
Hladno nanosljive tesnilne mase za stike – 4. del: Preskusna metoda za ugotavljanje spremembe mase in prostornine po namakanju v preskusnem gorivu

Cold applied joint sealants - Part 4: Test method for the determination of the change in mass and volume after immersion in test fuel

Kalt verarbeitbare Fugenmassen - Teil 4: Prüfverfahren zur Bestimmung der Massen- und Volumenänderung nach Lagerung in Prüfkraftstoff

Mastics pour joints appliqués a froid - Partie 4: Méthodes d'essai pour la détermination de la variation de masse et de volume apres immersion dans un carburant d'essai

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EUROPEAN STANDARD
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Cold applied joint sealants - Part 4: Test method for the determination of the change in mass and volume after immersion in test fuel

Mastics pour joints appliqués à froid - Partie 4: Méthodes d'essai pour la détermination de la variation de masse et de volume après immersion dans un carburant d'essai

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

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

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Foreword

This document (EN 14187-4:2003) 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.*¹⁾

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 liquid chemicals.

Annex A is informative.

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 of the evaluation of the resistance of cold applied joint sealants to the action of liquid chemicals by measuring the change in mass and volume after immersion in liquid chemicals.

1) In preparation.

EN 14187-4:2003 (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 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)*.

3 Terms and definitions

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

4 Principle

Test specimens cut from $(2 \pm 0,1)$ mm thick sheets of the cured cold applied joint sealant are immersed for a required period of time in the liquid chemical. Changes in mass and volume of the test specimens after immersion are determined.

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5 Apparatus and materials

5.1 Stopped glass bottle or tube of such dimension that the suspended test specimens remain completely immersed in the specified volume of the test liquid and are freely exposed on all surfaces without restraint.

5.2 Balance, capable of weighing the suspended test specimens immersed in distilled water and accurate to ≤ 1 mg.

5.3 Mould from aluminium or brass with an internal diameter of (150 ± 10) mm and a depth of $(2,0 \pm 0,1)$ mm.

5.4 A convection type oven, controllable at (50 ± 2) °C.

5.5 Test liquids with compositions as given in Table 1. Instead of test fuel I and test fuel II also jet fuel, hydraulic oil, engine oil, de-icing fluid, glycol or any other liquid chemical can be used as required from the intended application (see Annex A).

Table 1 — Composition of test fuels

Chemical liquid	Test fuel I volume in %	Test fuel II volume in %
Isooctane	30	70
Toluene	50	30
Ethanol	5	—
Diisobutylene	15	—

6 Preparation of test specimens

Prepare sheets of the cold applied joint sealant of $(2,0 \pm 0,1)$ mm thickness in the mould (see 5.3). To avoid air bubbles cure the sealant under pressure. For each test three test specimens with a diameter of (30 ± 1) mm are cut from the sheet.

7 Conditioning

Condition the test specimens in accordance with EN 28340:1990 either method A or method B. If method B is used, after conditioning store the test specimens at least 2 h at (23 ± 2) °C and (50 ± 5) % relative humidity before immersion in test fuel or other liquid chemical.

8 Procedure

8.1 Temperature of immersion

Carry out the immersion of the specimens in the stoppered glass bottle or tube (see 5.1) at one or more of the following temperatures:

- (23 ± 1) °C;
- (35 ± 1) °C;
- (50 ± 1) °C.

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8.2 Time of immersion

Carry out the immersion of the specimens for one or more of the following periods of time:

- 24 h;
- 72 h;
- 7 days;
- 21 days.

8.3 Test procedure

8.3.1 After conditioning weigh each test specimen with the balance (see 5.2) in air to the nearest milligram, m_1 , and then weigh again each test specimen in distilled water at standard laboratory temperature, m_2 .

8.3.2 Place the test specimens in the stoppered glass bottle or tube (see 5.1) in the test fuel or other liquid chemical. The test fuel or liquid chemical should be kept for the required time of immersion (see 8.2) at the temperature of immersion (see 8.1).

8.3.3 At the end of the period of immersion, bring the test specimens to standard laboratory temperature of (23 ± 2) °C by quickly transferring them to a fresh sample of the test liquid at this temperature for a period of 10 min to 30 min. Remove surplus test liquid from the surface of each test specimen. Immediately determine the mass of each test specimen in air, m_3 , to the nearest milligram, and then weigh them in distilled water, m_4 , at the standard laboratory temperature.

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8.3.4 Place the test specimens in the convection type oven (see 5.4) at a temperature of (50 ± 2) °C until the mass of the test specimen is decreasing less than 1 % within 24 h. Again, determine the mass of each test specimen to the nearest milligram, m_5 .

9 Expression of results**9.1 Change in volume**

Calculate the percentage change in volume, ΔV_{100} , for each test specimen using the following formula:

$$\Delta V_{100} = \frac{(m_3 - m_4) - (m_1 - m_2)}{(m_1 - m_2)} \times 100 \quad (1)$$

where

m_1 is the initial mass of the test specimen in air, expressed in milligrams (mg);

m_2 is the initial apparent mass of the test specimen in water, expressed in milligrams (mg);

m_3 is the mass of the test specimen in air after immersion, expressed in milligrams (mg);

m_4 is the apparent mass of the test specimen in water after immersion, expressed in milligrams (mg).

9.2 Change in mass after drying

Calculate the percentage change in mass after drying, ΔM_{100} , for each test specimen using the following formula:

$$\Delta M_{100} = \frac{m_5 - m_1}{m_1} \times 100 \quad (2)$$

where

ΔM_{100} is the change in mass after drying, expressed in percent (%);

m_1 is the initial mass of the test specimen in air, expressed in milligrams (mg);

m_5 is the mass of the test specimen after drying, expressed in milligrams (mg).

Take as the result the average of the values obtained for the three test specimens.

10 Test report

The test report shall include the following information:

- a) reference to this European Standard;
- b) name and type of the cold applied joint sealant;
- c) batch of sealant from which the test specimens were produced;
- d) description of the test liquid;
- e) the time and temperature of immersion;
- f) note of the appearance of the test specimen (i. e. cracking, delamination);
- g) note of the appearance of the test liquid (i. e. discoloration, sedimentation);
- h) any deviations from the specified test conditions;
- i) test results;
- j) date of test.

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