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Karakterizacija enokomponentnih pen - 5. del: Izolacija

Characterization of One Component Foam - Part 5: Insulation

Charakterisierung von Einkomponentenschäumen - Teil 5: Dämmung

Caractérisation des mousses monocomposants - Partie 5 : Isolation

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Characterisation of one component foam - Part 5: Insulation

Caractérisation des mousses monocomposants - Partie 5 : Isolation

Charakterisierung von Einkomponentenschäumen - Teil 5: Dämmung

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European foreword

This document (EN 17333-5:2020) has been prepared by Technical Committee CEN/TC 193 “Adhesives”, the secretariat of which is held by UNE.

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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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

This document is one of the product European Standards within the framework series of EN 17333 on Characterisation of one component foam, as follows:

— *Part 1: Foam yield characteristics*;

— *Part 2: Expansion characteristics*;

— *Part 3: Application*;

— *Part 4: Mechanical strength*;

— *Part 5: Insulation* (this document).

This document is one of a series of standards that specify test methods for determining the properties of one component foams (OCFs).

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies test methods for the evaluation of the insulation properties for moisture curing, self-curing activatable or water drying foams dispensed from single pressurised foam containers.

This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.

The following test method is described:

— Thermal conductivity: This method describes how to determine the long term thermal conductivity of a cured OCF foam, dispensed from a pressurised foam container, with a sample subjected to accelerated ageing procedure.

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 923, *Adhesives - Terms and definitions*

EN 12667, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Products of high and medium thermal resistance*

EN 15006, *Metal aerosol containers — aluminium containers — dimensions of the 25,4 mm aperture*

EN 14847, *Aerosol containers — Tinplate containers — Dimensions of the 25,4 mm aperture*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

— IEC Electropedia: available at http://www.electropedia.org/

3.1
one component foam
(OCF)
moisture curing or water drying foam as well as self-curing activatable foam dispensed from a single pressurised foam container

3.2
pressurised foam container
pressurised can according to EN 14847 and EN 15006

3.3
test container
pressurised can according to EN 14847 and EN 15006 used for testing purposes

4 Test method

4.1 Principle

The test piece is prepared by foaming into a mould made of two plates and spacers of non-adherent material. After curing, the two sides of the mould are open and the foam sample removed. The sample is then cut into the desired dimensions, depending on the measuring device to be used of e.g. 300 × 300 mm or 200 × 200 mm. The test is carried out on the basis of EN 12667 with a mean temperature of 10 °C.

4.2 Equipment

4.2.1 2 plates (not water absorbing, not adherent) dimensions of 300 mm × 400 mm × 10 mm.

4.2.2 2 spacers not water absorbing, not adherent, (e.g. polyethylene (PE), polytetrafluoroethylene (PTFE), on which polyurethane (PU) does not adhere), with dimensions of 300 mm × 30 mm × 30 mm.

4.2.3 4 clamps.

4.2.4 Water atomizer.

4.2.5 Sharp and clean knife blade.

4.2.6 Balance with accuracy of 0,1 g.

4.2.7 Thermal conductivity meter.

4.3 Sampling

4.3.1 Conditioning

Bring the plates, the spacers and the test container to the test temperature (23 ± 2) °C and (50 ± 5) % relative humidity (RH) for at least 24 h.

4.3.2 Standard test pieces preparation

Lightly moisten the inner side of the plates with the water atomizer (ca 10 g per plate), making sure the water is homogenously sprayed on the plates.

Prepare the mould by placing the spacers between the plates and tighten it with the clamps.

Shake an unused test container vigorously 20 times.

Extrude the foam in multiple layers between the plates, until the foam fills up the mould (see Figure 1).

For moisture curing foams, after 24 h the foam sample can be removed from the mould and cut in the desired dimension. For other technologies refer to manufacturer's specification.

Prepare at least three test pieces according to the steps described above.

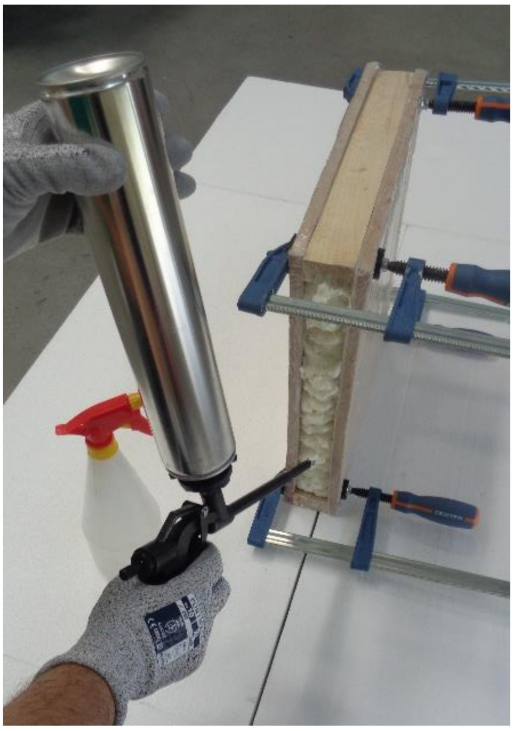

Figure 1 — Prepare the mould and fill with foam

4.3.3 Special test pieces preparation for dimensions above 30 mm thickness

When larger test pieces are required, or for foams with a tendency to warpage or deformation, the following larger test piece should be prepared according to below procedure.

Lightly moisten the inner side of the plates with the water atomizer (ca 1 g per plate), making sure the water is homogenously sprayed on the plates.

Prepare the mould by placing the spacers between the plates and tighten it with the clamps.

Shake an unused test container vigorously 20 times.

Extrude the foam in multiple layers between the plates until the foam fills up the mould (see Figure 1). Moisten 5 g before applying each layer.

For moisture curing foams, after 24 h the foam sample can be removed from the mould and cut in the desired dimension. For other technologies refer to manufacturer's specification.

Prepare at least three test pieces according to the steps described above.

NOTE It is also possible to produce the samples horizontally.

4.4 Test procedure

Store the removed and cut foam samples for 21 days in oven at (70 ± 2) °C for ageing.

Prepare the measuring device (see Figure 2). Set mean temperature between hot and cold plate on 10 °C, with temperature difference between the two plates e.g. 5 °C and 15 °C. Calculate the density by measuring the dimensions and the weight.

Carry out the test on the basis of EN 12667. It is necessary to complete at least three test pieces measurements to obtain a statistically relevant mean value.

Figure 2 — Measurement with a thermal conductivity meter

4.5 Expression of results

The following information shall be reported:

a) name of test piece;

b) the length, width, thickness and density of the test piece;

c) mean temperature of the hot plate in °C;

d) mean temperature of the cold plate in °C;

e) mean temperature between hot and cold plate in °C;

f) mean value of thermal conductivity in W/m·K.