



National Standards Authority of Ireland
Údarás um Chaighdeáin Náisiúnta na hÉireann

STANDARD RECOMMENDATION

S.R. CEN/TR 15678:2008

ICS 91.100.30

**CONCRETE - RELEASE OF REGULATED
DANGEROUS SUBSTANCES INTO SOIL,
GROUNDWATER AND SURFACE WATER -
TEST METHOD FOR NEW OR UNAPPROVED
CONSTITUENTS OF CONCRETE AND FOR
PRODUCTION CONCRETES**

National Standards
Authority of Ireland
Northwood, Dublin 9
Ireland

Tel: +353 1 807 3800
Fax: +353 1 807 3838
<http://www.nsai.ie>

Sales

<http://www.standards.ie>

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ICS 91.100.30

English Version

**Concrete - Release of regulated dangerous substances into soil,
groundwater and surface water - Test method for new or
unapproved constituents of concrete and for production
concretes**

Béton - Relargage de substances dangereuses
réglementées dans les sols, les eaux souterraines et les
eaux de surface - Méthode d'essai des constituants du
béton, nouveaux ou non-approuvés, et des formules de
béton

Beton - Freisetzung regulierter gefährlicher Stoffe in den
Boden, das Grundwasser und das Oberflächenwasser -
Testmethode für neue oder noch nicht zugelassene
Bestandteile von Beton und für Betone

This Technical Report was approved by CEN on 1 October 2007. It has been drawn up by the Technical Committee CEN/TC 51.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (CEN/TR 15678:2008) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

It describes test methods, that when completed, will produce eluates for the assessment of inorganic and organic substances potentially released from either the constituents of concretes (tested within hardened reference concretes) or from production concretes (or test pieces representative of production concretes) whether presented in the pre-hardened/precast state, fresh wet state or pre-packaged.

This document is currently incomplete. This document does not include the extraction procedure necessary to produce the eluates because extraction procedures will be developed within a programme of horizontal test method standardisation under a mandate given to CEN by the European Commission and the European Free Trade Association in order to support essential requirements of EU Directives. The necessary programme of work is being undertaken in CEN/TC 351 Construction products – Assessment of release of dangerous substances.

Annex A, which is normative, describes the testing for release of (regulated) dangerous substances from pre-hardened concrete products formed in the factory.

Annex B, which is informative, describes the testing for release of (regulated) dangerous substances from hardened test pieces representative of fresh wet concretes or pre-packaged concretes.

Annex C, which is informative, describes the principles of laboratory concrete mix design to be applied for the assessment of new/unapproved constituents of concrete.

Introduction

Regulatory background

In March 2005 the Commission Services of the European Union published mandate M/366 "Development of horizontal standardised assessment methods for harmonised approaches relating to (regulated) dangerous substances under the Construction Products Directive (CPD)". M/366 deals with the subject of emissions or release of (regulated) dangerous substances from construction products, as defined in the CPD, which may have harmful impacts on human health and the environment in relation to essential requirement No. 3 (ER 3), Health, hygiene and the environment, of the CPD. The mandate is intended to provide harmonised European measurement/test method standards that are needed in order to remove technical barriers to trade and bring about the "approximation" of laws, regulations and administrative provisions of the Member States. The measurement/test standards should provide results that can be expressed in performance terms and be suitable for addressing the emission or release of (regulated) dangerous substances within provisions in harmonised European Technical Specifications (ETS).

For ease of assigning the appropriate environments or exposure scenarios to individual products, the environment is notionally divided into two distinct environmental compartments: indoor air and soil, groundwater and surface water. In this context, it is important to recognize that essential requirement No. 3 only covers the potential effects of construction on the health of occupants and neighbours of construction works and the environment immediately surrounding the works. In life-cycle terms, it covers only the service life of a product and, therefore, does not cover the construction phase or end-of-use/disposal.

These distinct environmental compartments are necessarily associated with exposure-specific test methodologies, the emission of volatile, semi-volatile or other substances into indoor air being physico-chemically, kinetically and thermodynamically distinct from release into aqueous environments. The test methods described herein address only the potential release of substances into soil, groundwater and surface water, forms of aqueous exposure which, given the focus on service-life, could be described as the natural environment. Assessment of emission of substances into indoor air may or may not be relevant for the cementitious products identified in this CEN TR. However, if it emerges that the regulatory regime requires that this aspect of performance be addressed, then the European cement and concrete sector, via its standardization committees, will involve itself in appropriate work items.

At the time of drafting this CEN TR, spring 2007, there are a number of uncertainties about the regulatory regime that will eventually govern the assessment of emission/release of dangerous substances from construction products within Europe. In particular, it is unclear which products and/or materials will be subject to any part of the emerging regulatory regime. In the case of cement-containing products or materials such as concrete there is additional uncertainty because, with the exception of mixing water, all the constituents of concrete are construction products mandated in their own right under the Construction Products Directive (CPD). However, the constituents of concrete do not come into direct contact with either soil, groundwater or surface water and this could be taken to infer that they should not be subject to any regulatory provisions except that some (i.e. those not already standardised under national standards or European Technical Specifications) are subject to assessment within some Member States' existing environmental regulations. Furthermore, some types of concrete, for example fresh wet concretes, have not been mandated as construction products under the CPD and therefore might be considered to be outside any European regulatory regime based upon it. The complicating factor for these materials, though, is that they are subject to some EU Member States' existing regulations and may, in consequence, need to be assessed under a European regulatory regime.

It is also unclear whether the assessment and classification framework under development for use in the European regulatory regime will eventually be adopted. Currently, however, there are indications that the framework will include three distinct elements:

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