BRITISH STANDARD

BS EN
13880-12:2003

Hot applied joint sealants —

Part 12: Test method for the manufacture of concrete test blocks for bond testing (recipe methods)

The European Standard EN 13880-12:2003 has the status of a British Standard

ICS 93.080.20

National foreword

This British Standard is the official English language version of EN 13880-12:2003.

The UK participation in its preparation was entrusted by Technical Committee B/510, Road materials, to Subcommittee B/510/3, Materials for concrete roads, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, was published under the authority of the Standards Policy and Strategy Committee on 28 August 2003

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 8, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 42534 7

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13880-12

August 2003

ICS 93.080.20

English version

Hot applied joint sealants - Part 12: Test method for the manufacture of concrete test blocks for bond testing (recipe methods)

Produits de scellement de joints appliqués à chaud - Partie 12: Méthode d'essai pour la fabrication de blocs en béton pour l'essai d'adhérence (recette)

Heiß verarbeitbare Fugenmassen - Teil 12: Prüfverfahren zur Herstellung von Beton-Grundkörpern für die Bestimmung des Dehn- und Haftvermögens

This European Standard was approved by CEN on 2 May 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard 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 Management Centre has the same status as the official versions.

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

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

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

Ref. No. EN 13880-12:2003 E

Contents

page

Foreword

This document EN 13880-12:2003 has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2004, and conflicting national standards shall be withdrawn at the latest by March 2005.

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

This European Standard is one of a series of standards as listed below:

EN 13880-1, *Hot applied joint sealants — Part 1: Test method for the determination of density at 25 °C.*

EN 13880-2, *Hot applied joint sealants — Part 2: Test method for the determination of cone penetration at 25 °C.*

EN 13880-3, *Hot applied joint sealants — Part 3: Test method for the determination of penetration and recovery (resilience).*

EN 13880-4, *Hot applied joint selants — Part 4: Test method for the determination of heat resistance — Change in penetration value.*

EN 13880-5, *Hot applied joint sealants — Part 5: Test method for the determination of flow resistance.*

prEN 13880-6, *Hot applied joint sealants — Part 6: Test method for the preparation of samples for testing.*

EN 13880-7, *Hot applied joint sealants — Part 7: Function testing of joint sealants.*

EN 13880-8, *Hot applied joint sealants — Part 8: Test method for the determination of the change in weight of fuel resistance joint sealants after fuel immersion.*

EN 13880-9, *Hot applied joint sealants — Part 9: Test method for the determination of compatibility with asphalt pavements.*

EN 13880-10, *Hot applied joint sealants — Part 10: Test method for the determination of adhesion and cohesion following continuous extension and compression.*

EN 13880-11, *Hot applied joint sealants — Part 11: Test method for the preparation of asphalt test blocks used in the function test and for the determination of compatibility with asphalt pavements.*

EN 13880-12, *Hot applied joint sealants — Part 12: Test method for the manufacture of concrete test blocks for bond testing (recipe methods).*

EN 13880-13, *Hot applied joint sealants — Part 13: Test method for the determination of the discontinuous extension (adherence test).*

1 Scope

This European Standard describes a method for the manufacture of concrete test blocks for joint sealant bond testing.

The requirements of this European Standard are applicable to concrete test blocks with a maximum aggregate size of 16 mm to 20 mm or with a maximum aggregate size of 4,0 mm.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 933-2:1995, *Tests for geometrical properties of aggregates — Part 2: Determination of particle size distribution; test sieves, nominal size of apertures.*

EN 934-2, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labellling.*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete.*

EN 13880-7, *Hot applied joint sealants — Part 7: Function testing of joint sealants.*

EN 13880-10, *Hot applied joint sealants — Part 10: Test method for the determination of adhesion and cohesion following continuous extension and compression.*

EN 13880-13, *Hot applied joint sealants — Part 13: Test method for the determination of the discontinuous extension (adherence test).*

EN 14187-1, *Cold applied joint sealants — Part 1: Test methods for the determination of the rate of cure.*

EN 14187-6, *Cold applied joint sealants — Part 6: Test method for the determination of the adhesion/cohesion properties after immersion in chemical liquids.*

EN 14187-7, *Cold applied joint sealants — Part 7: Test method for the determination of the resistance to flame.*

ISO 4012, *Concrete — Determination of compressive strength of test specimens.*

3 Principle

Reference concrete test blocks to be of uniform consistency to enable the adhesive and cohesive properties of the joint sealant test specimens to be measured.

4 Apparatus

4.1 Concrete or mortar mixer.

4.2 Metal moulds, stout enough to resist distortion and of a suitable size to produce concrete test blocks with dimensions in accordance with the test method standards.

4.3 Vibrating table or vibration rod suitable for the compaction of the concrete in the moulds according to EN 934-2.

4.4 Diamond tipped concrete saw.

4.5 Oven, capable of maintaining a temperature of (105 ± 5) °C.

4.6 Cabinet, capable of maintaining a relative humidity of 95 % and a temperature of (23 ± 5) °C.

4.7 Desiccator.

4.8 Steel trowels.

5 Materials

5.1 Coarse aggregate

Coarse aggregate silica-based with low water absorption (less than 2 % by mass). The aggregate grading, measured in accordance with EN 933-2 shall conform to the maximum size of 16/20 mm and shall have an appropriate particle size distribution in order to obtain the mechanical properties.

