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**Hladno nanosljive tesnilne mase za stike – 8. del: Preskusna metoda za ugotavljanje umetnega staranja z ultravijoličnim sevanjem**

Cold applied joint sealants - Part 8: Test method for the determination of the artificial weathering by UV-irradiation

Kalt verarbeitbare Fugenmassen - Teil 8: Prüfverfahren zur Bestimmung der künstlichen Bewitterung durch UV-Bestrahlung

Mastics pour joints appliqués a froid - Partie 8: Méthodes d'essai pour la détermination du vieillissement artificiel par rayonnement UV

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**Ta slovenski standard je istoveten z: EN 14187-8:2003**

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**ICS:**

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

**SIST EN 14187-8:2004****en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 14187-8**

June 2003

ICS 93.080.20

English version

## Cold applied joint sealants - Part 8: Test method for the determination of the artificial weathering by UV-irradiation

Mastics pour joints appliqués à froid - Partie 8: Méthodes d'essai pour la détermination du vieillissement artificiel par rayonnement UV

Kalt verarbeitbare Fugenmassen - Teil 8: Prüfverfahren zur Bestimmung der künstlichen Bewitterung durch UV-Bestrahlung

This European Standard was approved by CEN on 25 March 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.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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**Contents****page**

Foreword.....	3
1 Scope .....	3
2 Normative references .....	4
3 Terms and definitions.....	4
4 Principle .....	4
5 Apparatus and materials .....	4
6 Preparation of test specimens.....	5
7 Conditioning .....	6
8 Procedure .....	6
9 Expression of results .....	7
10 Test report .....	8

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[SIST EN 14187-8:2004](https://standards.iteh.ai/catalog/standards/sist/cf5acc4e-aa4e-4da3-84a0-818d7d1d51d1/sist-en-14187-8-2004)

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## Foreword

This document (EN 14187-8:2003) 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 December 2003, and conflicting national standards shall be withdrawn at the latest by March 2005.

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

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

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

EN 14187-3, *Cold applied joint sealants — Part 3: Test method for the determination of self-levelling properties.*

EN 14187-4, *Cold applied joint sealants — Part 4: Test method for the determination of the change in mass and volume after immersion in test fuel.*

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

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.*

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

prEN 14187-9, *Cold applied joint sealants — Part 9: Function test.*<sup>1)</sup>

No existing European Standard is superseded.

**WARNING — Attention is drawn to the health and safety at work and the need to ensure that this test is carried out under suitable environmental conditions to provide adequate protection to persons against the risk of contact or inhalation of toxic products.**

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.

## 1 Scope

This European Standard describes a test method for evaluating the resistance of cold applied joint sealants to the action of UV-light by determination of the change of physical properties after irradiation by artificial UV-light.

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1) In preparation.

**EN 14187-8:2003 (E)****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 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature.*

prEN 13880-12, *Hot applied joint sealants – Test methods - Part 12: Manufacture of concrete test blocks for bond testing (recipe methods).*

EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1:1999).*

EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources (ISO 4892-2:1994).*

EN 26927:1990, *Building construction - Jointing products - Sealants - Vocabulary (ISO 6927:1981).*

EN 28340:1990, *Building construction - Jointing products - Sealants - Determination of tensile properties at maintained extension (ISO 8340:1984).*

IEC 60085, *Thermal evaluation and classification of electrical insulation.*

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**3 Terms and definitions**

SIST EN 14187-8:2004

For the purposes of this European Standard, the terms and definitions given in EN 26927:1990 apply.

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**4 Principle**

Test specimens of the cured cold applied joint sealant are exposed to artificial light, water or humidity and elevated temperatures under defined conditions and constant elongation.

**5 Apparatus and materials**

**5.1** Artificial light source with suitable filters, for a simulation of the visible and ultraviolet part of daylight in accordance with IEC 60085. The spectral distribution of radiation shall conform to the requirements of EN ISO 4892-2, method A. The irradiance at the surface of the test specimens at wavelengths of between 290 nm and 800 nm shall be  $(550 \pm 75) \text{ W/m}^2$ .

**5.2** Black standard thermometer according to EN ISO 4892-1 or black panel thermometer. Under given operating conditions black panel thermometers tend to indicate lower temperatures than black standard thermometers, with temperature differences up to 10 K.

**5.3** Climate chamber, for holding the artificial light source and the test specimens, capable of being maintained at a temperature of  $(45 \pm 2) \text{ }^\circ\text{C}$  and a minimum relative humidity of 95 %.

**5.4** Concrete supports for the preparation of the test specimens in accordance with prEN 13880-12 of dimensions as shown in Figure 1. Two supports shall be used for each test specimen

**5.5** Spacers of dimensions 12 mm × 12 mm × 12,5 mm (see Figure 1) for the preparation of test specimens

**5.6** Anti-adherent substrate for the preparation of the test specimens.

**5.7** Tensile testing machine conforming to EN 10002-1, capable of extending the test specimens at a rate of 5 mm/min to 6 mm/min.

