



SLOVENSKI STANDARD
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Polnilne in tesnilne mase za stike - 2. del: Specifikacije za tesnilne mase, ki se vgrajujejo po hladnem postopku

Joint fillers and sealants - Part 2: Specifications for cold applied sealants

Fugeneinlagen und Fugenmassen - Teil 2: Anforderungen an kalt verarbeitbare Fugenmassen

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Produits d'obturation et de scellements de joints - Partie 2: Spécifications pour produits de scellement appliqués à froid

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EUROPEAN STANDARD
NORME EUROPÉENNE
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Will supersede EN 14188-2:2004

English Version

Joint fillers and sealants - Part 2: Specifications for cold applied sealants

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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.

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

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Foreword

This document (prEN 14188-2:2014) 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 14188-2:2004.

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 Directive(s), see informative Annex ZA, which is an integral part of this document.

This document is one of a series of standards as listed below.

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

EN 14188-2, *Joint fillers and sealants — Part 2: Specifications for cold applied sealants.*

EN 14188-3, *Joint fillers and sealants — Part 3: Specifications for preformed joint seals.*

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

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prEN 14188-2:2014 (E)

1 Scope

This document specifies the requirements for cold applied normal, chemical and fuel resistant joint sealants for concrete pavements to be used in roads, bridges, parking decks, fuel stations, airfields and other trafficked areas.

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 13238, *Reaction to fire tests for building products — Conditioning procedures and general rules for selection of substrates*

EN 13501-1:2007+A1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

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*

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

EN ISO 8339, *Building construction — Sealants — Determination of tensile properties (Extension to break) (ISO 8339)*

EN ISO 8340, *Building construction — Sealants — Determination of tensile properties at maintained extension (ISO 8340)*

EN ISO 8394-1, *Building construction — Jointing products — Part 1: Determination of extrudability of sealants (ISO 8394-1)*

EN ISO 8394-2, *Building construction — Jointing products — Part 2: Determination of extrudability of sealants using standardized apparatus (ISO 8394-2)*

EN ISO 7389, *Building construction — Jointing products — Determination of elastic recovery of sealants (ISO 7389)*

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

EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

EN ISO 9047, *Building construction — Jointing products — Determination of adhesion/cohesion properties of sealants at variable temperatures (ISO 9047)*

EN ISO 10563, *Building construction — Sealants — Determination of change in mass and volume (ISO 10563)*

3 Terms and definitions

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

3.1

manufacturer's limiting value MLV

manufacturer's stated minimum or maximum value to be met during testing according to the requirements of this document

3.2

manufacturer's declared value MDV

value declared by the manufacturer accompanied by a declared tolerance.

3.3

cold climate area

areas in which the temperature can go below -25°C and the opening of the joint can exceed 35 %

<https://standards.iteh.ai/catalog/standards/sist/3dad1ef1-97b6-43be-b172->

4 Classification and specification

4.1 Cold applied sealant

According to the field of their application, cold applied joint sealants for joints in concrete pavements have to fulfil different requirements.

Depending on their chemical base and their compositions sealants are available as single or multi-component systems. To make identification easy they shall be designated by the following symbols:

Table 1 — Systems of cold applied joint sealants

Material	System
Single component system	S
Multi components system	M

Table 2 — Types of cold applied joint sealants

Material	Type
Self levelling type	sl
Non sag type	ns

Table 3 — Exposure of cold applied joint sealants

Material	Exposure	Test liquid
No requirements of chemical resistance	A	No test
Used in contact with gasoline, diesel	B (includes A)	Test fuel I
Used in contact with jet fuel and defrosting chemicals (DC)	C (includes B)	Test fuel I, Test fuel II DC ground and DC aircraft
Liquid chemicals as required	D	As required

Depending on their elasticity and modulus sealants are available with different level of movement capability. For joints in trafficed areas classes are sub-classified in accordance with their movement capability:

Table 4 — Movement capability and classes of cold applied sealants

Movement capability	Class			
25 %	25 A	25 B	25 C	25 D
35 %	35 A	35 B	35 C	35 D

4.2 Primer

Where a primer is recommended by the manufacturer of the joint sealant, the manufacturer's directions for its use shall be followed. Where a primer is part of the system recommended by the manufacturer, then specimens prepared for the appropriate performance tests shall include a primer.

