

REACH - Cement and cement clinker (and flue dust)

Introduction

The REACH regulation came into force on 1 June 2007. 'REACH' stands for - *Registration, Evaluation, Authorisation (and Restriction) of Chemicals* - and it implements a uniform legal system, effective for all chemicals inside the European Community (EEA). This system is intended to enhance the safe use of chemicals in all types of application by providing appropriate health, safety and environmental information and communicating it to relevant stakeholders.

The REACH Regulation does not, however, mention the term *chemicals* in its text and, hence, there is no definition. REACH does, though, address: *substances, preparations (also called mixtures) and articles*, all of which are defined in the Regulation. According to its Article 1, REACH principally addresses the *manufacture, import, placing on the market and use* of substances on their own and in preparations and articles. Consequently, REACH will achieve its aims by imposing a series of inter-related obligations on manufacturers (or importers) for submission of a range of, essentially, self-assessed information on the substances that they manufacture (or import) into the EEA.

How are Portland cement, and its precursor, (Portland) cement clinker, affected by REACH? This Fact Sheet describes the official position so that all stakeholders are brought up-to-date but, in particular, that professional downstream users can be assured that cement, as an 'input' to their operations, is REACH-compliant.

Is cement a substance, a preparation or an article under REACH?

To a large extent, the identity of a chemical under REACH is a matter for a manufacturer (or importer) to decide, guided by the definitions in the Regulation and their expert knowledge of the product. In the case of cement, it is clearly a **preparation** because it is an example of:

"Preparation: a mixture (or solution) composed of two or more substances" (Article 3.2)

Preparations are not subject to Registration (i.e. formalised supply of a dossier of information) under REACH.

CEMENT is a PREPARATION under REACH

One of these "*two or more substances*" is always (Portland) cement clinker, the basic constituent of all Portland cements. A second substance would be 'gypsum' used for regulating cement setting time. A third would be the chemical reducing agent added to control the content of water soluble chromium (VI) in compliance with a regulatory limit in clause 47 of Annex XVII of REACH but there are others depending on cement type.

Cement clinker, REACH and Registration

Cement clinker is a substance under REACH because it conforms to the regulatory definition in Article 3.1 as:

"Substance: means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition".

CEMENT CLINKER is a SUBSTANCE under REACH

Substances generally have to be Registered under REACH when manufactured/imported in quantities above 1 tonne but cement clinker is in a special category. In accordance with Annex V of the Regulation, it is **officially exempted** from the general obligation to Register substances with the European Chemicals Agency (ECHA - the 'Agency').

CEMENT CLINKER is EXEMPTED FROM REGISTRATION under REACH

This exemption has been granted by the European Institutions on the grounds that the hazards/risks posed by cement/cement clinker are, after almost 200 years of world-wide manufacture, so well known that it does not need to be Registered with the Agency. There are, however, some health and safety (H&S) related obligations that do apply to both cement and cement clinker for the benefit of professional downstream users and the wider public.

Safety data sheets (SDS), classification & labelling of cement and cement clinker

SDS

Under REACH, there are requirements for communicating information along the supply chain and in the case of cement and cement clinker, these take the form of:

- H&S information communicated upstream (to suppliers) and downstream (to customers), that is 'professional users', by means of safety data sheets (SDS);
- classification and labelling information for cement and cement clinker and, in the specific case of cement clinker, the notification of the classification and labelling (C&L) information to the Agency in 2010.

SDS are provided by MPA Cement's Members free of charge to professional users in the official language of the country in which they are marketed at first delivery. In accordance with the requirements, these SDS will be updated if any new information becomes available that affects risk management measures (RMM) or hazards.

SDS Classification & labelling [incl. CLP Regulation (EC) No 1272/2008]

Classification

Classification is the process that determines the physico-chemical, human health and environmental hazards of a chemical. In the case of cement clinker as a substance, a self-classification as 'Xi irritant' has been carried out under the former Directive 67/548/EEC, in addition a more complex classification has been carried out under the current CLP regulation and SDS must carry the 'old and new' until 1 June 2015.

In the case of cement as a preparation/mixture, it must be classified in accordance with the CLP Regulation as of 1 June 2015, until then cement can continue to be classified, as 'Xi irritant' in accordance with Directive 1999/45/EC (Dangerous preparations Directive).

Labelling

Classification, as a legal requirement, is followed by labelling. In a labelling assessment, the identified hazards are converted into corresponding labelling elements (warning symbols, risk phrases and safety phrases). These labelling elements are then displayed on the label of the product with relevant information. In the case of clinker as a substance, it has been re-labelled under the current CLP regulation and SDS identify the new 'label elements'. In the case of cement as a preparation/mixture, SDS may continue to use the label elements earlier derived under Directive 1999/45/EC until 1 June 2015. Prior to that point it is at the manufacturer's discretion whether or not to label in accordance with the CLP.

