

SLOVENSKI STANDARD

SIST EN 197-1:2001/A1:2004

01-julij-2004

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Cement - Part 1: Composition, specifications and conformity criteria for common cements

Zement - Teil 1: Zusammensetzung, Anforderungen, und Konformitätskriterien von Normalzement

Ciment - Partie 1 : Composition, spécifications et critères de conformité de ciments courants

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Ta slovenski standard je istoveten z: EN 197-1:2000/A1:2004

ICS:

91.100.10 Cement. Mavec. Apno. Malta Cement. Gypsum. Lime.
Mortar

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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 197-1:2000/A1

April 2004

ICS 91.100.10

English version

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

Ciment - Partie 1 : Composition, spécifications et critères
de conformité de ciments courants

Zement - Teil 1: Zusammensetzung, Anforderungen, und
Konformitätskriterien von Normalzement

This amendment A1 modifies the European Standard EN 197-1:2000; it was approved by CEN on 16 January 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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https://standards.iteh.ai/catalog/standards/sist/77e11777-967b-4fea-9ddf-
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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

EN 197-1:2000/A1:2004 (E)**Foreword**

This document EN (197-1:2000/A1:2004) has been prepared by Technical Committee CEN/TC 51 “Cement and building lime”, the secretariat of which is held by IBN.

This Amendment to the European Standard EN 197-1:2000 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2004, and conflicting national standards shall be withdrawn at the latest by October 2004.

This Amendment extends the European Standard EN 197-1:2000 to cover the optional property of low heat of hydration for common cement. The technical content of EN 197-1:2000 has not been changed.

Very low heat special cements are dealt with in EN 14216.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directives, see informative annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

Add (modification is underlined):

4th paragraph:

The amendment A1:2003 contained the low heat common cements.

11th paragraph:

In view of the large number of different cements involved, it was considered necessary to separate the “common cements” from special cements i.e. those with additional or special properties. The purpose of EN 197-1 is to specify the composition, requirements and conformity criteria for the common cements. This includes all common cements and common cements with low heat of hydration which are described by the respective national standardisation bodies within CEN as traditional and well tried. Types based on composition and a classification based on strength have been introduced in order to take into account the different cements included. The hardening of these cements mainly depends on the hydration of calcium silicates. Common cements with special properties as well as cements with different hardening processes will be included in further parts of this European Standard or in further European Standards respectively.

12th paragraph:

The requirements in EN 197-1 are based on the results of tests on cement in accordance with EN 196-1, -2, -3, -5, -6, -7, -8, -9 and -21. The scheme for the evaluation of conformity of common cements and common cements with low heat of hydration is specified in EN 197-2.

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Introduction

Add (modification is underlined):

SIST EN 197-1:2001/A1:2004

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It is recognised that different cements have different properties and performance. Those performance tests now available (i.e. setting time, strength, soundness and heat of hydration), have been included in EN 197-1. In addition, work is being carried out by CEN/TC 51 to identify any additional tests which are needed to specify further performance characteristics of cement. Until further performance tests are available it is necessary that the choice of cement, especially the type and/or strength class in relation to the requirements for durability depending on exposure class and type of construction in which it is incorporated, follows the appropriate standards and/or regulations for concrete or mortar valid in the place of use.

1 Scope

Add (modification is underlined):

EN 197-1 defines and gives the specifications of 27 distinct common cement products and their constituents. The definition of each cement includes the proportions in which the constituents are to be combined to produce these distinct products in a range of six strength classes. The definition also includes requirements the constituents have to meet and the mechanical, physical and chemical including, where appropriate, heat of hydration requirements of the 27 products and strength classes. EN 197-1 also states the conformity criteria and the related rules. Necessary durability requirements are also given.

NOTE 1 In addition to the specified requirements, an exchange of additional information between the cement manufacturer and user may be helpful. The procedures for such an exchange are not within the scope of EN 197-1 but should be dealt with in accordance with national standards or regulations or may be agreed between the parties concerned.

NOTE 2 The word “cement” in EN 197-1 is used to refer only to common cements unless otherwise specified.

EN 197-1:2000/A1:2004 (E)**2 Normative references***Add:*EN 196-8, *Methods of testing cement — Part 8: Heat of hydration — Solution method.*EN 196-9, *Methods of testing cement — Part 9: Heat of hydration — Semi-adiabatic method.*EN 13639, *Determination of total organic carbon in limestone.**Delete:*prEN 13639:1999, *Determination of total organic carbon content in limestone.***3 Definitions***Add:***3.15****heat of hydration**

quantity of heat developed by the hydration of a cement within a given period of time

3.16**low heat common cement**

common cement with a limited heat of hydration

iTech STANDARD PREVIEW
(standards.itech.ai)**7 Mechanical, physical, chemical and durability requirements***Add:*<https://standards.itech.ai/catalog/standards/sist/77e11777-967b-4fea-9ddf-86e7143b1b4c/sist-en-197-1-2001-a1-2004>**7.2.3 Heat of hydration**

The heat of hydration of low heat common cements shall not exceed the characteristic value of 270 J/g, determined in accordance with either EN 196-8 at 7 days or in accordance with EN 196-9 at 41 h.