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The manufacturer shall always specify whether a primer is required or not. [http://www.koordinator.org.uk/standards/97b6-43be-b172-705661f03a2c/ksist-pren-14188-2-2017](#)

5 Requirements

5.1 General

For testing a cold applied sealant, the uniform method of conditioning (EN ISO 8340, Method B) shall be applied for test procedures where this conditioning method is stipulated by choice.

A test specimen fails the test if, after the test extension, the sum of adhesive and cohesive failures exceeds 5 %. Test specimens, which pass the first extension, fails the test if in subsequent extensions if the sum of additional adhesive or cohesive failures exceeds 10 %.

If one of the three test specimens fails, the test shall be repeated once. If more than one test specimen fails or if one specimen fails in the repeated test, the sample shall be reported as failing the test.

The manufacturer shall provide installation recommendations. Guidance is provided in Annex C.

Cold applied joint sealants can have different movement capabilities (extension, compression, shearing) in accordance with the declaration of the manufacturer and are classified with 25 % and 35 % movement capability. The level of extension and the amplitude of cycling for the tests of the functional properties are given in the Table 5.

Table 5 — Cold applied joint sealants — Special test conditions of functional tests

Line	Property	Test in accordance with		Movement Capability	
				25 %	35 %
	1	2 (table 6)	3	4	5
1	Cohesion	10.1	EN ISO 9047	extension/ compression $\pm 25\%$	extension/ compression $\pm 35\%$
2	Cohesion (for cold climate areas)	10.2	EN 14187-9	in accordance with cycling method	
3	Bonding strength	11	EN ISO 8340	extension (100 ± 2) %	extension (140 ± 2) %
4	Elastic recovery	12	EN ISO 7389	extension (100 ± 2) %	extension (140 ± 2) %
5	Artificial weathering by UV irradiation	13	EN 14187-8	extension (100 ± 2) %	extension (140 ± 2) %
6	Adhesion/cohesion properties after immersion in test fuels and liquid chemicals	14	EN 14187-6 class B, C, D	extension (100 ± 2) %	extension (140 ± 2) %

5.2 Extrudability

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5.2.1 Single component sealants [kSIST prEN 14188-2:2017](https://standards.iteh.ai/catalog/standards/sist/3dad1ef1-97b6-43be-b172-13e8e8888888)

<https://standards.iteh.ai/catalog/standards/sist/3dad1ef1-97b6-43be-b172-13e8e8888888>

The extrudability of single component sealants, Type ns, shall be determined in accordance with EN ISO 8394-1 and the result shall conform to the relevant value given in Table 6, line 1.1.

The quantity of extruded material shall be determined using an orifice of ($5,0 \pm 0,3$) mm.

5.2.2 Multicomponent sealants

The extrudability of multi-component sealants, Type ns, shall be determined at (23 ± 2) °C in accordance with EN ISO 8394-2 and the result shall conform to the relevant value given in Table 6, line 1.2.

5.3 Rate of cure

The rate of cure shall be determined in accordance with EN 14187-1 to measure the time to reach at least 80 % of rate of cure. The manufacturer shall declare the rate of cure and the result shall conform to the relevant value given in Table 6, line 2.

5.4 Tack free time

The tack free time shall be determined in accordance with EN 14187-2. The manufacturer shall declare the tack free time and the result shall conform to the relevant value given in Table 6, line 3.

5.5 Self levelling properties

The self levelling properties of cold applied sealants, Type sl, shall be determined in accordance with EN 14187-3. The manufacturer shall declare the self levelling properties and the result shall conform to the relevant value given in Table 6, line 4.

prEN 14188-2:2014 (E)**5.6 Resistance to flow**

The resistance to flow of cold applied sealants, Type ns, shall be determined in accordance with EN ISO 7390 and the result shall conform to the relevant value given in Table 6, line 5.

