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Guidelines for a procedure to support the European standardization of cements

Directrices générales pour l'obtention du soutien de la standardisation européenne des ciments

Leitlinien für ein Verfahren zur Unterstützung der europäischen Normung von Zement

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European foreword

This document (CEN/TR 16912:2016) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

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Introduction

The willingness to improve construction products leads to the optimization of existing cements as well as to the development of new binders. Improvement may concern in particular the performance of the products, the reduction of production costs or the lowering of the environmental impact. With regards to the environment, a fundamental policy objective of the European Union is to encourage/incentivise a reduction in CO_2 emissions within a framework of sustainable development. Cement manufacturers are reducing their specific CO_2 emissions e.g. by the production of cements with a lower clinker content. At the same time, the expectations of contractors, ready-mixed concrete producers and precast concrete manufacturers should also be met by maintaining high levels of performance in cements and in the durability of concrete.

Existing cement standards, in particular EN 197-1, allow manufacturers to select cement compositions with low clinker content, i.e. CEM III/B and C, CEM IV/B, CEM V. However, these cements are often used for their good resistance to chemically aggressive environments but do not necessarily achieve, in concrete, the early age strength required where formwork is to be removed at less than 24 h.

Maintaining performance, in particular early strength and durability related characteristics, while reducing specific CO_2 emissions by the development of new types of cement is expected to be one of the main challenges of the coming years.

When considering such new cements intended to be used to produce structural concrete the question arises whether these products should be covered by European Standards or by European Technical Assessments (ETAs). For an answer, the various EU policy documents referenced in the bibliography should be considered, in particular the "Council Conclusions on standardization and innovation (Brussels, 25 September 2008)" [7] which highlight "the essential contribution which standardization can make towards developing innovation and competitiveness, by facilitating access to markets, enabling interoperability between new and existing products, services and processes, enhancing protection of users, giving consumers confidence in innovations and disseminating research results". CEN and CENELEC have responded to all the EU initiatives and adopted, in October 2008, an integrated approach titled "Standardization Innovation and Research (STAIR)". From this common approach of the EU and CEN, it is clear that European standardization may cover innovation.

An application to standardize a new cement should be submitted to the Technical Committee CEN/TC 51 based on a dossier introduced by the applicant who may, according to CEN/CENELEC Internal Regulations – Part 2:2015 [14], be a national standardization body (CEN Member), a CEN Technical Committee, the EU or EFTA Secretariat, an international organization or an European trade, professional, technical or scientific organization. It is essential that all applicants are aware in advance of the information they should provide to CEN/TC 51 in the dossier in order to demonstrate the fitness for intended use of the new cement. For this purpose, CEN/TC 51 has prepared this CEN Technical Report.

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1 Scope

This CEN Technical Report provides guidance for the procedure to be followed in order to support the European standardization of new cements that are not covered by an existing European Standard.

The term "new cement" has been used in this document to describe its primary focus; however, this same guideline procedure may be used for other products to be standardized by CEN/TC 51.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 197-2, *Cement — Part 2: Conformity evaluation*

EN 206, *Concrete — Specification, performance, production and conformity*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 197-1, EN 197-2 and EN 206 apply.

4 Procedure of application and standardization of a new cement

4.1 General information on standardization processes

For general information on the process of European product standardization, see http://boss.cen.eu/Pages/default.aspx.

4.2 Classification of new cements

The procedure to be followed in order to support the European standardization of a new cement depends on the type of the cement, i.e. on the question whether the new cement is similar to cements that already have been standardized by CEN/TC 51. Following this principle, new cements can be classified in the following three categories:

1) Category 1: cement from a new combination of traditional and well-tried constituents;

2) Category 2: cement basically corresponding to cement types defined in existing standards but containing one or more new constituents;

3) Category 3: cement differing substantially from those types defined in existing standards, e.g. produced with a new kind of clinker or based on different physicochemical phases/principles.

Cement of category 2 should be similar to common cements, i.e. its hydration should be based on the formation of calcium silicate hydrates (CSH).

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