Low heat common cements are indicated by LH.

NOTE 1 A pre-normative research project has demonstrated the equivalence of test results for EN 196-8 at 7 days and EN 196-9 at 41 h. Nevertheless, in case of dispute between laboratories, the method to be applied should be agreed.

NOTE 2 Cement with a higher hydration heat value is appropriate for some applications. It is necessary that this value should be agreed upon between producer and user, and that this cement should not be identified as low heat cement (LH).

8 Standard designation*Add (1st paragraph):*

Low heat common cement shall be identified additionally by the notation LH.

Add:

And for low heat common cements:

EXAMPLE 5

Blastfurnace cement, conforming to EN 197-1, containing between 66 % and 80 % by mass of granulated blastfurnace slag (S), of strength class 32,5 with an ordinary early strength and a low heat of hydration is identified by:

Blastfurnace cement EN 197-1 – CEM III/B 32,5 N – LH.

9 Conformity criteria

Table 4 — Properties, test methods and minimum testing frequencies for the autocontrol testing by the manufacturer, and the statistical assessment procedure

Add:

Property	Cements to be tested	Test method ^{a b}	Autocontrol testing			
			Minimum testing frequency		Statistical assessment procedure	
			Routine situation	Initial period for a new type of cement	Inspection by Variables ^e	Attributes
1	2	3	4	5	6	7
heat of hydration	Low heat common cements	EN 196-8 or EN 196-9	1/month	1/week		x^f

Table 8 — Limit values for single results (standards.iteh.ai)

Add:

Property		Limit values for single results					
		Strength class					
		32,5N	32,5R	42,5N	42,5R	52,5N	52,5R
heat of hydration (J/g) upper limit value	LH	300					

Annex A (informative)

Add (modification is underlined):

Water-soluble hexavalent chromium

Some CEN member countries have regulations for the content of water-soluble hexavalent chromium.

Alteration of these national regulations is, for the time being, outside the competence of CEN/CENELEC members. In these countries these regulations are valid in addition to the relevant requirements of this European Standard until they have been removed.

For this European Standard the following national regulations have been applied according to EC-Directive 90/531 by Denmark, Finland, Germany, Iceland, Norway and Sweden:

Denmark:	Arbejdstilsynets bekendtgørelse nr 661 af 28. November 1983 om vandopløseligt chromat i cement.
Finland:	Decision of the Council of State concerning the content of chromate in cement for concrete and masonry cement, No. 593, July 24, 1986.
Germany:	Gefahrstoffverordnung (GefStoffV) together with TRGS 613 "Ersatzstoffe, Ersatzverfahren und Verwendungsbeschränkungen für chromathaltige Zemente und chromathaltige zementhaltige Zubereitungen, April 1993 (BArbBI Nr. 4.1993)".
Iceland:	Reglur nr. 330/1989 um krom í sementi, Order No 330 of 19 June 1989.
Norway:	Directorate of Labour Inspection: Regulations relating to the Working Environment, laid down on 23 October 1987.
Sweden:	Kemikalieinspektionens föreskrifter om kemiska produkter och biotekniska organismer, KIFS 1998:8, 9 kapitlet §§ 10-13, Kemikalieinspektionens allmänna råd till föreskrifterna om krom i cement, 1989:1.

ZA.1 Clauses of EN 197-1 addressing the provisions of EU Construction Products Directive

Add (modification underlined):

3rd paragraph

Compliance with these clauses confers a presumption of fitness of common cements and low heat common cements covered by EN 197-1 for the intended use(s) under consideration in table ZA.2.

Table ZA.A.1 — Harmonised clauses

Add:

Construction Products: 27 different common cement and/or low heat common cement products (see Table 1)				
Intended use(s): Preparation of concrete, mortar, grout and other mixes for construction and for the manufacture of construction products (see notes in this table)				
Requirements/performance characteristics	Harmonised clauses ^a in EN 197-1		CPD Article 3.2 level(s) and/or class(es)	Notes
	Clauses ^a	Outline of the requirements		
Heat of hydration	7.2.3 9	Requirements expressed in terms of upper limits. ^b	None	Only for low heat common cements