);
- (g) if the equipment was decommissioned, the measures taken to recover and dispose of the fluorinated greenhouse gases.

2. Unless the records referred to in paragraph 1 are stored in a database set up by the competent authorities of the Member States the following rules apply:

- (a) the operators referred to in paragraph 1 shall keep the records referred to in that paragraph for at least five years;
- (b) undertakings carrying out the activities referred to in point (e) of paragraph 1 for operators shall keep copies of the records referred to in paragraph 1 for at least five years.

The records referred to in paragraph 1 shall be made available, on request, to the competent authority of the Member State concerned or to the Commission. To the extent that such records contain environmental information, Directive 2003/4/EC of the European Parliament and of the Council or Regulation (EC) No 1367/2006 of the European Parliament and of the Council shall apply as appropriate.

3. For the purpose of Article 11(4), undertakings supplying fluorinated greenhouse gases shall establish records of relevant information on the purchasers of fluorinated greenhouse gases including the following details:

- (a) the numbers of certificates of the purchasers; and
- (b) the respective quantities of fluorinated greenhouse gases purchased.

The undertakings supplying fluorinated greenhouse gases shall maintain those records for at least five years.

The undertakings supplying fluorinated greenhouse gases shall make such records available, on request, to the competent authority of the Member State concerned or to the Commission. To the extent that the records contain environmental information, Directive 2003/4/EC or Regulation (EC) No 1367/2006 shall apply as appropriate.

4. The Commission may, by means of an implementing act, determine the format of the records referred to in paragraphs 1 and 3 of this Article and specify how they should be established and maintained. That implementing act shall be adopted in accordance with the examination procedure referred to in Article 24.

Article 7

Emissions of fluorinated greenhouse gases in relation to production

1. Producers of fluorinated compounds shall take all necessary precautions to limit emissions of fluorinated greenhouse gases to the greatest extent possible during:

- (a) production;
- (b) transport; and
- (c) storage.

This Article also applies where fluorinated greenhouse gases are produced as by-products.

2. Without prejudice to Article 11(1), the placing on the market of fluorinated greenhouse gases and gases listed in Annex II shall be prohibited unless, where relevant, producers or importers provide evidence, at the time of such placing, that trifluoromethane, produced as a by-product during the manufacturing process, including during the manufacturing of feedstocks for their production, has been destroyed or recovered for subsequent use, in line with best available techniques.

This requirement shall apply from 11 June 2015.

Article 8

Recovery

1. Operators of stationary equipment or of refrigeration units of refrigerated trucks and trailers that contain fluorinated greenhouse gases not contained in foams shall ensure that the recovery of those gases is carried out by natural persons that hold the relevant certificates provided for by Article 10, so that those gases are recycled, reclaimed or destroyed.

- (a) This obligation applies to operators of any of the following equipment:
- (b) the cooling circuits of stationary refrigeration, stationary air-conditioning and stationary heat pump equipment;
- (c) the cooling circuits of refrigeration units of refrigerated trucks and trailers;
- (d) stationary equipment that contains fluorinated greenhouse gas-based solvents;
- (e) stationary fire protection equipment;
- (f) stationary electrical switchgear.

2. The undertaking that uses a fluorinated greenhouse gas container immediately prior to its disposal shall arrange for the recovery of any residual gases to make sure they are recycled, reclaimed or destroyed.

3. Operators of products and equipment not listed in paragraph 1, including mobile equipment, that contain fluorinated greenhouse gases shall arrange for the recovery of the gases, to the extent that it is technically feasible and does not entail disproportionate costs, by appropriately qualified natural persons, so that they are recycled, reclaimed or destroyed or shall arrange for their destruction without prior recovery.

The recovery of fluorinated greenhouse gases from air-conditioning equipment in road vehicles outside the scope of Directive 2006/40/EC of the European Parliament and of the Council shall be carried out by appropriately qualified natural persons.

For the recovery of fluorinated greenhouse gases from air-conditioning equipment in motor vehicles falling within the scope of Directive 2006/40/EC only natural persons holding at least a training attestation in accordance with Article 10(2) shall be considered appropriately qualified.

Article 9

Producer responsibility schemes

Without prejudice to existing Union legislation, Member States shall encourage the development of producer responsibility schemes for the recovery of fluorinated greenhouse gases and their recycling, reclamation or destruction.

Member States shall provide information to the Commission on the actions undertaken under the first paragraph.

Article 10

Training and certification

1. Member States shall, on the basis of the minimum requirements referred to in paragraph 5, establish or adapt certification programmes, including evaluation processes. Member States shall ensure that training is available for natural persons carrying out the following tasks:

- (a) installation, servicing, maintenance, repair or decommissioning of the equipment listed in the points (a) to (f) of Article 4(2);
- (b) leak checks of the equipment referred to in points (a) to (e) of Article 4(2), as provided for in Article 4(1);
- (c) recovery of fluorinated greenhouse gases as provided for in Article 8(1).

2. Member States shall ensure that training programmes for natural persons recovering fluorinated greenhouse gases from air-conditioning equipment in motor vehicles falling within the scope of Directive 2006/40/EC are available, on the basis of the minimum requirements referred to in paragraph 5.

3. The certification programmes and training provided for in paragraphs 1 and 2 shall cover the following:

- (a) applicable regulations and technical standards;
- (b) emission prevention;
- (c) recovery of fluorinated greenhouse gases;
- (d) safe handling of equipment of the type and size covered by the certificate;
- (e) information on relevant technologies to replace or to reduce the use of fluorinated greenhouse gases and their safe handling.

4. Certificates under the certification programmes provided for in paragraph 1 shall be subject to the condition that the applicant has successfully completed an evaluation process established in accordance with paragraphs 1, 3 and 5.

5. The minimum requirements for certification programmes are those laid down in Regulations (EC) No 303/2008 to (EC) No 306/2008 and under paragraph 12. The minimum requirements for training attestations are those laid down in Regulation (EC) No 307/2008 and under paragraph 12. Those minimum requirements shall specify, for each type of equipment referred to in paragraphs 1 and 2, the required practical skills and theoretical knowledge, where appropriate, differentiating between different activities to be covered, as well as the conditions for mutual recognition of certificates and training attestations.

6. Member States shall establish or adapt certification programmes on the basis of the minimum requirements referred to in paragraph 5 for undertakings carrying out installation, servicing, maintenance, repair or decommissioning of the equipment listed in points (a) to (d) of Article 4(2) for other parties.

7. Existing certificates and training attestations issued in accordance with Regulation (EC) No 842/2006 shall remain valid, in accordance with the conditions under which they were originally issued.

8. Member States shall ensure that all natural persons holding certificates under certification programmes provided for in paragraphs 1 and 7 have access to information regarding each of the following:

- (a) technologies referred to point (e) of paragraph 3; and
- (b) existing regulatory requirements for working with equipment containing alternative refrigerants to fluorinated greenhouse gases.

9. Member States shall ensure the availability of training for natural persons who wish to update their knowledge in relation to the matters referred to in paragraph 3.