It should be noted that all transitional periods end on 1 June 2015 when the CLP Regulation enters fully into force and will replace:

- the Dangerous Substances Directive (67/548/EEC), and:
- Dangerous Preparations Directive (1999/45/EC)

Does the cement manufacturer have to do anything else under REACH?

Yes. As a downstream user of other manufacturers' substances ('inputs'), the cement manufacturer has to check that each substance he uses has been appropriately pre-registered/registered, or if not registered, is generically or specifically exempted. This has been done for the full range of input substances, covering:

- waste-derived fuels;
- coal, coke, petcoke, crude oil, natural gas etc;
- raw feed minerals;
- chemical composition adjusters and process chemicals;
- natural gypsum and by-product gypsum;
- chromium (VI) reducing agents;
- secondary constituents such as fly ash, blastfurnace slag, silica fume and limestone.

In particular, in cases where an input substance has met the criteria for classification as 'dangerous' in accordance with Directive 67/548/EEC and is present in quantities above the threshold limit of 1% by mass, MPA Cement's Members:

- have identified the use of the substance to the supplier so that the supplier can recommend how to control exposure via appropriate risk management measures and conditions of use (within an 'exposure scenario');
- have taken receipt of SDS for appropriate input substances, and;
- will, when the position becomes clearer, extend its own relevant SDS by adding exposure scenarios for input substances classified as 'dangerous' that are used in the manufacture of cement and are present in quantities above the threshold limit of 1% by mass.

Where can I find out more?

For product-specific information, contact your supplier/manufacturer directly.

For generic information, and other Fact Sheets, contact: C McCague, Tel: +44(0)20 7963 8000, colum.mccague@mineralproducts.org

Further reading

[1] Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) establishing a European Chemicals Agency amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=oj:l:2006:396:0001:0849:en:pdf>

[2] Council Directive of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=DD:l:1967:31967L0548:EN:PDF>

[3] Directive of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative procedures of the Member States relating to the classification, packaging and labelling of dangerous preparations (1999/45/EC)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1999:200:0001:0001:EN:PDF>

Useful websites

http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm

<http://echa.europa.eu/>

<http://www.hse.gov.uk/reach/resources.htm>

<http://www.defra.gov.uk/environment/chemicals/reach/>

ANNEX

'Flue dust, Portland cement', REACH and Registration

What is 'flue dust, Portland cement'?

'Flue dust, Portland cement' is a substance under REACH. It takes this official EC name and its composition includes: bypass dust, cement kiln dust, clinker dust and flue dust. It is a by-product from the manufacture of cement clinker and is described in the REACH Registration dossier, as:

A complex combination of finely divided inorganic particles separated from the exit gases formed during the manufacture of Portland cement. The flue dust consists of uncalcined raw materials along with partially calcined materials. Some Portland cement clinker is usually included. The major constituents are calcium carbonate, clays, shales, quartz and sulfate salts. The following materials may also be present: dolomite, Ca(OH)₂, feldspars, CaSO₄, fly ash, KCl, iron oxides, K₂CO₃, CaF₂, K₂SO₄, CaO, Na₂SO₄ and glasses of SiO₂.

It has EINECS Number: 270-659-9, the CAS Number: 68475-76-3, is chemically inorganic and, in terms of composition, is a UVCB substance under REACH. A UVCB substance is one of unknown or variable composition, a complex reaction product or biological material.

Has this substance been Registered under REACH?

Yes, a generic/joint Registration was obtained in October 2010 leading to an official Registration Number: 01-2119486767-17-xxxx. From that point, all members ('legal entities') of the *Cimeurope* REACH Consortium, the body which organized generic Registration for flue dust, were eligible to submit their own Registration to ECHA for this substance. The generic Registration dossier included the technical dossier, chemical safety assessment, chemical safety report, exposure scenarios and guidance on safe use. In order to derive the information needed, flue dust was sampled from a range of cement plants and used in toxicological and eco-toxicological testing in specialist laboratories.

Safety Data Sheets and classification and labeling of 'flue dust, Portland cement'

REACH-compliant SDS are available from suppliers of flue dust. A main element is the classification under the CLP (EC No. 1272/2008) together with the classification under Directive 67/548/ECC, until 31 May 2015. SDS clearly identify flue dust's alkaline nature, its potential to induce allergic contact dermatitis due to presence of soluble hexavalent chromium salts, to other specific hazards and the labeling requirements.

MPA Cement

Mineral Products Association

Gillingham House

38 - 44 Gillingham Street

London SW1V 1HU

Tel +44(0)20 7963 8000

Fax +44(0)20 7963 8001

<http://cement.mineralproducts.org>

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