



SLOVENSKI STANDARD

SIST EN 13880-13:2018

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Nadomešča:

SIST EN 13880-13:2004

Tesnilne mase za stike, ki se vgrajujejo po vročem postopku - 13. del: Preskusna metoda za ugotavljanje prekinjenega raztezka (preskušanje adherence)

Hot applied joint sealants - Part 13: Test method for the determination of the discontinuous extension (adherence test)

Heiß verarbeitbare Fugenmassen - Teil 13: Prüfverfahren zur Bestimmung der diskontinuierlichen Dehnung (Prüfung der Haftfestigkeit)

Produits de scellement de joints appliqués à chaud - Partie 13: Méthode d'essai pour la détermination de la traction discontinue (essai d'adhérence)

Ta slovenski standard je istoveten z: EN 13880-13:2018

ICS:

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| 91.100.50 | Veziva. Tesnilni materiali | Binders. Sealing materials |
| 93.080.20 | Materiali za gradnjo cest | Road construction materials |

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EUROPEAN STANDARD

EN 13880-13

NORME EUROPÉENNE

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June 2018

ICS 93.080.20

Supersedes EN 13880-13:2003

English Version

Hot applied joint sealants - Part 13: Test method for the determination of the discontinuous extension (adherence test)

Produits de scellement de joints appliqués à chaud -
Partie 13: Méthode d'essai pour la détermination de la
traction discontinue (essai d'adhérence)

Heiß verarbeitbare Fugenmassen - Teil 13:
Prüfverfahren zur Bestimmung der diskontinuierlichen
Dehnung (Prüfung der Haftfestigkeit)

This European Standard was approved by CEN on 16 March 2018.

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 CEN-CENELEC Management Centre or to any CEN member.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 13880-13:2018) 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 December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13880-13:2003.

A list of all parts in the EN 13880 series, published under the general title "Hot applied joint sealants", can be found on the CEN website.

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

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EN 13880-13:2018 (E)**1 Scope**

This document describes a method for determining the extensibility and the adhesion to concrete of hot applied sealant-systems with or without priming simulating the moving of concrete pavement slabs during cooling conditions in wintertime.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13880-6, *Hot applied joint sealants — Part 6: Method for the preparation of samples for testing*

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

EN 14188-1:2004, *Joint fillers and sealants — Part 1: Specifications for hot applied sealants*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14188-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

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**3.1
adhesion failures**

surface area of the concrete test blocks from which the sealant is completely separated is to be evaluated for adhesive failure, calculated to the nearest 10 mm²

**3.2
cohesion failures**

sum of the superficial areas of any ruptures on the faces of the material to the nearest 5 mm² and any cavity exceeding 3 mm in depth, measured normal to the face of the test specimen

4 Principle

The purpose of this test is to establish whether sealants will remain cohesive and bond to concrete when subjected to discontinuous accelerated extension steps in accordance with EN 14188-1.

5 Apparatus

5.1 Tensile test rig

The tensile test rig consists of:

- an apparatus which allows the test specimen to be inserted into clamps, conveniently and without disturbing the specimen before, during or after removal. The test specimen shall be fastened in the clamps so that any separate movement is avoided.

If the apparatus is capable of testing a number of test specimens simultaneously, it shall not be significantly affected by the premature failure of one or more test specimens;

- an appliance equipped with an electric motor capable of extending the test specimen in the tensile apparatus every (360 ± 20) s $(0,10 \pm 0,01)$ mm at a rate of $(12 \pm 0,5)$ mm/min. The accuracy of the test rig shall be class 2A according to ISO 5893.

5.2 Cooling chamber

The cooling chamber is suitable for conditioning the test specimens at a temperature of (-20 ± 1) °C or a temperature of (-25 ± 1) °C in accordance with EN 14188-1.

5.3 Depth gauge

A device to measure depth of defects to the nearest 1 mm.

