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Tesnilne mase za nekonstrukcijske stike v stavbah in na površinah za pešce - 4. del: Tesnilne mase za površine za pešce

Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4: Sealants for pedestrian walkways

Fugendichtstoffe für nicht tragende Anwendungen in Gebäuden und Fußgängerwegen - Teil 4: Fugendichtstoffe für Fußgängerwege

Mastics pour joints pour des usages non structuraux dans les constructions immobilières et pour chemins piétonniers - Partie 4 : Mastics pour chemins piétonniers

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Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 4: Sealants for pedestrian walkways

Mastics pour joints pour des usages non structuraux dans les constructions immobilières et pour chemins piétonniers - Partie 4 : Mastics pour chemins piétonniers

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This European Standard was approved by CEN on 25 December 2016.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Contents

Page

European foreword 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 6
4 Requirements 6
4.1 Identification requirements 6
4.1.1 Short description of the sealant 6
4.1.2 Thermogravimetric test 7
4.1.3 Density 7
4.1.4 Indentation hardness (Shore hardness) 7
4.2 Conditioning, test procedure and substrates 7
4.2.1 General 7
4.2.2 Classification 7
4.2.3 Test procedure 9
4.3 Performance requirements and test methods for non-structural sealants for pedestrian walkways 10
4.3.1 General 10
4.3.2 Sealants in pedestrian walkways used in cold climates 10
4.3.3 Resistance to flow for non-sagging sealants 11
4.3.4 Sealants with self-levelling properties 11
4.3.5 Tear resistance 11
4.4 Additional performance requirements for exterior applications 13
4.4.1 General 13
4.4.2 Artificial weathering by UV-radiation 13
4.5 Release of dangerous substances 14
4.6 Reaction to fire 14
4.6.1 General 14
4.6.2 Mounting and fixing conditions for test samples 14
5 Durability 16
6 Sampling 16
7 Assessment and verification of constancy of performance 16
7.1 General 16
7.2 Product type determination 16
7.3 Factory production control 16
8 Marking and labelling 16
Annex A (informative) Example on the frequency of tests for factory production control 17
Annex B (normative) Determination of the change of volume of self-levelling cold applied joint sealants 18
B.1 Principle 18
B.2 Apparatus and materials 18
B.3 Preparation of test specimens 18
B.4 Test procedure 18

B.5 Calculation and expression of results 19
B.5.1 Change in mass 19
B.5.2 Change in volume 19
Annex ZA (informative) Relationship of this European Standard with Regulation (EU) No.305/2011 20
ZA.1 Scope and relevant characteristics 20
ZA.2 System of Assessment and Verification of Constancy of Performance (AVCP) 21
ZA.3 Assignment of AVCP tasks 21
Bibliography 24

European foreword

This document (EN 15651-4:2017) has been prepared by Technical Committee CEN/TC 349 “Sealants for joints in building construction”, the secretariat of which is held by AFNOR.

This document supersedes EN 15651-4:2012.

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 August 2017, and conflicting national standards shall be withdrawn at the latest by November 2018.

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

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports basic work requirements of EU Regulation.

For relationship with EU Regulation, see informative Annex ZA, which is an integral part of this document.

This document is one of the product European Standards within the framework series of EN 15651 on *Sealants for non-structural use in joints in buildings and pedestrian walkways*, as follows:

— *Part 1: Sealants for facade elements*,

— *Part 2: Sealants for glazing*,

— *Part 3: Sealants for sanitary joints*,

— *Part 4: Sealants for pedestrian walkways* (this document),

— *Part 5: Assessment and verification of constancy of performance, marking and labelling*.

The following significant technical changes have been implemented in this new edition:

— Clause 4.1.3 and Clause 5 have been improved;

— Clause 4.5 has been modified;

— Clause 7 and Annex ZA have been changed in accordance with the regulation (EU) No.305/2011.

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.

1 Scope

This European Standard specifies definitions and requirements for cold applied non-structural elastic sealants used for movement joints in floors in building construction for interior and exterior use.

Areas of application are: floor joints designed for pedestrian walkways, public areas, movement joints between concrete slabs, areas with pedestrian load, areas used with trolleys, walkable floors, balconies, terraces, warehouses.

NOTE Provisions on assessment and verification of constancy of performance - AVCP (i.e. Product type determination and Factory Production Control) and marking of these products are given in EN 15651–5.

Chemical containment, cold applied joint sealants for concrete pavements to be used in roads, airfields and sewage treatment plants, perimeter seals and seals in wood floors are excluded.

This European Standard does not apply to non-structural sealants in any of non-paste form, to those used in pedestrian walkways.

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, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

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

EN 15651-5:2017, *Sealants for non-structural use in joints in buildings and pedestrian walkways - Part 5: Evaluation of conformity and marking*

EN ISO 291, *Plastics - Standard atmospheres for conditioning and testing (ISO 291)*

EN ISO 868, *Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

EN ISO 2811-1:2016, *Paints and varnishes - Determination of density - Part 1: Pycnometer method (ISO 2811-1:2016)*

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

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 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 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)*

EN ISO 10590, *Building construction - Sealants - Determination of tensile properties of sealants at maintained extension after immersion in water (ISO 10590)*

EN ISO 11358 (all parts), *Plastics — Thermographimetry (TG) of polymers — General principles (ISO 11358)*

EN ISO 11431, *Building construction - Jointing products - Determination of adhesion/cohesion properties of sealants after exposure to heat, water and artificial light through glass (ISO 11431)*

EN ISO 11600:2003, *Building construction - Jointing products - Classification and requirements for sealants (ISO 11600:2002)*

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)*

ISO 13640, *Building construction — Jointing products — Specifications for test substrates*

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
reactive sealant
mainly curing by chemical reaction, with significant increase of the molecular weight of the main polymer

3.2
cure
irreversible transformation of a sealant from a liquid or paste-like state into a hardened or rubber-like solid state

3.3
uncured / wet
state of a sealant prior to the above transformation

4 Requirements

4.1 Identification requirements

4.1.1 Short description of the sealant

The short description of the non-structural sealant for pedestrian walkways shall include brand name, type (general, chemical, family, one or multi-component e.g. one component Polyurethane sealant in different colours, etc.).

