

## Refrigeration and Air Conditioning – Guidance for leak checking



Two pieces of European legislation, Regulation 1005/2009 and Regulation 842/2006, control the use of refrigerant gases in the refrigeration and air conditioning sectors. Both Regulations have direct effect in Ireland, and operators in the Irish refrigeration and air conditioning sectors and end-users must comply with them

### *Ozone depleting substances (ODS)*

The current European Regulation on substances that deplete the ozone layer (Regulation (EC) No. 1005/2009) came into effect on 1 January 2010. Its main aim is the protection and restoration of the ozone layer through the **control of emissions** of these substances, and their ultimate **phase out**. Most of these substances have been largely phased out by this time. However, for those that are still in use in certain applications, there are a number of requirements that must be met.

### *Fluorinated greenhouse gases (F-gases)*

The European Regulation on certain fluorinated greenhouse gases (Regulation (EC) No. 842/2006) came into force for most provisions in July 2007. Its main aim is to reduce fluorinated greenhouse gas emissions through the **containment and prevention of emissions**; phase out of these gases is not generally a requirement of the Regulation except for some specified uses. In many cases, ozone depleting substances were replaced by fluorinated greenhouse gases in the refrigeration and air conditioning sector.

A specific requirement of each Regulation is to carry out periodic leak checking (at least annually) of equipment containing a refrigerant fluid charge of more than 3kg (Article 23 of the ODS Regulation and Article 3 of the F-gas Regulation). The specific frequency of leak checking requirements set out under each Regulation is presented in Table 1.

**Table 1 Leak Testing Frequencies**

Leak Testing Frequency	ODS		F Gases	
	System charge - normal	System charge - Hermetically sealed	System charge - normal	System charge - Hermetically Sealed
None	• < 3 kg	• < 6 kg	• < 3 kg	• < 6 kg
Annual	• 3 kg to 30 kg	• 6 kg to 30 kg	• 3 kg to 30 kg • 30 kg to 300 kg with automatic leak detection in place	• 6 kg to 30 kg • 30 kg to 300 kg with automatic leak detection in place
6-monthly	• 30 kg to 300 kg	• 30 kg to 300 kg	• 30 kg to 300 kg • >300kg with automatic leak detection in place	• 30 kg to 300 kg • >300kg with automatic leak detection in place
Quarterly	• > 300 kg	• > 300 kg		

A requirement of the F-gas Regulation is that the Commission shall establish standard leak checking requirements for stationary refrigeration, air conditioning and heat pump equipment. These have been defined in Commission Regulations as follows:

*Commission Regulation (EC) No 1516/2007 of 19 December 2007 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, standard leakage checking requirements for **stationary refrigeration, air conditioning and heat pump equipment** containing certain fluorinated greenhouse gases.*

### *Responsibility*

The Environmental Protection Agency is the competent authority for enforcement of the ODS and F-gas Regulations. The EPA works actively with sectors affected by the requirements of the Regulations to promote compliance and carry out enforcement.

The onus is on the operator to ensure compliance with all requirements of the Regulations. In addition, the international standard *EN 378: refrigerating systems and heat pumps – safety and environmental requirements* is generally regarded as representing industry best practice. Copies of the standard are available from the National Standards Authority of Ireland or from [www.standards.ie](http://www.standards.ie). The definition of operator is presented in Box 1.

#### **Box 1 Definition of operator**

The operator is “*the natural or legal person exercising actual power over the technical functioning of the equipment and systems covered by the Regulation...*”.

The “actual power over the technical functioning” of a piece of equipment or system should be understood as including the following elements:

- free access to the system, which entails the possibility to supervise its components and their functioning, and the possibility to grant access to third parties;
- the control over the day-to-day functioning/running (e.g. take the decision to switch it on or off); and,
- the power (including financial power) to decide on technical modifications (e.g. replacement of a component, installation of a permanent leak detector), modification of the quantities of F-gases in the equipment or system, and to have checks (e.g. checks for leakage) or repairs carried out.

All these elements are needed to fulfil the obligations placed by Regulation (EC) No 842/2006 on “operators”.

Under both Regulations the operator should make the necessary arrangements for leak checking. In all cases, records should be maintained for the purpose of demonstrating compliance. All personnel handling ODS or f-gas refrigerant must be appropriately qualified.

It is important to note that leak checking or any handling of refrigerant gases should only be carried out by **appropriately qualified persons**, as per Articles 22 and 23 of the ODS Regulation and Article 5 of the F-Gas Regulation. The minimum qualifications for personnel in the stationary refrigeration and air conditioning sector are presented in Box 2.

## Box 2 Minimum qualifications in the stationary refrigeration and air conditioning sector

### **Minimum qualification for handling ODS refrigerants:**

- City & Guilds Certificate in Handling Refrigerants Scheme 2078

### **Interim qualification for handling f-gas refrigerants:**

- City & Guilds Certificate in Handling Refrigerants Scheme 2078  
(valid until 4 July 2011)

### **Full qualification for handling f-gas refrigerants:**

- City and Guilds Level 2 Award in F-gas and ODS Regulations (2079)  
*or*
- FETAC Level 5 Specific Purpose Certificate Handling F-gas Refrigerants (5S0108)  
(required from 4 July 2011)

This advice is directed at end-users of refrigeration and air conditioning equipment, property management companies, facility managers, refrigeration and air conditioning (installation, maintenance and service) contractors and any other person or entity with responsibility for the maintenance and upkeep of equipment falling under either Regulation. Additionally, it is advisable for refrigeration and air conditioning contractors to make these requirements known to their clients.

*Further information on is available as follows:*

#### **Environmental Protection Agency**

PO Box 3000, Johnstown Castle Estate, Wexford

E-mail: [ods@epa.ie](mailto:ods@epa.ie)

Website: [www.ozone.ie](http://www.ozone.ie) and [www.fgases.ie](http://www.fgases.ie)

#### **Department of the Environment, Heritage & Local Government**

Custom House, Dublin 1

E-mail: [climatechangeinfo@environ.ie](mailto:climatechangeinfo@environ.ie)

Website: [www.environ.ie](http://www.environ.ie) (click on Atmosphere under Our Environment)

#### **Institute of Refrigeration Ireland**

Email: [info@instituteofrefrigerationireland.ie](mailto:info@instituteofrefrigerationireland.ie)

Website: [www.instituteofrefrigerationireland.ie/](http://www.instituteofrefrigerationireland.ie/)

#### **Refrigeration Skillnet**

Email: [info@refrigerationskillnet.ie](mailto:info@refrigerationskillnet.ie)

Website: [www.refrigerationskillnet.ie](http://www.refrigerationskillnet.ie)

#### **FETAC (Further Education and Training Awards Council)**

Website: [www.fetac.ie](http://www.fetac.ie)

#### **National Standards Authority of Ireland**

Glasnevin, Dublin 9

Email: [nsai@nsai.ie](mailto:nsai@nsai.ie)

Website: [www.nsai.ie/](http://www.nsai.ie/) or [www.standards.ie/](http://www.standards.ie/)