10. By 1 January 2017 Member States shall notify the Commission of certification and training programmes.

Member States shall recognise certificates and training attestations issued in another Member State in accordance with this Article. They shall not restrict the freedom to provide services or the freedom of establishment because a certificate was issued in another Member State.

11. Any undertaking which assigns a task referred to in paragraph 1 to another undertaking shall take reasonable steps to ascertain that the latter holds the necessary certificates for the required tasks pursuant to this Article.

12. In the event that it appears necessary for the purposes of the application of this Article, to provide for a more harmonised approach to training and certification, the Commission shall, by means of implementing acts, adapt and update the minimum requirements as to the skills and knowledge to be covered, specify the modalities of the certification or attestation and the conditions for mutual recognition and repeal acts adopted pursuant to Article 5(1) of Regulation (EC) No 842/2006. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24. When exercising the power conferred on it by this paragraph, the Commission shall take into account relevant existing qualification or certification schemes.

13. The Commission may, by means of implementing acts, determine the format of the notification referred to in paragraph 10 of this Article and may repeal acts adopted pursuant to Article 5(5) of Regulation (EC) No 842/2006. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

14. Where the obligations under this Article relating to the provision of certification and training would impose disproportionate burdens on a Member State because of the small size of its population and the consequent lack of demand for such training and certification, compliance may be achieved through the recognition of certificates issued in other Member States.

Member States applying this paragraph shall inform the Commission who shall inform other Member States.

15. Nothing in this Article shall prevent Member States from setting up further certification and training programmes in respect of equipment other than that referred to in paragraph 1.

CHAPTER III

PLACING ON THE MARKET AND CONTROL OF USE

Article 11

Restrictions on the placing on the market

1. The placing on the market of products and equipment listed in Annex III, with an exemption for military equipment, shall be prohibited from the date specified in that Annex, differentiating, where applicable, according to the type or global warming potential of the fluorinated greenhouse gas contained.
2. The prohibition set out in paragraph 1 shall not apply to equipment for which it has been established in ecodesign requirements adopted under Directive 2009/125/EC that due to higher energy efficiency during its operation, its lifecycle CO₂ equivalent emissions would be lower than those of equivalent equipment which meets relevant ecodesign requirements and does not contain hydrofluorocarbons.
3. Following a substantiated request by a competent authority of a Member State and taking into account the objectives of this Regulation, the Commission may, exceptionally, by means of implementing acts, authorise an exemption for up to four years to allow the placing on the market of products and equipment listed in Annex III containing, or whose functioning relies upon, fluorinated greenhouse gases, where it is demonstrated that:
 - (a) for a specific product or a piece of equipment, or for a specific category of products or equipment, alternatives are not available, or cannot be used for technical or safety reasons; or
 - (b) the use of technically feasible and safe alternatives would entail disproportionate costs.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

4. For the purposes of carrying out the installation, servicing, maintenance or repair of the equipment that contains fluorinated greenhouse gases or whose functioning relies upon those gases for which certification or attestation is required under Article 10, fluorinated greenhouse gases shall only be sold to and purchased by undertakings that hold the relevant certificates or attestations in accordance with Article 10 or undertakings that employ persons holding a certificate or a training attestation in accordance with Article 10(2) and (5). This paragraph shall not prevent non-certified undertakings, who do not carry out the activities referred to in the first sentence of this paragraph, from collecting, transporting or delivering fluorinated greenhouse gases.
5. Non-hermetically sealed equipment charged with fluorinated greenhouse gases shall only be sold to the end user where evidence is provided that the installation is to be carried out by an undertaking certified in accordance with Article 10.
6. The Commission shall collect, on the basis of available data from Member States, information on national codes, standards or legislation of Member States with respect to replacement technologies using alternatives to fluorinated greenhouse gases in refrigeration, air-conditioning and heat pump equipment and in foams.

The Commission shall publish a synthesis report on the information collected under the first subparagraph by 1 January 2017.

Article 12

Labelling and product and equipment information

1. Products and equipment that contain, or whose functioning relies upon, fluorinated greenhouse gases shall not be placed on the market unless they are labelled. This only applies to:

- (a) refrigeration equipment;
- (b) air-conditioning equipment;
- (c) heat pumps;
- (d) fire protection equipment;
- (e) electrical switchgear;
- (f) aerosol dispenser that contain fluorinated greenhouse gases, with the exception of metered dose inhalers for the delivery of pharmaceutical ingredients;
- (g) all fluorinated greenhouse gas containers;
- (h) fluorinated greenhouse gas-based solvents;
- (i) organic Rankine cycles.

2. Products or equipment subject to an exemption under Article 11(3) shall be labelled accordingly and shall include a reference that those products or equipment may only be used for the purpose for which an exemption under that Article was granted.

3. The label required pursuant to paragraph 1 shall indicate the following information:

- (a) a reference that the product or equipment contains fluorinated greenhouse gases or that its functioning relies upon such gases;
- (b) the accepted industry designation for the fluorinated greenhouse gases concerned or, if no such designation is available, the chemical name;
- (c) from 1 January 2017, the quantity expressed in weight and in CO₂ equivalent of fluorinated greenhouse gases contained in the product or equipment, or the quantity of fluorinated greenhouse gases for which the equipment is designed, and the global warming potential of those gases.

The label required pursuant to paragraph 1 shall indicate the following information, where applicable:

- (a) a reference that the fluorinated greenhouse gases are contained in hermetically sealed equipment;
- (b) a reference that the electrical switchgear has a tested leakage rate of less than 0,1 % per year as set out in the technical specification of the manufacturer.

4. The label shall be clearly readable and indelible and shall be placed either:

- (a) adjacent to the service ports for charging or recovering the fluorinated greenhouse gas; or
- (b) on that part of the product or equipment that contains the fluorinated greenhouse gas.

The label shall be in the official languages of the Member State in which it is to be placed on the market.

5. Foams and pre-blended polyols that contain fluorinated greenhouse gases shall not be placed on the market unless the fluorinated greenhouse gases are identified with a label using the accepted industry designation or, if no such designation is available, the chemical name. The label shall clearly indicate that the foam or pre-blended polyol contains fluorinated greenhouse gases. In the case of foam boards, this information shall be clearly and indelibly stated on the boards.

6. Reclaimed or recycled fluorinated greenhouse gases shall be labelled with an indication that the substance has been reclaimed or recycled, information on the batch number and the name and address of the

reclamation or recycling facility.

7. Fluorinated greenhouse gases placed on the market for destruction shall be labelled with an indication that the contents of the container may only be destroyed.

8. Fluorinated greenhouse gases placed on the market for direct export shall be labelled with an indication that the contents of the container may only be directly exported.

9. Fluorinated greenhouse gases placed on the market for the use in military equipment shall be labelled with an indication that the contents of the container may only be used for that purpose.

10. Fluorinated greenhouse gases placed on the market for the etching of semiconductor material or the cleaning of chemicals vapour deposition chambers within the semiconductor manufacturing sector shall be labelled with an indication that the contents of the container may only be used for that purpose.

11. Fluorinated greenhouse gases placed on the market for feedstock use shall be labelled with an indication that the contents of the container may only be used as feedstock.