The primer shall be stated for the substrate concerned, if relevant (name, chemical type, etc.).

4.1.2 Thermogravimetric test

The test shall be carried out in accordance with EN ISO 11358 on the uncured or wet sealant, between 35 °C and 900 °C, temperature slope 10 °C/min, non-oxidative condition (e.g. nitrogen). A single sample shall be used for this test. A single specimen may be tested and there shall be no significant difference between the reference curve and derivative (profile).

In the case of a multi-component sealant, each component shall be evaluated (if relevant).

4.1.3 Density

4.1.3.1 Principal

A pyknometer is filled with the product under test. The density is calculated from the mass of the product in the pyknometer and the known volume of the pyknometer.

4.1.3.2 Method

A test temperature of (23,0 ± 0,5) °C shall be used and the test sample and pyknometer shall be conditioned to this temperature, and it shall be ensured that the temperature variation does not exceed 0,5 °C during testing.

The determination of the density shall be in accordance with EN ISO 2811-1:2016 using a suitable 50 cm^3 calibrated pyknometer as described in EN ISO 2811-1:2016, 6.1.1. An alternative is the 50 cm^3 Hubbard pyknometer as described in ISO 3507.

Measurements should be carried out on the uncured or wet sealant and in the case of a multi-component sealant, each component shall be evaluated. At least three samples shall be tested. The specific pyknometer used and the mean value, recorded to two decimal places, shall be declared. The tolerance of the declared values shall be within ± 5 %.

4.1.4 Indentation hardness (Shore hardness)

The determination of the indentation hardness shall be in accordance with EN ISO 868. The test shall be performed on the cured sealant.

The exact conditions of test shall be defined by the manufacturer (i.e. thickness, cure/drying times and temperature and relative humidity, specific Shore type (A, D…), test time, temperature, etc.).

At least three samples shall be tested and five measurements taken per sample. The mean value and tolerances of all measurements, recorded to the nearest unit, shall be declared.

4.2 Conditioning, test procedure and substrates

4.2.1 General

When determining the classification of a sealant according to the requirements of this standard, the same conditioning procedure shall be used in all relevant test methods (use only Method A or Method B). For each test method, three test specimens for each substrate shall be tested. The same batch of sealant (and primer, if used) shall be used in all tests. The same substrates (material and surface finish) shall be used in all tests.

4.2.2 Classification

4.2.2.1 General

Classes for cold applied elastic sealants for movement joints in floors in building construction are referred to as type:

— PW (= pedestrian walkways);

— EXT (= exterior application) and INT (= interior application);

— CC (= cold climate).

4.2.2.2 Classification according to the movement capability

According to their movement capability, sealants are subdivided into different classes as given in Table 1.

Table 1 — Sealant classes

Class	Elongation %	Test amplitude %	Movement capability % [a]
25	100	±25	25,0
20	60	±20	20,0
12,5	60	±12,5	12,5
[a] For the correct interpretation and application of movement capability to the design of joints, relevant national standards and advisory documents should be considered.			

4.2.2.3 Classification according to the secant tensile modulus

Sealants of class 25 and class 20 are additionally sub-classified according to their secant tensile modulus (see EN ISO 6927 and EN ISO 11600):

— low modulus: code LM;

— high modulus: code HM.

If the evaluated secant tensile modulus value exceeds the values specified below for either or both temperatures, the sealant shall be classified as high modulus. Specified values (see Tables 2 and 3, second column) are as follows:

— 0,4 N/mm² at + 23 °C;

— 0,6 N/mm² at - 20 °C.

The secant modulus shall be the mean value of the three measured values. Round the mean value to one decimal place.

EXAMPLE:

Measured values 0,43 N/mm² 0,40 N/mm² 0,46 N/mm² and mean value 0,43 N/mm². Reported value0,4 N/mm² .

Substrates to be used in all mechanical tests concerned are; mortar M1 or M2 according to ISO 13640 and/or other substrates.

4.2.3 Test procedure

The specific test conditions shall be in accordance with Table 2.

Table 2 — Specific test conditions

	Test method	Classes of non-structural sealants for pedestrian walkways elements				
		25LM	25HM	20LM	20HM	12,5E
Elongation [a]	EN ISO 7389 EN ISO 8339 EN ISO 8340 EN ISO 10590 EN ISO 11431	100 %	100 %	60 %	60 %	60 %
Amplitude	EN ISO 9047	±25 %	±25 %	±20 %	±20 %	±12,5 %

[a] The value of elongation is given as a percentage of the original width:
elongation % = [(final width – original width) / (original width)] x 100 %

Substrates to be used in all mechanical tests concerned shall be mortar M1 or M2 and/or anodised aluminium and/or glass, according to ISO 13640.