The following test conditions shall be applied:

- U-profile with a nominal width of 20 mm and a nominal depth of 10 mm;
- test temperatures of (50 ± 2) °C and (5 ± 2) °C.

5.7 Loss of volume

The loss of volume shall be determined in accordance with EN ISO 10563 and the result shall conform to the relevant value given in Table 6, line 6.

The following test conditions shall be applied:

- Test procedure C: $(24,0 \pm 0,5)$ h at (23 ± 2) °C and (50 ± 5) % relative humidity, followed by procedure B, 7 days at (70 ± 2) °C.

5.8 Change in mass and volume after immersion in fuels and liquid chemicals

The change in mass and volume after immersion in fuels and liquid chemicals shall be determined in accordance with EN 14187-4 and the result shall conform to the relevant value given in Table 6, line 7, after a storage time in liquid chemicals of $(72 \pm 0,5)$ h at (23 ± 2) °C except in the case of defrosting chemicals. For defrosting chemicals the time of immersion is 21 days at (23 ± 2) °C.

Test liquids in accordance with table 3.

5.9 Resistance to hydrolysis

The resistance to hydrolysis shall be determined in accordance with EN 14187-5 and the result shall conform to the relevant value given in Table 6, line 8.

The following test conditions shall be applied:

- 14 days at (70 ± 2) °C.

5.10 Cohesion

The cohesion properties at variable temperatures shall be determined in accordance with table 5 and the result shall conform to the relevant value given in Table 6, line 10.1.

- Any failures in adhesion or cohesion are recorded.

For cold climate areas:

The cohesion properties shall be determined in accordance with EN 14187-9 with concrete and asphalt test specimens in accordance with EN 13880-12 and EN 13880-11 respectively. The results shall conform to the relevant values in Table 6, line 10.2.

5.11 Bonding strength

The bonding strength shall be determined in accordance with EN ISO 8339 and EN ISO 8340 and the test parameter of table 5 and the results shall conform to the relevant values given in Table 6, line 11.

5.12 Adhesion/cohesion properties at maintained extension after immersion in test fuels and liquid chemicals

The adhesion/cohesion properties at maintained extension after immersion in test fuels and liquid chemicals shall be determined in accordance with EN 14187-6 and the test parameter of Table 5. The results shall conform to the relevant values in Table 6, line 14.

The following test conditions shall be applied:

Storage time of $(72,0 \pm 0,5)$ h at (23 ± 2) °C except in the case of defrosting chemicals. For defrosting chemicals the time of immersion is 21 days at (23 ± 2) °C.

Test liquids in accordance with table 3.

5.13 Resistance to artificial weathering

The resistance to artificial weathering by UV-irradiation shall be determined in accordance with EN 14187-8 with a time of irradiation of 1000 hours. The test parameters of Table 5 shall be applied. The result shall conform to the relevant value given in Table 6, line 13.

5.14 Elastic recovery

The elastic recovery shall be determined in accordance with EN ISO 7389 and Table 5. The result shall conform to the relevant value given in Table 6, line 12. The applied extension shall be in accordance with Table 5, line 4.

5.15 Resistance to flame

The resistance to flame shall be determined in accordance with EN 14187-7 and the result shall conform to the relevant value given in Table 6, line 9.

5.16 Dangerous substances

"National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through: <http://ec.europa.eu/enterprise/construction/cpd-ds/>."

5.17 Reaction to fire

5.17.1 General

Products shall be classified in accordance with EN 13501-1:2007+A1. The appropriate reaction to fire class shall be declared.

5.17.2 Mounting and fixing conditions for test samples

Mounting and fixing conditions for the test samples of the reaction to fire performance shall be as follows for the following reaction to fire classes:

a) Class A2, B, C or D

Design of specimen:

- 1) substrate: calcium silicate panel