

# EU F-Gas Regulation Guidance

## Information Sheet 12: Magnesium Smelting

### Target audience for this Information Sheet

This information sheet is aimed at companies that carry out casting of magnesium.

## 1. Background

This guidance is for organisations affected by the 2014 EU F-Gas Regulation (517/2014). The F-Gas Regulation creates controls on the use and emissions of fluorinated greenhouse gases (F-Gases) including HFCs, PFCs and SF<sub>6</sub>.

In the magnesium casting sector, the F-Gas Regulation affects the use of SF<sub>6</sub> and HFC 134a as cover gases in the smelting process. The 2014 EU F-Gas Regulation replaces the 2006 Regulation, strengthening all of the 2006 requirements and introducing a number of important new measures.

The F-Gas Regulation is an important piece of legislation that will result in significant reductions in the emissions of F-Gases. These are very powerful greenhouse gases, with global warming impacts that can be several thousand times higher than CO<sub>2</sub> (per kg of gas emitted). All EU Member States agree that it is important to reduce emissions of these gases.

This Information Sheet describes the requirements that apply to magnesium casting. Further guidance is available – see Information Sheet 30 for a full list and a glossary of terms.

### Magnesium Casting: Compliance Checklist for EU F-Gas Regulation

#### Operation of casting plants

- ✓ Ban on the use of SF<sub>6</sub> in magnesium die casting, for plants using above 850 kg per year
- ✓ **NEW:** ban on the use of SF<sub>6</sub> in the recycling of magnesium die casting alloys, for plants using above 850 kg per year
- ✓ **NEW:** from 2018 an extension of bans on SF<sub>6</sub> to plants using less than 850 kg per year
- ✓ **NEW:** general requirement to avoid release of F-Gases (including SF<sub>6</sub> and HFCs)

## 2. Sector description

The casting of magnesium products involves melting magnesium alloys prior to casting. Molten magnesium is highly reactive and must avoid contact with oxygen in the air. Magnesium plants make use of a cover gas that is fed over the molten magnesium to protect it from oxygen. The main cover gas used was SF<sub>6</sub>. To avoid use of a cover gas with such a high GWP<sup>1</sup>, operators have started introducing other cover gases, including HFC 134a, SO<sub>2</sub> and a fluoro-ketone product.

<sup>1</sup> GWP, Global Warming Potential: see Information Sheet 25 for further details on GWP

### 3. Operation of magnesium casting plants

#### Ban on SF<sub>6</sub> for die casting for plants using > 850 kg per year

The use of SF<sub>6</sub> for die casting operations using more than 850 kg of SF<sub>6</sub> per year was banned under the old F-Gas Regulation in 2008.

#### **New:** Ban on SF<sub>6</sub> for recycling of die casting alloys for plants using > 850 kg per year

The ban for plants using more than 850 kg of SF<sub>6</sub> per year has been extended to operations that carry out the recycling of magnesium die-casting alloys. This new ban applies from January 2015

#### **New:** Ban on SF<sub>6</sub> for all die casting and recycling of die casting alloys

From 1<sup>st</sup> January 2018 the SF<sub>6</sub> bans will be extended to any plant carrying out magnesium die casting or the recycling of magnesium die casting alloys. This ban is for any size of operation using SF<sub>6</sub>.

#### General requirement to avoid release of F-Gases

The 2014 F-Gas Regulation states that:

*“The intentional release of fluorinated greenhouse gases into the atmosphere shall be prohibited where the release is not technically necessary for the intended use.*

*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”.*

Magnesium plant operators using either SF<sub>6</sub> or HFCs should ensure that they are in compliance with this requirement. F-Gases should be used with care and every effort made to avoid unintentional release.

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**This Information Sheet has been prepared by Gluckman Consulting**

**in collaboration with the Defra (UK Department for Environment, Food and Rural Affairs) and Jacobs**

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