12. Fluorinated greenhouse gases placed on the market for producing metered dose inhalers for the delivery of pharmaceutical ingredients shall be labelled with an indication that the contents of the container may only be used for that purpose.

13. The information referred to in paragraphs 3 and 5 shall be included in instruction manuals for the products and equipment concerned.

In the case of products and equipment that contain fluorinated greenhouse gases with a global warming potential of 150 or more this information shall also be included in descriptions used for advertising.

14. The Commission may, by means of implementing acts, determine the format of the labels referred to in paragraph 1 and paragraphs 4 to 12 and may repeal acts adopted pursuant to Article 7(3) of Regulation (EC) No 842/2006. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

15. The Commission shall be empowered to adopt delegated acts in accordance with Article 22 amending the labelling requirements set out in paragraphs 4 to 12 where appropriate in view of commercial or technological development.

Article 13

Control of use

1. The use of sulphur hexafluoride in magnesium die-casting and in the recycling of magnesium die-casting alloys shall be prohibited.

As regards installations using a quantity of sulphur hexafluoride below 850 kg per year, in respect of magnesium die-casting and in the recycling of magnesium die-casting alloys, this prohibition shall only apply from 1 January 2018.

2. The use of sulphur hexafluoride to fill vehicle tyres shall be prohibited.

3. From 1 January 2020, the use of fluorinated greenhouse gases, with a global warming potential of 2 500 or more, to service or maintain refrigeration equipment with a charge size of 40 tonnes of CO₂ equivalent or more, shall be prohibited.

This paragraph shall not apply to military equipment or equipment intended for applications designed to cool products to temperatures below – 50 °C.

The prohibition referred to in the first subparagraph shall not apply to the following categories of fluorinated greenhouse gases until 1 January 2030:

- (a) reclaimed fluorinated greenhouse gases with a global warming potential of 2 500 or more used for the maintenance or servicing of existing refrigeration equipment, provided that they have been labelled in accordance with Article 12(6);
- (b) recycled fluorinated greenhouse gases with a global warming potential of 2 500 or more used for the maintenance or servicing of existing refrigeration equipment provided they have been recovered from such equipment. Such recycled gases may only be used by the undertaking which carried out their recovery as part of maintenance or servicing or the undertaking for which the recovery was carried out as part of maintenance or servicing.

The prohibition referred to in the first subparagraph shall not apply to refrigeration equipment for which an exemption has been authorised pursuant to Article 11(3).

Article 14

Pre-charging of equipment with hydrofluorocarbons

1. From 1 January 2017 refrigeration, air conditioning and heat pump equipment charged with hydrofluorocarbons shall not be placed on the market unless hydrofluorocarbons charged into the equipment are accounted for within the quota system referred to in Chapter IV.

2. When placing pre-charged equipment as referred to in paragraph 1 on the market, manufacturers and importers of equipment shall ensure that compliance with paragraph 1 is fully documented and shall draw up a declaration of conformity in this respect.

From 1 January 2018, where hydrofluorocarbons contained in the equipment have not been placed on the market prior to the charging of the equipment, importers of that equipment shall ensure that by 31 March every year the accuracy of the documentation and declaration of conformity is verified, for the preceding calendar year, by an independent auditor. The auditor shall be either:

- (a) accredited pursuant to Directive 2003/87/EC of the European Parliament and of the Council; or
- (b) accredited to verify financial statements in accordance with the legislation of the Member State concerned.

Manufacturers and importers of equipment referred to in paragraph 1 shall keep the documentation and declaration of conformity for a period of at least five years after the placing on the market of that equipment. Importers of equipment placing on the market pre-charged equipment where hydrofluorocarbons contained in that equipment have not been placed on the market prior to the charging of the equipment shall ensure they are registered pursuant to point (e) of Article 17(1).

3. By drawing up the declaration of conformity, manufacturers and importers of equipment referred to in paragraph 1 shall assume responsibility for compliance with paragraphs 1 and 2.

4. The Commission shall, by means of implementing acts, determine the detailed arrangements relating to the declaration of conformity and the verification by the independent auditor referred to in the second subparagraph of paragraph 2 of this Article. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

CHAPTER IV

REDUCTION OF THE QUANTITY OF HYDROFLUOROCARBONS PLACED ON THE MARKET

Article 15

Reduction of the quantity of hydrofluorocarbons placed on the market

1. The Commission shall ensure that the quantity of hydrofluorocarbons that producers and importers are entitled to place on the market in the Union each year does not exceed the maximum quantity for the year in question calculated in accordance with Annex V.

Producers and importers shall ensure that the quantity of hydrofluorocarbons calculated in accordance with Annex V that each of them places on the market does not exceed their respective quota allocated pursuant to Article 16(5) or transferred pursuant to Article 18.

2. This Article shall not apply to producers or importers of less than 100 tonnes of CO₂ equivalent of hydrofluorocarbons per year.

This Article shall also not apply to the following categories of hydrofluorocarbons:

- (a) hydrofluorocarbons imported into the Union for destruction;
- (b) hydrofluorocarbons used by a producer in feedstock applications or supplied directly by a producer or an importer to undertakings for use in feedstock applications;
- (c) hydrofluorocarbons supplied directly by a producer or an importer to undertakings, for export out of the Union, where those hydrofluorocarbons are not subsequently made available to any other party within the Union, prior to export;
- (d) hydrofluorocarbons supplied directly by a producer or an importer for use in military equipment;
- (e) hydrofluorocarbons supplied directly by a producer or an importer to an undertaking using it for the etching of semiconductor material or the cleaning of chemicals vapour deposition chambers within the semiconductor manufacturing sector;
- (f) from 1 January 2018 onwards, hydrofluorocarbons supplied directly by a producer or an importer to an undertaking producing metered dose inhalers for the delivery of pharmaceutical ingredients.

3. This Article and Articles 16, 18, 19 and 25 shall also apply to hydrofluorocarbons contained in pre-blended polyols.

4. Following a substantiated request by a competent authority of a Member State and taking into account the objectives of this Regulation, the Commission may, exceptionally, by means of implementing acts, authorise an exemption for up to four years to exclude from the quota requirement laid down in paragraph 1 hydrofluorocarbons for use in specific applications, or specific categories of products or equipment, where it is demonstrated that:

- (a) for those particular applications, products or equipment, alternatives are not available, or cannot be used for technical or safety reasons; and
- (b) a sufficient supply of hydrofluorocarbons cannot be ensured without entailing disproportionate costs.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

Article 16

Allocation of quotas for placing hydrofluorocarbons on the market

1. By 31 October 2014 the Commission shall, by means of implementing acts, determine for each producer or importer, having reported data under Article 6 of Regulation (EC) No 842/2006, a reference value based on the annual average of the quantities of hydrofluorocarbons the producer or importer reported to have placed on the market from 2009 to 2012. The reference values shall be calculated in accordance with Annex V to this Regulation.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

2. Producers and importers that have not reported placing on the market hydrofluorocarbons under Article 6 of Regulation (EC) No 842/2006 for the reference period referred to in paragraph 1 may declare their intention to place hydrofluorocarbons on the market in the following year.