6 Preparation and conditioning of test specimens

6.1 Prepare the test sample according to EN 13880-6

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6.2 Concrete test blocks in accordance with EN 13880-12 shall be used. The dimensions of the test blocks are (250 ± 40) mm length, (60 ± 20) mm width and $(30,0 \pm 0,5)$ mm height. The concrete test blocks shall have a moisture content within the limits of $(5,0 \pm 0,5)$ %. The concrete surfaces shall be clean and free of dust.

6.3 Use a suitable mould to place two test blocks exactly opposite each other for a joint width of $(15,0 \pm 0,5)$ mm and joint length of $(200,0 \pm 0,5)$ mm.

6.4 If a primer is used, apply it to the sawn test faces of the test blocks in accordance with the manufacturer's instructions.

6.5 Place a top-mask on the mould so that the joint can be overfilled when the test sample is poured into it.

6.6 Any adhering to the borders of the joint of the test sample shall be avoided.

6.7 Allow the test specimens to cool under laboratory temperature for 2 h, after which remove the excess test sample using a heated knife so that the test specimens are flush with the surface of the test blocks.

6.8 For each test, two test specimens shall be prepared.

EN 13880-13:2018 (E)**7 Storage of test specimens****7.1 Air conditioned test specimens**

The test specimens shall be stored at room temperature for 24 h to 72 h.

7.2 Water immersed test specimens

Store the immersed test specimens completely covered by deionized water at room temperature for 14 d in a suitable container. Afterwards the test specimens shall be dried at a room temperature for 3 h to 5 h.

8 Procedure

Fix the test specimens in the clamps of the extension apparatus, positioned in the cooling chamber and cool them for at least 6 h at $(-10 \pm 1) ^\circ\text{C}$ or $(-20 \pm 1) ^\circ\text{C}$ or $(-25 \pm 1) ^\circ\text{C}$. The temperature to be chosen depends on the sealant which is tested. Test temperatures for the different sealants are defined in EN 14188-1:2004, Table 2.

Extend the joint in steps of $(0,10 \pm 0,01)$ mm at an extension rate of $(12 \pm 0,5)$ mm/min, every (360 ± 20) s up to the total extension of 5 mm. Record the maximum force during this discontinuous extension.

After reaching the total extension, hold the position of the test specimen. Record the stress $[\text{N}/\text{mm}^2]$ after $1 \text{ h} \pm 1 \text{ min}$. This shall be recorded as the stress after one hour, stress (1 h).

If the result final force is required, continue to record the loss of force at intervals of 30 min until a value is reached after which any further decrease will be less than 5%. This shall be recorded as the final force.

The temperature of the air around the specimens, the force and the extension shall be registered during the entire test procedure. The extension can be measured outside the chamber as long as the accuracy requirement is fulfilled for the sealant specimen. The force shall be measured outside the chamber.

After the discontinuous extension test, all sides of the joint shall be examined for adhesive and cohesive failures in accordance with EN 14188-1. Measure the depth of defects to the nearest 1 mm.

9 Calculation and expression of results**9.1 Stresses**

The maximum stress shall be calculated to the nearest $0,01 \text{ N}/\text{mm}^2$ by dividing the maximum force (N) by the joint area (usually $200 \text{ mm} \times 30 \text{ mm} = 6\,000 \text{ mm}^2$).

The stress (1 h) shall be calculated to the nearest $0,01 \text{ N}/\text{mm}^2$ by dividing the force (N) after one hour by the joint area (usually $200 \text{ mm} \times 30 \text{ mm} = 6\,000 \text{ mm}^2$).

If the result final force is required, it shall be calculated to the nearest $0,01 \text{ N}/\text{mm}^2$ by dividing the recorded force (N) by the joint area (usually $200 \text{ mm} \times 30 \text{ mm} = 6\,000 \text{ mm}^2$).

9.2 Failures

Report adhesive failures, where cavity exceeds 3 mm in depth.

Report cohesive failures, where cavity exceeds 3 mm in depth.

NOTE Optionally, the width of the defects in millimetres can be reported or a photo can be added to the report.