The coarse aggregate shall be used to produce normal concrete test blocks.

5.2 Fine aggregate

Fine aggregate silica-based with low water absorption (less than 2 % by mass). The aggregate grading, measured in accordance with EN 933-2 shall conform to the maximum size of 4,0 mm and shall have a particle size distribution in accordance with Table 1.

Table 1 — Grading of silica and aggregate mix, 0/4 mm

	Content	
	% of mass	kg/m^3
Fine aggregates, 0/4 mm		
0,125/0,5	30	460
0,5/1,0	17	410
1,0/2,0	25	280
2,0/4,0	28	500
Total	100	1 650

The fine aggregate shall be used to produce concrete test blocks with fine aggregate.

5.3 Cement

Portland type cement CEM I 42, 5R conforming to EN 197-1.

5.4 Mixing water

Mixing water, conforming to EN 1008.

5.5 Admixtures

Admixtures, conforming to EN 934-2.

6 Concrete test block mixes

6.1 General

This European Standard describes two types of concrete test block recipe mixes, defined by the maximum aggregate size and mix proportions.

The use of admixtures conforming to EN 934-2 are permitted to give a workable concrete mix.

6.2 Concrete test blocks with coarse aggregate

Concrete test blocks with coarse aggregate shall be used in EN 13880-7 and EN 13880-10.

The mix shall be proportioned as follows:

— aggregates: 6 parts (m/m);

— cement: 1 part (m/m);

— water: 0,6 part (m/m).

The 28 days mean compressive strength (cube) shall be measured in accordance with ISO 4012.

6.3 Concrete test blocks with fine aggregate

Concrete test blocks with fine aggregate shall be used in EN 13880-13 and in EN 14187-1, -6, -7.

The mix shall be in accordance with Table 2:

Table 2 — Concrete mix composition

	Content	
	% of mass	kg/m^3
Cement content	20,8	500
Water	10,4	250
Water/cement-ratio	0,5	—
Fine aggregates, 0/4 mm	68,0	1 650
Total	100,0	2 400

The 28 days mean compressive strength (cube) shall be measured in accordance with ISO 4012.

7 Manufacture of concrete test blocks

7.1 General

Mix the concrete by machine, or by hand if not more than three test blocks are required from the batch.

If mixed by machine, place the aggregate and cement into the mixer first, followed by the water and mix the components for 3 min.

If mixed by hand, first mix the cement and aggregates on a non-porous surface for 1 min or until the mixture is uniform. Add the water and mix the contents for a further 3 min using two trowels.

7.2 Casting

Cast the concrete test blocks within 30 min of mixing the concrete. Transfer the mixed concrete to the moulds in approximately two equal quantities placed in layers and compact each layer by vibration on a suitable vibrating table in such a manner that full compaction is obtained without the occurrence of segregation or excessive laitance.

Alternatively, compact layers by hand tamping. Smooth the top of the concrete with a trowel so that the surface is levelled flush with the sides of the mould.

7.3 Curing the concrete blocks

The concrete test blocks shall be cured at (23 ± 5) °C for 24 h covered with polyethylene film or stored at a relative humidity of at least 95 %. The concrete test blocks shall be removed from the moulds and stored in water at (23 ± 5) °C for 27 days.

7.4 Cutting the concrete test blocks

Cut the concrete blocks to the dimensions required, by means of a diamond tipped concrete saw, discarding any block that becomes damaged by ravelling of the edge during sawing.

The dimensions of the concrete test blocks shall be in accordance with the test method standards.

7.5 Storage of the concrete test blocks

The concrete test blocks shall be stored in lime saturated water until use.

8 Conditioning of the concrete test blocks

Take the concrete test blocks from the limed water, wash them and dry in an oven at a temperature of (105 ± 5) °C for 48 h.

Remove the concrete test blocks from the oven and place in a desiccator over anhydrous calcium chloride to cool for a minimum of 4 h. Determine and record the mass then store at standard laboratory conditions of (23 ± 2) °C and (50 ± 5) % relative humidity until ready for testing.

When moisture content is required for use, submerge the concrete test blocks in water maintained at a temperature of (23 ± 2) °C for 24 h. Remove from the water, wipe the surfaces dry with a clean absorbent cloth and allow the concrete test blocks to stand for (1,00 ± 0,25) h in standard laboratory conditions. Weigh the blocks and calculate their moisture content. Reject any blocks which have moisture contents outside the limits of (5,0 ± 0,5) %.

9 Test report

The test report shall confirm that the test was carried out in accordance with this European Standard and shall include the following information for reference concrete test blocks made from one batch:

a) mix composition;

b) date and time of production;

c) origin and size distribution of the aggregates;

d) curing and storage period;

e) compressive strength – average and minimum value;

f) the name of the preparator and laboratory.

Bibliography

[1] EN 206-1, *Concrete – Part 1: Specification, performance, production and conformity.*

blank

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL