
Hladno nanosljive tesnilne mase za stike - Preskusne metode - 9. del: Preskušanje funkcionalnosti tesnilnih mas za stike

Cold applied joint sealants - Test methods - Part 9: Function testing of joint sealants

Kalt verarbeitbare Fugenmassen - Prüfverfahren - Teil 9: Funktionsprüfung von Fugenmassen

Produits de scellement de joint appliqués à froid - Méthodes d'essais - Partie 9 : Test fonctionnel sur scellement de joints

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EUROPEAN STANDARD
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prEN 14187-9

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Will supersede EN 14187-9:2006

English Version

**Cold applied joint sealants - Test methods - Part 9: Function
testing of joint sealants**

Produits de scellement de joint appliqués à froid - Méthodes
d'essais - Partie 9 : Test fonctionnel sur scellement de joints

Kalt verarbeitbare Fugenmassen - Prüfverfahren - Teil 9:
Funktionsprüfung von Fugenmassen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 227.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

[http://standards.cen.org/info/074956de2548/osist-pren-14187-9-2014](#)

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

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Foreword

This document (prEN 14187-9:2014) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14187-9:2006.

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

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

EN 14187-2, *Cold applied joint sealants — Test methods — Part 2: Determination of tack free time.*

EN 14187-3, *Cold applied joint sealants — Test methods — Part 3: Determination of self-levelling properties.*

EN 14187-4, *Cold applied joint sealants — Test methods — Part 4: Determination of the change in mass and volume after immersion in test fuels and liquid chemicals.*

EN 14187-5, *Cold applied joint sealants — Test methods — Part 5: Determination of the resistance to hydrolysis.*

EN 14187-6, *Cold applied joint sealants — Test methods — Part 6: Determination of the adhesion/cohesion properties after immersion in test fuels and liquid chemicals.*

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

EN 14187-8, *Cold applied joint sealants — Test methods — Part 8: Determination of the artificial weathering by UV-irradiation.*

EN 14187-9, *Cold applied joint sealants — Test methods — Part 9: Function testing of joint sealants.*

1 Scope

This European Standard specifies a function test for cold applied joint sealants intended for use in joints in roads and airfield pavements in cold climate areas where the total joint movement can be greater than 35 % and the temperature can go below –25 °C.

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

EN 14188-4, *Joint fillers and sealants — Part 4: Specifications for primers to be used with joint sealants*

EN 14187-2, *Cold applied joint sealants — Part 2: Test method for the determination of tack free time*

EN ISO 6927, *Buildings and civil engineering works — Sealants — Vocabulary (ISO 6927:2012)*

EN ISO 7390, *Building construction — Jointing products — Determination of resistance to flow of sealants (ISO 7390)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 6927 apply.

4 Principle

This method describes an accelerated test for the assessment of damage of the cold applied sealants arising from the influence of fluctuating temperatures, water-spraying and simultaneous dynamic load.

5 Apparatus and materials

5.1 Concrete test blocks

Concrete supports in accordance with EN 13880-12, for the preparation of the test specimens, of dimensions as shown in Figure 1. Two supports are required for each test specimen.

5.2 Tensile/compression test rig

Apparatus, which allows specimens to be inserted into holding clamps, conveniently and without disturbing the specimens before, during or after removal shall be used. The apparatus shall be capable of testing a number of test specimens simultaneously and shall not be significantly affected by the failure of one or more specimens.

The apparatus shall have the following characteristics:

- be motor driven through positive drives without slip or significant backlash, so that cycles of extension and compression are carried out steadily and automatically;
- be capable of moving the test blocks and specimens smoothly and linearly, so that their alignment is maintained at all times without subjecting them to torsion, bending, shock, or significant vibration;
- be capable of exerting on each specimen an appropriate tensile/compression force and extending the specimen uniformly under the specified conditions according to 7.2 and 7.4;

- be capable of measuring and recording the force with an uncertainty of maximum 2 % after application of the force to each system;
- the tolerance of the movement shall not exceed 0,01 mm.

5.3 Climate chamber

Climate chamber shall be capable of reducing the temperature of the specimens to the specified temperature in the range from $-30\text{ }^{\circ}\text{C}$ to $30\text{ }^{\circ}\text{C}$ drop/rise throughout the period of examination.

The chamber shall be fitted with a time controlled device to allow the specimen to be subjected to spraying with distilled or demineralized water for 20 % of the total conditioning time at the fixed temperatures as provided in 7.4.

5.4 Temperature indicator

The temperature indicator shall consist of an electronic device capable of measuring temperatures in the range of $-40\text{ }^{\circ}\text{C}$ to $50\text{ }^{\circ}\text{C}$ to an accuracy of $\pm 1\text{ }^{\circ}\text{C}$.

6 Preparation of the test specimens

For each test, at least three test specimens shall be prepared.

Prepare the test specimens in accordance with the manufacturer's instructions including the application of a primer, etc. where stipulated. The test specimens shall be as shown in Figure 1.

Prior to conditioning, the gelation time of the sealant shall be determined in the following way.

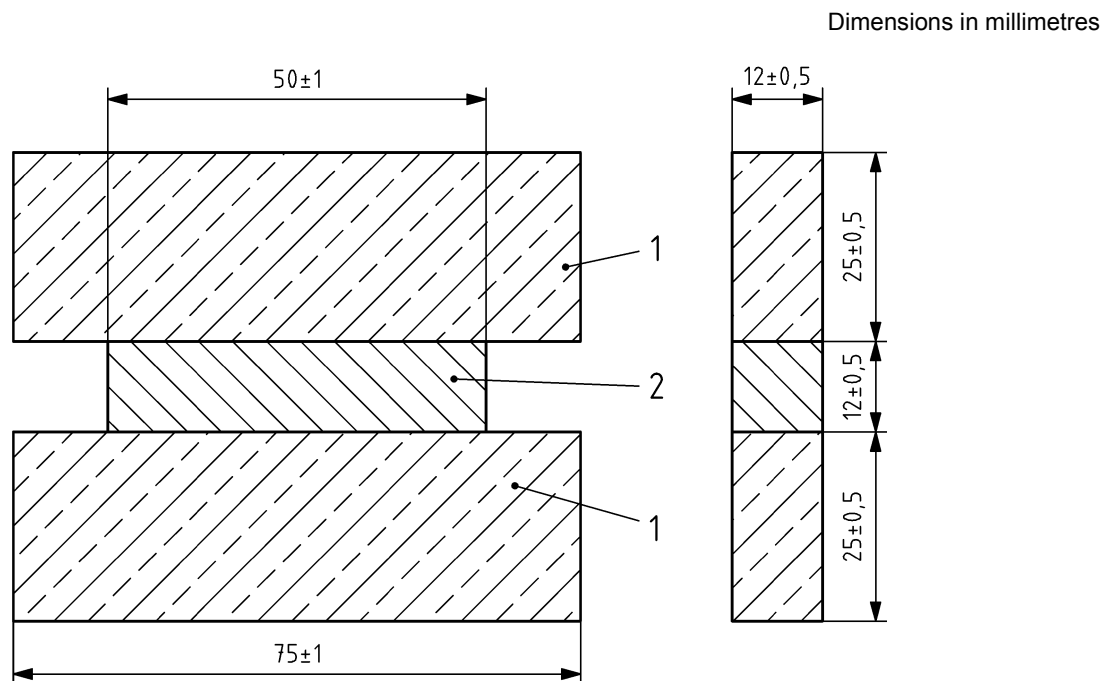
Measure tack free time in accordance with EN 14187-2. Thereafter, prepare test specimens in accordance with EN ISO 7390.

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After the preparation, place test specimens in standard conditions ($(23 \pm 2)\text{ }^{\circ}\text{C}$, $(50 \pm 5)\text{ \%RH}$).

Examine the first test specimen as described in EN ISO 7390, procedure B, after the time equal to the tack free time. If no flow is observed, the gelation time is equal to the tack free time. In other cases, the examination shall be repeated in steps of additional 10% of the tack free time until no flow is observed.

Prepare the test specimens and immediately after the sealant has gelled carefully mount them in the tensile test rig.

**Key**

- 1 Concrete test blocks
- 2 Sealant

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Figure 1 — Test specimen mounted between the concrete test blocks

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7 Procedure**7.1 Conditioning cycle**

Prior to testing, the test specimens shall be subjected to the conditioning procedure described below.

Mount the test specimens on a tensile test rig in the climate chamber as shown in Figure 2.

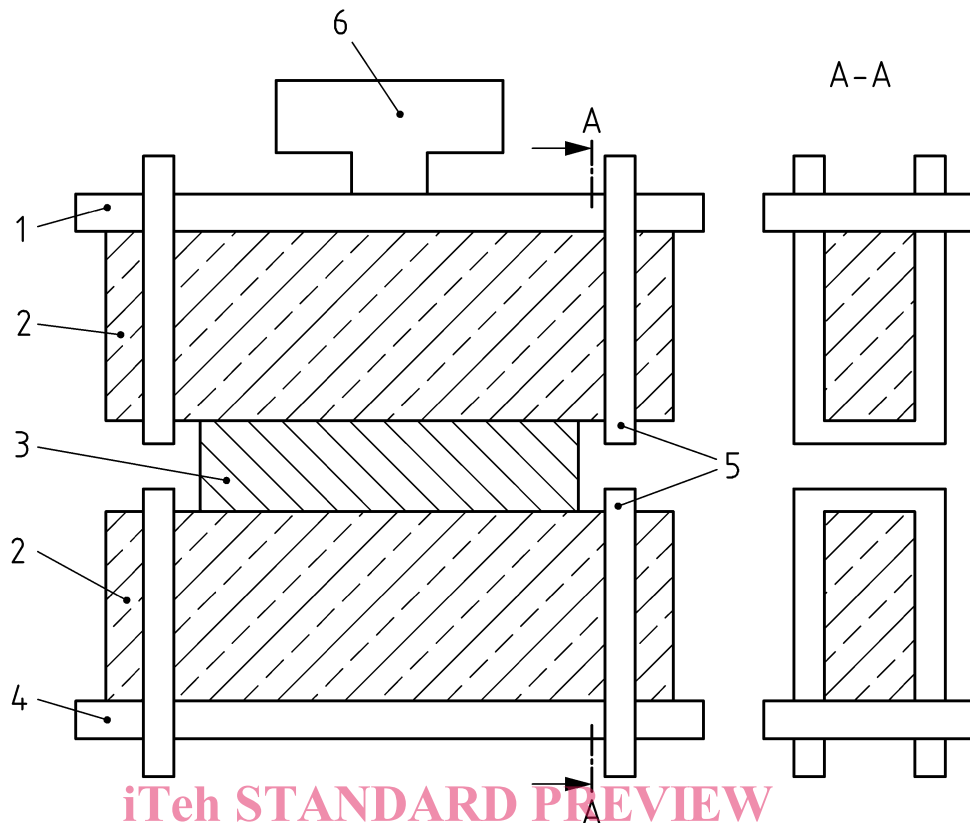
Subject the test specimens to the following conditioning cycle shown in Figure 3.

Temperature cycling: minimum temperature $(10 \pm 1) ^\circ\text{C}$,
 maximum temperature $(25 \pm 1) ^\circ\text{C}$.

Rate of deformation: $(0,010 \pm 0,002) \text{ mm/min}$.

Movement: Extension $(0,40 \pm 0,03) \text{ mm}$ $(3,33 \pm 0,25) \%$,
 Compression $(0,10 \pm 0,03) \text{ mm}$ $(0,83 \pm 0,25) \%$.

Water spraying: 20 % of total time (1 min water spraying, 4 min pause),
 Water temperature $10 ^\circ\text{C}$ to $20 ^\circ\text{C}$.

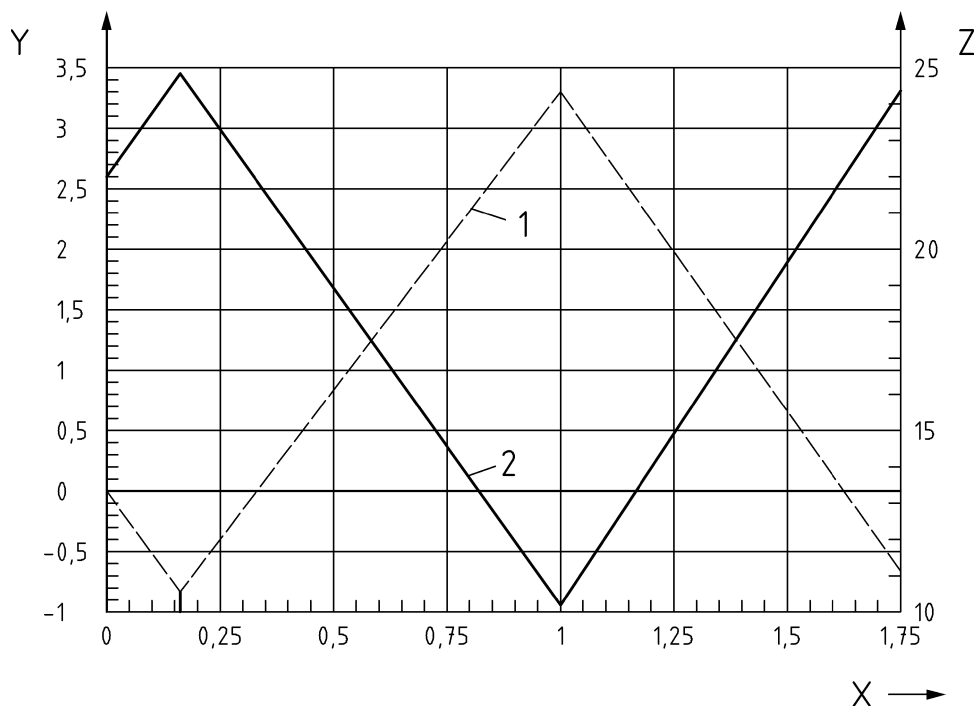


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Key

- 1 Stationary beam
- 2 Concrete test blocks according to EN 13880-12 prEN 14187-9:2014
- 3 Sealant <https://standards.iteh.ai/catalog/standards/sist/b44cb6c3-8730-40bc-af5b-074956de2548/osist-pren-14187-9-2014>
- 4 Moveable beam
- 5 Grips
- 6 Load cell

Figure 2 — Test specimen mounted in the test rig

**Key**

- X Time, in hours
 Y Compression, in percent
 Z Temperature, in degrees Celsius
 1 Movement
 2 Temperature, in degrees Celsius

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Figure 3 — Conditioning cycle

This conditioning cycle shall be repeated for at least 3 days, or longer if the manufacturer recommends a longer curing time to have a fully cured sealant. After conditioning, the test specimens shall be subjected to the test procedure in accordance with 7.4.

7.2 After conditioning

After completion of the conditioning cycle the temperature shall be lowered to $(11 \pm 1) ^\circ\text{C}$ without moving the test specimens.

7.3 Test procedure

The test specimens shall be subjected to the test cycle (see Figure 4) as described below:

Temperature cycling range:	starting point	$(11 \pm 1) ^\circ\text{C}$,
	maximum temperature	$(24 \pm 1) ^\circ\text{C}$,
	minimum temperature	$(-30 \pm 1) ^\circ\text{C}$.
Rate of deformation:	$(0,010 \pm 0,002) \text{ mm/min}$.	
Movement:	Compression	20 % (2,4 mm),
	Extension	60 % (7,2 mm).
Number of cycles:	3	