

Department for Environment, Food and Rural Affairs

# Guidance for Magnesium Smelters, Sand Casters & Die Casters

## Guidance: F Gas and Ozone Regulations

### Information Sheet MG 1: Overview

April 2012

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This Information Sheet relates to the smelting and casting of magnesium using sulphur hexafluoride (SF<sub>6</sub>). Certain obligations apply to the use of fluorinated gases (F gases), such as SF<sub>6</sub>, and these obligations vary depending on the nature of the use and of the process.

Please note, this Information Sheet only refers to magnesium smelting and casting, if you have any refrigeration, air-conditioning or fire fighting equipment on your sites which contain F gases or Ozone Depleting Substances (ODS) you will also have further obligations for this equipment. Refer to Information Sheet GEN 3 to check whether you have any other uses of F gases.

## Which Regulations are covered by this Information Sheet?

This Information Sheet addresses the EU F gas Regulation that may affect magnesium smelters and casters.

**The F Gas Regulation**<sup>1</sup>. This is EU Regulation 842/2006 on certain fluorinated greenhouse gases.

In Great Britain the Fluorinated Greenhouse Gases Regulations 2009 (Statutory Instrument No 261) applied from 9<sup>th</sup> March 2009. This Statutory Instrument prescribes offences and penalties applicable to infringements of the EU F gas Regulation.

The EU F gas Regulation and associated Statutory Instrument aim to reduce emissions of the fluorinated greenhouse gases i.e. HFCs, PFCs and SF<sub>6</sub>.

## Summary of Key Obligations under the EU F gas Regulation

The key obligation in the EU F gas Regulation that affects the magnesium industry is a ban that applies to die casters, as follows:

<b>Ban</b>	The use of SF <sub>6</sub> for die casting is <b>banned</b> from 1 <sup>st</sup> January 2008, except where the quantity used is less than 850 kg per year.
<b>Taking delivery</b>	Companies taking delivery of containers of F gas need to employ personnel with appropriate qualifications if undertaking F gas recovery.

In addition, users of SF<sub>6</sub> should note that the EU F gas Regulation specifies:

- 2) Recovery of SF<sub>6</sub> from used containers;

<sup>1</sup> The full text of the Regulation can be found on a link in Information Sheet GEN 4

b) Reporting of quantities of bulk F gas imported from outside the EU.

Whilst it is only larger die casters that are directly affected by the SF<sub>6</sub> ban it is worth considering alternative gases if you are a magnesium smelter or a sand caster. SF<sub>6</sub> is the most powerful greenhouse gas; emitting 1 kg of SF<sub>6</sub> is equivalent to emitting about 22,200 kg of CO<sub>2</sub>. It is essential to minimise emissions of this gas. Using an alternative gas will have less impact on global warming and, in some circumstances, could save money.

## Some Critical Dates

<b>4<sup>th</sup> July 2007</b>	F gas <b>recovery</b> from end of life containers. Recovery should be undertaken by personnel with appropriate <b>qualifications</b> .
<b>1<sup>st</sup> January 2008</b>	<b>Ban</b> on SF <sub>6</sub> gas use for die casting where 850 kg or more is used per year.
<b>1<sup>st</sup> April 2008</b>	<b>Reporting</b> of F gas import/export activity.

## Alternatives to SF<sub>6</sub>

SF<sub>6</sub> has only been used in the magnesium industry for a relatively short period of time. One alternative is to go back to a gas that was used previously i.e. SO<sub>2</sub>. This has no impact on global warming, although it does have issues related to toxicity.

Novec 612 is an alternative and has been used in Japan and America for about 3 years and has similar operational costs to SF<sub>6</sub>. It works well with most alloys.

A new alternative that has been adopted by some magnesium companies is HFC 134a. Although this is also an F gas, it is about 20 times less powerful in terms of global warming potential. It has also proved to be a cheaper alternative to SF<sub>6</sub>.

## Relevant Information for Smelters and Casters

Defra has produced a set of information that will help smelters and casters understand their obligations under the EU F gas and Ozone Regulations.

The following information sheets may be of relevance:

<b>Number</b>	<b>Content of Information Sheet</b>
<b>Information Sheets Addressing Magnesium Smelters Issues</b>	
MG 1	Short overview of issues for magnesium smelters
<b>Information Sheets Addressing Refrigeration and Air-conditioning Issues</b>	
RAC 1	Short overview of issues for users of RAC Systems.
RAC 2	Background to F gas and ODS use in RAC Systems. Sources of emissions. Emission reduction opportunities. Alternative refrigerants.

RAC 3	Detailed description of key obligations for companies
RAC 4	Getting Started – advice on the steps to take to achieve compliance
RAC 5	Qualifications & Certification – details about the training and certification requirements for RAC personnel and contracting companies.
RAC 6	Practical Guidance – dealing with numerous detailed RAC topics including: leak testing, record keeping, refrigerant recovery, labelling of equipment.
RAC 7	Alternative Refrigerants – minimising emissions and options for refrigerant selection.
RAC 8	HCFC Phase-out.
<b>General F Gas and ODS Information Sheets</b>	
GEN 1	Glossary of Terms related to EU F gas and ODS Regulations
GEN 2	Background to F gas and ODS fluids
GEN 3	Overview of markets and equipment affected by the F gas and ODS Regulations
GEN 4	Links to full copies of all relevant Regulations and legislation
GEN 5	Guidance on estimating refrigerant charge.

The information in this document is intended as guidance and must not be taken as formal legal advice or as a definitive statement of the law. Ultimately only the courts can decide on legal questions and matters of legal interpretation. If you have continuing concerns you should seek legal advice from your own lawyers.

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