The declaration shall be addressed to the Commission, specifying the types of hydrofluorocarbons and the quantities that are expected to be placed on the market.

The Commission shall issue a notice of the time-limit for submitting those declarations. Before submitting a declaration pursuant to paragraphs 2 and 4 of this Article, undertakings shall register in the registry provided for in Article 17.

3. By 31 October 2017 and every three years thereafter, the Commission shall recalculate the reference values for the producers and importers referred to in paragraphs 1 and 2 of this Article on the basis of the annual average of the quantities of hydrofluorocarbons lawfully placed on the market from 1 January 2015 as reported under Article 19 for the years available. The Commission shall determine those reference values by means of implementing acts.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

4. Producers and importers for which reference values have been determined may declare additional anticipated quantities following the procedure set out in paragraph 2.

5. The Commission shall allocate quotas for placing hydrofluorocarbons on the market for each producer and importer for each year beginning with the year 2015, applying the allocation mechanism laid down in Annex VI.

Quotas shall only be allocated to producers or importers which are established within the Union, or which have mandated an only representative established within the Union for the purpose of compliance with the requirements of this Regulation. The only representative may be the same as the one mandated pursuant to Article 8 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council.

The only representative shall comply with all obligations of producers and importers under this Regulation.

Article 17

Registry

1. By 1 January 2015, the Commission shall set up and ensure the operation of an electronic registry for quotas for placing hydrofluorocarbons on the market ('the registry').

Registration in the registry shall be compulsory for the following:

- (a) producers and importers to which a quota for the placing on the market of hydrofluorocarbons has been allocated in accordance with Article 16(5);
- (b) undertakings to which a quota is transferred in accordance with Article 18;
- (c) producers and importers declaring their intention to submit a declaration pursuant to Article 16(2);
- (d) producers and importers supplying, or undertakings in receipt of hydrofluorocarbons for the purposes listed in points (a) to (f) of the second subparagraph of Article 15(2);
- (e) importers of equipment placing pre-charged equipment on the market where the hydrofluorocarbons contained in the equipment have not been placed on the market prior to the charging of that equipment in accordance with Article 14.

Registration shall be effected by means of application to the Commission in accordance with procedures to be set out by the Commission.

2. The Commission may, to the extent necessary, by means of implementing acts, ensure the smooth functioning of the registry. Those implementing acts shall be adopted in accordance with the examination procedure in Article 24.

3. The Commission shall ensure that registered producers and importers are informed via the registry about the quota allocated and about any changes to it during the allocation period.

4. The competent authorities, including customs authorities, of the Member States shall have access, for information purposes, to the registry.

Article 18

Transfer of quotas and authorisation to use quotas for the placing on the market of hydrofluorocarbons in imported equipment

1. Any producer or importer for whom a reference value has been determined pursuant to Article 16(1) or (3) and who has been allocated a quota in accordance with Article 16(5), may transfer in the registry referred to in Article 17(1) that quota for all or any quantities to another producer or importer in the Union or to another producer or importer which is represented in the Union by an only representative referred to in the second and third subparagraph of Article 16(5).

2. Any producer or importer having received its quota pursuant to Article 16(1) and (3) or to whom a quota has been transferred pursuant to paragraph 1 of this Article may authorise another undertaking to use its quota for the purpose of Article 14.

Any producer or importer having received its quota exclusively on the basis of a declaration pursuant to Article 16(2), may only authorise another undertaking to use its quota for the purpose of Article 14 provided that the corresponding quantities of hydrofluorocarbons are physically supplied by the authorising producer or importer.

For the purpose of Articles 15, 16 and 19(1) and (6) the respective quantities of hydrofluorocarbons shall be deemed to be placed on the market by the authorising producer or importer at the moment of the authorisation. The Commission may require from the authorising producer or importer evidence that it is active in the supply of hydrofluorocarbons.

CHAPTER V

REPORTING

Article 19

Reporting on production, import, export, feedstock use and destruction of the substances listed in Annexes I or II

1. By 31 March 2015 and every year thereafter, each producer, importer and exporter that produced, imported or exported one metric tonne or 100 tonnes of CO₂ equivalent or more of fluorinated greenhouse gases and gases listed in Annex II during the preceding calendar year shall report to the Commission the data specified in Annex VII on each of those substances for that calendar year. This paragraph shall also apply to undertakings receiving quotas pursuant to Article 18(1).
2. By 31 March 2015 and every year thereafter, each undertaking that destroyed 1 metric tonne or 1 000 tonnes of CO₂ equivalent or more of fluorinated greenhouse gases and gases listed in Annex II during the preceding calendar year shall report to the Commission the data specified in Annex VII on each of those substances for that calendar year.
3. By 31 March 2015 and every year thereafter, each undertaking that used 1 000 tonnes of CO₂ equivalent or more of fluorinated greenhouse gases as feedstock during the preceding calendar year shall report to the Commission the data specified in Annex VII on each of those substances for that calendar year.
4. By 31 March 2015 and every year thereafter, each undertaking that placed 500 tonnes of CO₂ equivalent or more of fluorinated greenhouse gases and gases listed in Annex II contained in products or equipment on the market during the preceding calendar year shall report to the Commission the data specified in Annex VII on each of those substances for that calendar year.
5. Each importer of equipment that place on the market pre-charged equipment where hydrofluorocarbons contained in this equipment have not been placed on the market prior to the charging of the equipment shall submit to the Commission a verification document issued pursuant to Article 14(2).
6. By 30 June 2015 and every year thereafter, each undertaking which under paragraph 1 reports on the placing on the market 10 000 tonnes of CO₂ equivalent or more of hydrofluorocarbons during the preceding calendar year shall, in addition, ensure that the accuracy of the data is verified by an independent auditor. The auditor shall be either:
 - (a) accredited pursuant to Directive 2003/87/EC; or
 - (b) accredited to verify financial statements in accordance with the legislation of the Member State concerned.

The undertaking shall keep the verification report for at least five years. The verification report shall be made available, on request, to the competent authority of the Member State concerned and to the Commission.

7. The Commission may, by means of implementing acts, determine the format and means of submitting the reports referred to in this Article.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24.

8. The Commission shall take appropriate measures to protect the confidentiality of the information submitted to it in accordance with this Article.

Article 20

Collection of emissions data

Member States shall establish reporting systems for the relevant sectors referred to in this Regulation, with the objective of acquiring, to the extent possible, emissions data.

CHAPTER VI

FINAL PROVISIONS

Article 21

Review

1. The Commission shall be empowered to adopt delegated acts in accordance with Article 22 concerning the updating of Annexes I, II and IV on the basis of new Assessment Reports adopted by the Intergovernmental Panel on Climate Change or new reports of the Scientific Assessment Panel (SAP) of the Montreal Protocol on the global warming potential of the listed substances.

2. On the basis of information on the placing on the market of the gases listed in Annexes I and II, reported in accordance with Article 19, and on emissions of fluorinated greenhouse gases made available in accordance with Article 20 and on the basis of any relevant information received from Member States, the Commission shall monitor the application and effects of this Regulation.