**5.8** Distant pieces of appropriate dimensions to hold the test specimens extended to 25 % of the original width.

## 6 Preparation of test specimens

Assemble two concrete supports (see 5.4) and two spacers (see 5.5) according to Figure 1 and set up on the anti-adherent substrate (see 5.6).

Follow the instructions of the sealant manufacturer, whether a primer is to be used.

Condition the concrete supports (see 5.4), the spacers (see 5.5) and the sealant for at least 4 h at  $(23 \pm 2)$  °C. The volume between concrete supports (see 5.4) and spacers (see 5.5) shall be filled with the cold applied joint sealant.

The following precautions shall be taken:

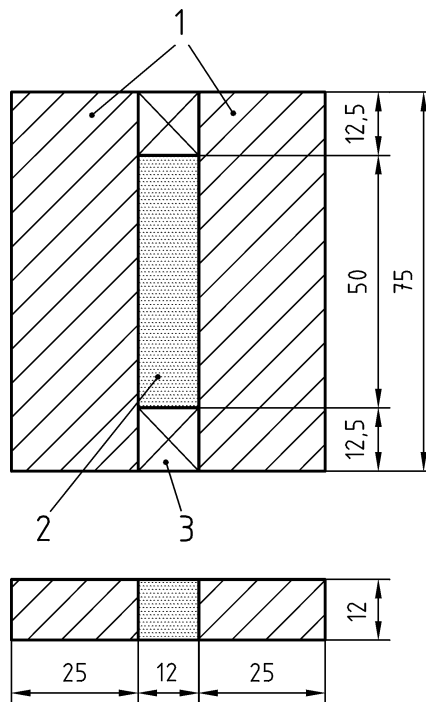
- avoid the formation of air bubbles;
- make sure that no sealant is running out at the bottom;
- trim the sealant surface so that it is flush with the faces of the support and spacers.

For each test prepare three specimens and also three reference specimens.

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Dimensions in millimetres

**Key**

- 1 Concrete support
- 2 Cold applied joint sealant
- 3 Spacers

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**Figure 1 — Test specimen**

**7 Conditioning**

Condition the test specimens in accordance with either method A or method B of EN 28340:1990. If method B is used, after conditioning store the test specimens ( $2 \pm 0,5$ ) h at ( $23 \pm 2$ ) °C and ( $50 \pm 5$ ) % relative humidity before irradiation by UV-light.

**8 Procedure**

Extend the 6 test specimens with the tensile testing machine (see 5.7) to 25 % of the original width at a rate of 5 mm/min to 6 mm/min. Maintain the extension during exposure to artificial light using the distant pieces (see 5.8). Expose three specimens in accordance with Table 1 to light from the artificial light source (see 5.1) at wavelengths of between 290 nm and 800 nm in a climate chamber (see 5.3) at a temperature of ( $45 \pm 2$ ) °C (measured on a black panel) and a minimum relative humidity of 95 %.

The total irradiance at the surface of the test specimens shall be ( $550 \pm 75$ ) W/m<sup>2</sup>.

Three of the test specimens are kept during this time at ( $23 \pm 2$ ) °C and ( $50 \pm 5$ ) % relative humidity.



Table 1 — Test procedure

	Reference test specimens	Test specimens
Conditioning method	EN 28340:1990, method A or B	EN 28340:1990, method A or B
Procedure	(23 ± 2) °C (50 ± 5) r.h. 25 % extension	total irradiance at the surface of the test specimens (550 ± 75) W/m <sup>2</sup> 25 % extension
Number of test specimens	3	3

Readings of the black standard temperature (see 5.2) or black panel temperature (see 5.2) shall only be taken after sufficient time when the temperature has stabilized. The temperatures shall be controlled by adjusting the air exchange rate.

After UV-exposure take the test specimens from the climate chamber (see 5.3) and keep for 24 h at (23 ± 2) °C and (50 ± 5) % relative humidity without extension. Then extend to 100 % of the original width at a rate of 5 mm/min to 6 mm/min.

Record a force/strain diagram.

In the same way test the reference test specimens after conditioning for 24 h at (23 ± 2) °C and (50 ± 5) % relative humidity.

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### 9 Expression of results

Calculate the percentage of change of tensile strength,  $\Delta F_{100}$ , for each test specimen using the following formula:

$$\Delta F_{100} = \frac{F_1}{F_0} \times 100$$

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where

$\Delta F_{100}$  is the change of tensile strength, expressed in percent (%);

$F_1$  is the mean value of tensile strength at 100 % extension of the test specimens after irradiation by UV-light, expressed in newton per square millimetre (N/mm<sup>2</sup>);

$F_0$  is the mean value of tensile strength at 100 % extension of the reference test specimens, expressed in newton per square millimetre (N/mm<sup>2</sup>).