No later than 31 December 2020, the Commission shall publish a report on the availability of hydrofluorocarbons on the Union market.

No later than 31 December 2022, it shall publish a comprehensive report on the effects of this Regulation, including in particular:

- (a) a forecast of the continued demand for hydrofluorocarbons up to and beyond 2030;
- (b) an assessment of the need for further action by the Union and its Member States in light of existing and new international commitments regarding the reduction of fluorinated greenhouse gas emissions;
- (c) an overview of European and international standards, national safety legislation and building codes in Member States in relation to the transition to alternative refrigerants;
- (d) a review of the availability of technically feasible and cost-effective alternatives to products and equipment containing fluorinated greenhouse gases for products and equipment not listed in Annex III, taking into account energy efficiency.

3. No later than 1 July 2017, the Commission shall publish a report assessing the prohibition pursuant to point 13 of Annex III, considering in particular, the availability of cost-effective, technically feasible, energy-efficient and reliable alternatives to multipack centralised refrigeration systems referred to in that provision. In light of that report, the Commission shall submit, if appropriate, a legislative proposal to the European Parliament and to the Council with a view to amending the provision pursuant to point 13 of Annex III.

4. No later than 1 July 2020, the Commission shall publish a report assessing whether cost-effective, technically feasible, energy-efficient and reliable alternatives exist, which make the replacement of fluorinated greenhouse gases possible in new medium-voltage secondary switchgear and new small single split air-conditioning systems and shall submit, if appropriate, a legislative proposal to the European Parliament and to the Council to amend the list set out in Annex III.

5. No later than 1 July 2017, the Commission shall publish a report assessing the quota allocation method, including the impact of allocating quotas for free, and the costs of implementing this Regulation in Member States and of a possible international agreement on hydrofluorocarbons, if applicable. In light of that report the Commission shall submit, if appropriate, a legislative proposal to the European Parliament and to the Council with a view to:

- (a) amending the quota allocation method;
- (b) establishing an appropriate method of distributing any possible revenues.

6. No later than 1 January 2017, the Commission shall publish a report examining Union legislation with respect to the training of natural persons for the safe handling of alternative refrigerants to replace or reduce the use of fluorinated greenhouse gases and shall submit, if appropriate, a legislative proposal to the European Parliament and to the Council to amend the relevant Union legislation.

Article 22

Exercise of the delegation

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.
2. The power to adopt delegated acts referred to in Articles 12(15) and 21(1) shall be conferred on the Commission for period of five years from 10 June 2014. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five year period. The delegation of power shall be tacitly extended for further periods of five years, unless the European Parliament or the Council opposes such extension not later than three months before the end of each such period.
3. The delegation of power referred to in Articles 12(15) and 21(1) may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.
4. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.
5. A delegated act adopted pursuant to Articles 12(15) and 21(1) shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

Article 23

Consultation Forum

In implementing this Regulation, the Commission shall ensure a balanced participation of Member States' representatives and representatives of civil society, including environmental organisations, representatives of manufacturers, operators and certified persons. To that end, it shall establish a Consultation Forum for those parties to meet and provide advice and expertise to the Commission in relation to the implementation of this Regulation, in particular with regard to the availability of alternatives to fluorinated greenhouse gases, including the environmental, technical, economic and safety aspects of their use. The rules of procedure of the Consultation Forum shall be established by the Commission and shall be published.

Article 24

Committee procedure

1. The Commission shall be assisted by a committee. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011.
2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply. Where the committee delivers no opinion, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply.

Article 25

Penalties

1. Member States shall lay down the rules on penalties applicable to infringements of this Regulation and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive.

Member States shall notify those provisions to the Commission by 1 January 2017 at the latest and shall notify it without delay of any subsequent amendment affecting them.

2. In addition to the penalties referred to in paragraph 1, undertakings that have exceeded their quota for placing hydrofluorocarbons on the market, allocated in accordance with Article 16(5) or transferred to them in accordance with Article 18, may only be allocated a reduced quota allocation for the allocation period after the excess has been detected.

The amount of reduction shall be calculated as 200 % of the amount by which the quota was exceeded. If the amount of the reduction is higher than the amount to be allocated in accordance with Article 16(5) as a quota for the allocation period after the excess has been detected, no quota shall be allocated for that allocation period and the quota for the following allocation periods shall be reduced likewise until the full amount has been deducted.

Article 26

Repeal

Regulation (EC) No 842/2006 shall be repealed with effect from 1 January 2015, without prejudice to compliance with the requirements of that Regulation in accordance with the timetable set out therein.

However, Regulations (EC) No 1493/2007, (EC) No 1494/2007, (EC) No 1497/2007, (EC) No 1516/2007, (EC) No 303/2008, (EC) No 304/2008, (EC) No 305/2008, (EC) No 306/2008, (EC) No 307/2008 and (EC) No 308/2008 shall remain in force and continue to apply unless and until repealed by delegated or implementing acts adopted by the Commission pursuant to this Regulation.

References to Regulation (EC) No 842/2006 shall be construed as references to this Regulation and shall be read in accordance with the correlation table in Annex VIII.

Article 27

Entry into force and date of application

This Regulation shall enter into force on the 20th day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 1 January 2015.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Strasbourg, 16 April 2014.

ANNEX I

FLUORINATED GREENHOUSE GASES REFERRED TO IN POINT 1 OF ARTICLE 2

^a Based on the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change, unless otherwise indicated.

Substance			GWP _a
Industrial designation	Chemical name(Common name)	Chemical formula	
Section 1: Hydrofluorocarbons (HFCs)			
HFC-23	trifluoromethane (fluoroform)	CHF ₃	14 800
HFC-32	difluoromethane	CH ₂ F ₂	675
HFC-41	fluoromethane (methyl fluoride)	CH ₃ F	92
HFC-125	pentafluoroethane	CHF ₂ CF ₃	3 500
HFC-134	1,1,2,2-tetrafluoroethane	CHF ₂ CHF ₂	1 100
HFC-134a	1,1,1,2-tetrafluoroethane	CH ₂ FCF ₃	1 430
HFC-143	1,1,2-trifluoroethane	CH ₂ FCHF ₂	353
HFC-143a	1,1,1-trifluoroethane	CH ₃ CF ₃	4 470
HFC-152	1,2-difluoroethane	CH ₂ FCH ₂ F	53
HFC-152a	1,1-difluoroethane	CH ₃ CHF ₂	124
HFC-161	fluoroethane (ethyl fluoride)	CH ₃ CH ₂ F	12

FLUORINATED GREENHOUSE GASES REFERRED TO IN POINT 1 OF ARTICLE 2

HFC-227ea	1,1,1,2,3,3,3-heptafluoropropane	$\text{CF}_3\text{CHFCF}_3$	3 220
HFC-236cb	1,1,1,2,2,3-hexafluoropropane	$\text{CH}_2\text{FCF}_2\text{CF}_3$	1 340
HFC-236ea	1,1,1,2,3,3-hexafluoropropane	$\text{CHF}_2\text{CHFCF}_3$	1 370
HFC-236fa	1,1,1,3,3,3-hexafluoropropane	$\text{CF}_3\text{CH}_2\text{CF}_3$	9 810
HFC-245ca	1,1,2,2,3-pentafluoropropane	$\text{CH}_2\text{FCF}_2\text{CHF}_2$	693
HFC-245fa	1,1,1,3,3-pentafluoropropane	$\text{CHF}_2\text{CH}_2\text{CF}_3$	1 030
HFC-365 mfc	1,1,1,3,3-pentafluorobutane	$\text{CF}_3\text{CH}_2\text{CF}_2\text{CH}_3$	794
HFC-43-10 mee	1,1,1,2,2,3,4,5,5,5-decafluoropentane	$\text{CF}_3\text{CHFCHFCF}_2\text{CF}_3$	1 640

Section 2: Perfluorocarbons (PFCs)

PFC-14	tetrafluoromethane (perfluoromethane, carbon tetrafluoride)	CF_4	7 390
PFC-116	hexafluoroethane (perfluoroethane)	C_2F_6	12 200
PFC-218	octafluoropropane (perfluoropropane)	C_3F_8	8 830
PFC-3-1-10 (R-31-10)	decafluorobutane (perfluorobutane)	C_4F_{10}	8 860
PFC-4-1-12 (R-41-12)	dodecafluoropentane (perfluoropentane)	C_5F_{12}	9 160
PFC-5-1-14 (R-51-14)	tetradecafluorohexane (perfluorohexane)	C_6F_{14}	9 300

FLUORINATED GREENHOUSE GASES REFERRED TO IN POINT 1 OF ARTICLE 2

PFC-c-318	octafluorocyclobutane (perfluorocyclobutane)	c-C ₄ F ₈	10 300
Section 3: Other perfluorinated compounds			
	sulphur hexafluoride	SF ₆	22 800

ANNEX II
OTHER FLUORINATED GREENHOUSE GASES SUBJECT TO REPORTING IN ACCORDANCE WITH ARTICLE 19

^a Based on the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change, unless otherwise indicated.

^b GWP according to the Report of the 2010 Assessment of the Scientific Assessment Panel (SAP) of the Montreal Protocol, Tables 1-11, citing two peer-reviewed scientific references.
http://ozone.unep.org/Assessment_Panels/SAP/Scientific_Assessment_2010/index.shtml

^c Default value, global warming potential not yet available.

^d Minimum value according to the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change.

Substance		GWP _a
Common name/industrial designation	Chemical formula	
Section 1: Unsaturated hydro(chloro)fluorocarbons		
HFC-1234yf	CF ₃ CF = CH ₂	4 ^{Fn} b
HFC-1234ze	trans — CHF = CHCF ₃	7 ^{Fn} 2
HFC-1336mzz	CF ₃ CH = CHCF ₃	9
HCFC-1233zd	C ₃ H ₂ C ₁ F ₃	4,5
HCFC-1233xf	C ₃ H ₂ C ₁ F ₃	1 ^{Fn} c
Section 2: Fluorinated ethers and alcohols		
HFE-125	CHF ₂ OCF ₃	14 900
HFE-134 (HG-00)	CHF ₂ OCHF ₂	6 320
HFE-143a	CH ₃ OCF ₃	756
HCFE-235da2 (isofluorane)	CHF ₂ OHC ₁ CF ₃	350

OTHER FLUORINATED GREENHOUSE GASES SUBJECT TO REPORTING IN ACCORDANCE WITH ARTICLE 19

HFE-245cb2	$\text{CH}_3\text{OCF}_2\text{CF}_3$	708
HFE-245fa2	$\text{CHF}_2\text{OCH}_2\text{CF}_3$	659
HFE-254cb2	$\text{CH}_3\text{OCF}_2\text{CHF}_2$	359
HFE-347 mcc3 (HFE-7000)	$\text{CH}_3\text{OCF}_2\text{CF}_2\text{CF}_3$	575
HFE-347pcf2	$\text{CHF}_2\text{CF}_2\text{OCH}_2\text{CF}_3$	580
HFE-356pcc3	$\text{CH}_3\text{OCF}_2\text{CF}_2\text{CHF}_2$	110
HFE-449sl (HFE-7100)	$\text{C}_4\text{F}_9\text{OCH}_3$	297
HFE-569sf2 (HFE-7200)	$\text{C}_4\text{F}_9\text{OC}_2\text{H}_5$	59
HFE-43-10pccc124 (H-Galden 1040x) HG-11	$\text{CHF}_2\text{OCF}_2\text{OC}_2\text{F}_4\text{OCHF}_2$	1 870
HFE-236ca12 (HG-10)	$\text{CHF}_2\text{OCF}_2\text{OCHF}_2$	2 800
HFE-338pcc13 (HG-01)	$\text{CHF}_2\text{OCF}_2\text{CF}_2\text{OCHF}_2$	1 500
HFE-347mmy1	$(\text{CF}_3)_2\text{CFOCH}_3$	343
2,2,3,3,3-pentafluoropropanol	$\text{CF}_3\text{CF}_2\text{CH}_2\text{OH}$	42
bis(trifluoromethyl)-methanol	$(\text{CF}_3)_2\text{CHOH}$	195
HFE-227ea	$\text{CF}_3\text{CHFOCF}_3$	1 540
HFE-236ea2 (desfluoran)	$\text{CHF}_2\text{OCHF}_2\text{CF}_3$	989
HFE-236fa	$\text{CF}_3\text{CH}_2\text{OCF}_3$	487
HFE-245fa1	$\text{CHF}_2\text{CH}_2\text{OCF}_3$	286
HFE 263fb2	$\text{CF}_3\text{CH}_2\text{OCH}_3$	11
HFE-329 mcc2	$\text{CHF}_2\text{CF}_2\text{OCF}_2\text{CF}_3$	919
HFE-338 mcf2	$\text{CF}_3\text{CH}_2\text{OCF}_2\text{CF}_3$	552
HFE-338mmz1	$(\text{CF}_3)_2\text{CHOCHF}_2$	380
HFE-347 mcf2	$\text{CHF}_2\text{CH}_2\text{OCF}_2\text{CF}_3$	374
HFE-356 mec3	$\text{CH}_3\text{OCF}_2\text{CHFCF}_3$	101
HFE-356mm1	$(\text{CF}_3)_2\text{CHOCH}_3$	27
HFE-356pcf2	$\text{CHF}_2\text{CH}_2\text{OCF}_2\text{CHF}_2$	265
HFE-356pcf3	$\text{CHF}_2\text{OCH}_2\text{CF}_2\text{CHF}_2$	502
HFE 365 mcf3	$\text{CF}_3\text{CF}_2\text{CH}_2\text{OCH}_3$	11
HFE-374pc2	$\text{CHF}_2\text{CF}_2\text{OCH}_2\text{CH}_3$	557

OTHER FLUORINATED GREENHOUSE GASES SUBJECT TO REPORTING IN ACCORDANCE WITH ARTICLE 19

	- (CF ₂) ₄ CH (OH)-	73
Section 3: Other perfluorinated compounds		
perfluoropolymethylisopropyl-ether (PFPMIE)	CF ₃ OCF(CF ₃)CF ₂ OCF ₂ OCF ₃	10 300
nitrogen trifluoride	NF ₃	17 200
trifluoromethyl sulphur pentafluoride	SF ₅ CF ₃	17 700
perfluorocyclopropane	c-C ₃ F ₆	17 340 ^{F_n} d

ANNEX III

PLACING ON THE MARKET PROHIBITIONS REFERRED TO IN ARTICLE 11(1)

Products and equipmentWhere relevant, the GWP of mixtures containing fluorinated greenhouse gases shall be calculated in accordance with Annex IV, as provided for in point 6 of Article 2		Date of prohibition
1. Non-refillable containers for fluorinated greenhouse gases used to service, maintain or fill refrigeration, air-conditioning or heat-pump equipment, fire protection systems or switchgear, or for use as solvents		4 July 2007
2. Non-confined direct evaporation systems that contain HFCs and PFCs as refrigerants		4 July 2007
3. Fire protection equipment	that contain PFCs	4 July 2007
	that contain HFC-23	1 January 2016
4. Windows for domestic use that contain fluorinated greenhouse gases		4 July 2007
5. Other windows that contain fluorinated greenhouse gases		4 July 2008
6. Footwear that contains fluorinated greenhouse gases		4 July 2006

PLACING ON THE MARKET PROHIBITIONS REFERRED TO IN ARTICLE 11(1)		
7. Tyres that contain fluorinated greenhouse gases		4 July 2007
8. One-component foams, except when required to meet national safety standards, that contain fluorinated greenhouse gases with GWP of 150 or more		4 July 2008
9. Aerosol generators marketed and intended for sale to the general public for entertainment and decorative purposes, as listed in point 40 of Annex XVII to Regulation (EC) No 1907/2006, and signal horns, that contain HFCs with GWP of 150 or more		4 July 2009
10. Domestic refrigerators and freezers that contain HFCs with GWP of 150 or more		1 January 2015
11. Refrigerators and freezers for commercial use (hermetically sealed equipment)	that contain HFCs with GWP of 2 500 or more	1 January 2020
	that contain HFCs with GWP of 150 or more	1 January 2022
12. Stationary refrigeration equipment, that contains, or whose functioning relies upon, HFCs with GWP of 2 500 or more except equipment intended for application designed to cool products to temperatures below – 50 °C		1 January 2020
13. Multipack centralised refrigeration systems for commercial use with a rated capacity of 40 kW or more that contain, or whose functioning relies upon, fluorinated greenhouse gases with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1 500 may be used		1 January 2022
14. Movable room air-conditioning equipment (hermetically sealed equipment which is movable between rooms by the end user) that contain HFCs with GWP of 150 or more		1 January 2020
15. 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 GWP of 750 or more		1 January 2025
16. Foams that contain HFCs with GWP of 150 or more except when required to meet national safety standards	Extruded polystyrene (XPS)	1 January 2020
	Other foams	1 January 2023

PLACING ON THE MARKET PROHIBITIONS REFERRED TO IN ARTICLE 11(1)

17. Technical aerosols that contain HFCs with GWP of 150 or more, except when required to meet national safety standards or when used for medical applications

1 January
2018

ANNEX IV**METHOD OF 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.

$$\Sigma (\text{Substance X \%} \times \text{GWP}) + (\text{Substance Y \%} \times \text{GWP}) + \dots (\text{Substance N \%} \times \text{GWP}),$$

where % is the contribution by weight with a weight tolerance of +/- 1 %.

For example: applying the formula to a blend of gases consisting of 60 % dimethyl ether, 10 % HFC-152a and 30 % isobutane:

$$\Sigma (60 \% \times 1) + (10 \% \times 124) + (30 \% \times 3)$$

? Total GWP = 13,9

The GWP of the following non-fluorinated substances are used to calculate the GWP of mixtures. For other substances not listed in this annex a default value of 0 applies.

^a Based on the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change, unless otherwise indicated.

^b Substance not listed in the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change, default value on the basis of the GWPs of other hydrocarbons.

Substance			GWP ^a
Common name	Industrial designation	Chemical Formula	
methane		CH ₄	25
nitrous oxide		N ₂ O	298
dimethyl ether		CH ₃ OCH ₃	1
methylene chloride		CH ₂ Cl ₂	9
methyl chloride		CH ₃ Cl	13
chloroform		CHCl ₃	31
ethane	R-170	CH ₃ CH ₃	6

propane	R-290	CH ₃ CH ₂ CH ₃	3
butane	R-600	CH ₃ CH ₂ CH ₂ CH ₃	4
isobutane	R-600a	CH(CH ₃) ₂ CH ₃	3
pentane	R-601	CH ₃ CH ₂ CH ₂ CH ₂ CH ₃	5b
isopentane	R-601a	(CH ₃) ₂ CHCH ₂ CH ₃	5b
ethoxyethane (diethyl ether)	R-610	CH ₃ CH ₂ OCH ₂ CH ₃	4
methyl formate	R-611	HCOOCH ₃	25
hydrogen	R-702	H ₂	6
ammonia	R-717	NH ₃	0
ethylene	R-1150	C ₂ H ₄	4
propylene	R-1270	C ₃ H ₆	2
cyclopentane		C ₅ H ₁₀	5b

ANNEX V

CALCULATION OF THE MAXIMUM QUANTITY, REFERENCE VALUES AND QUOTAS FOR PLACING HYDROFLUOROCARBONS ON THE MARKET

The maximum quantity referred to in Article 15(1) shall be calculated by applying the following percentages to the annual average of the total quantity placed on the market into the Union during the period from 2009 to 2012. From 2018 onwards, the maximum quantity referred to in Article 15(1) shall be calculated by applying the following percentages to the annual average of the total quantity placed on the market into the Union during period 2009 to 2012, and subsequently subtracting the amounts for exempted uses according to Article 15(2), on the basis of available data.

Years	Percentage to calculate the maximum quantity of hydrofluorocarbons to be placed on the market and corresponding quotas
2015	100 %
2016–17	93 %
2018–20	63 %
2021–23	45 %
2024–26	31 %
2027–29	24 %
2030	21 %

The maximum quantity, reference values and quotas for placing hydrofluorocarbons on the market referred to in Articles 15 and 16 shall be calculated as the aggregated quantities of all types of hydrofluorocarbons, expressed in tonne(s) of CO₂ equivalent.

The calculation of reference values and quotas for placing hydrofluorocarbons on the market referred to in Articles 15 and 16 shall be based on the quantities of hydrofluorocarbons producers and importers have placed on the market in the Union during the reference or allocation period but excluding quantities of hydrofluorocarbons for the usage referred to in Article 15(2) during the same period, on the basis of available data.

Transactions referred to in point (c) of Article 15(2) shall be verified in accordance with Article 19(6) regardless of the quantities involved.

ANNEX VI

ALLOCATION MECHANISM REFERRED TO IN ARTICLE 16

1. Determination of the quantity to be allocated to undertakings for which a reference value has been established under Article 16(1) and (3)

Each undertaking for which a reference value has been established receives a quota corresponding to 89 % of the reference value multiplied by the percentage indicated in Annex V for the respective year.

2. Determination of the quantity to be allocated to undertakings that have submitted a declaration under Article 16(2)

The sum of the quotas allocated under point 1 is subtracted from the maximum quantity for the given year set out in Annex V to determine the quantity to be allocated to undertakings for which no reference value has been established and which have submitted a declaration under Article 16(2) (quantity to be allocated in step 1 of the calculation).

2.1. Step 1 of the calculation

Each undertaking receives an allocation corresponding to the quantity requested in its declaration, but no more than a pro-rata share of the quantity to be allocated in step 1.

The pro-rata share is calculated by dividing 100 by the number of undertakings that have submitted a declaration. The sum of the quotas allocated in step 1 is subtracted from the quantity to be allocated in step 1 to determine the quantity to be allocated in step 2.

2.2. Step 2 of the calculation

Each undertaking that has not obtained 100 % of the quantity requested in its declaration in step 1 receives an additional allocation corresponding to the difference between the quantity requested and the quantity obtained in step 1. However, this must not exceed the pro-rata share of the quantity to be allocated in step 2.

The pro-rata share is calculated by dividing 100 by the number of undertakings eligible for an allocation in step 2. The sum of the quotas allocated in step 2 is subtracted from the quantity to be allocated in step 2 to determine the quantity to be allocated in step 3.

2.3. Step 3 of the calculation

Step 2 is repeated until all requests are satisfied or the remaining quantity to be allocated in the next phase is less than 500 tonnes of CO₂ equivalent.

3. Determination of the quantity to be allocated to undertakings that have submitted a declaration under Article 16(4)

For the allocation of quotas for 2015 to 2017 the sum of the quotas allocated under points 1 and 2 is subtracted from the maximum quantity for the given year set out in Annex V to determine the quantity to be allocated to undertakings for which a reference value has been established and that have submitted a declaration under Article 16(4).

The allocation mechanism set out under points 2.1 and 2.2 applies.

For the allocation of quotas for 2018 and every year thereafter, undertakings that have submitted a declaration under Article 16(4) shall be treated in the same way as undertakings that have submitted a declaration under Article 16(2).

ANNEX VII

DATA TO BE REPORTED PURSUANT TO ARTICLE 19

1. Each producer referred to in Article 19(1) shall report on:

- (a) the total quantity of each substance listed in Annexes I and II it has produced in the Union, identifying the main categories of application in which the substance is used;
- (b) the quantities of each substance listed in Annex I and, where applicable, Annex II it has placed on the market in the Union, specifying separately quantities placed on the market for feedstock uses, direct exports, producing metered dose inhalers for the delivery of pharmaceutical ingredients, use in military equipment and use in the etching of semiconductor material or the cleaning of chemical vapour deposition chambers within the semiconductor manufacturing sector;
- (c) the quantities of each substance listed in Annexes I and II that have been recycled, reclaimed and destroyed, respectively;
- (d) any stocks held at the beginning and the end of the reporting period;
- (e) any authorisation to use quota, specifying relevant quantities, for the purpose of Article 14.

2. Each importer referred to in Article 19(1) shall report on:

- (a) the quantity of each substance listed in Annex I and, where applicable, Annex II it has imported into the Union, identifying the main categories of application in which the substance is used, specifying separately quantities placed on the market for destruction, feedstock uses, direct exports, producing metered dose inhalers for the delivery of pharmaceutical ingredients, use in military equipment and use in the etching of semiconductor material or the cleaning of chemical vapour deposition chambers within the semiconductor manufacturing sector;
- (b) the quantities of each substance listed in Annexes I and II that have been recycled, reclaimed and destroyed, respectively;
- (c) any authorisation to use quota, specifying relevant quantities, for the purpose of Article 14;
- (d) any stocks held at the beginning and the end of the reporting period.

3. Each exporter referred to in Article 19(1) shall report on:

- (a) the quantities of each substance listed in Annexes I and II that it has exported from the Union other than to be recycled, reclaimed or destroyed;
- (b) any quantities of each substance listed in Annexes I and II that it has exported from the Union to be recycled, reclaimed and destroyed, respectively.

4. Each undertaking referred to in Article 19(2) shall report on:

- (a) the quantities of each substance listed in Annexes I and II destroyed, including the quantities of those substances contained in products or equipment;
- (b) any stocks of each substance listed in Annexes I and II waiting to be destroyed, including the quantities of those substances contained in products or equipment;
- (c) the technology used for the destruction of the substances listed in Annexes I and II.

5. Each undertaking referred to in Article 19(3) shall report on the quantities of each substance listed in Annex I used as feedstock.

6. Each undertaking referred to in Article 19(4) shall report on:

- (a) the categories of the products or equipment containing substances listed in Annexes I and II;
- (b) the number of units;
- (c) any quantities of each substance listed in Annexes I and II contained in the products or equipment.

ANNEX VIII

CORRELATION TABLE	
Regulation (EC) No 842/2006	This Regulation
Article 1	Article 1
Article 2	Article 2
Article 3(1)	Article 3(2) and (3)
Article 3(2), first subparagraph	Article 4(1), (2) and (3)
Article 3(2), second subparagraph	Article 3(3), second subparagraph
Article 3(2), third subparagraph	—
Article 3(3)	Article 5(1)
Article 3(4)	Article 4(3)
Article 3(5)	Article 4(4)
Article 3(6)	Article 6(1) and (2)

CORRELATION TABLE	
Article 3(7)	Article 4(5)
Article 4(1)	Article 8(1)
Article 4(2)	Article 8(2)
Article 4(3)	Article 8(3)
Article 4(4)	—
Article 5(1)	Article 10(5) and (12)
Article 5(2), first sentence	Article 10(1), (2) and (6)
Article 5(2), second sentence	Article 10(10), first subparagraph
Article 5(2), third sentence	Article 10(10), second subparagraph
Article 5(3)	Article 3(4), first subparagraph and Article 10(3)
Article 5(4)	Article 11(4)
Article 5(5)	Article 10(13)
Article 6(1)	Article 19(1) and Annex VII
Article 6(2)	Article 19(7)
Article 6(3)	Article 19(8)
Article 6(4)	Article 20 and Article 6(2)
Article 7(1), first subparagraph, first sentence	Article 12(1) first sentence
Article 7(1), first subparagraph, second and third sentence	Article 12(2), (3) and (4)
Article 7(1), second subparagraph	Article 12(13)
Article 7(2)	Article 12(1), second sentence
Article 7(3), first sentence	Article 12(14)
Article 7(3), second sentence	Article 12(15)
Article 8(1)	Article 13(1)
Article 8(2)	Article 13(2)
Article 9(1)	Article 11(1)
Article 9(2)	—
Article 9(3)	—
Article 10	21(2)
Article 11	—

CORRELATION TABLE	
Article 12	Article 24
Article 13(1)	Article 25(1), first subparagraph
Article 13(2)	Article 25(1), second subparagraph
Article 14	—
Article 15	Article 27
Annex I — Part 1	Annex I
Annex I — Part 2	Annex IV
Annex II	Annex III