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Värmeisoleringsprodukter för byggnader – PU limskum för utvändiga värmeisoleringsystem (ETICS)

Thermal insulation products for buildings – Methods of identification and test methods for one-component PU adhesive foam for External Thermal Insulation Composite Systems (ETICS)

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EUROPEAN STANDARD

EN 17101

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2018

ICS 91.100.60

English Version

**Thermal insulation products for buildings - Methods of
identification and test methods for one-component PU
adhesive foam for External Thermal Insulation Composite
Systems (ETICS)**

Produits isolants thermiques pour le bâtiment -
Méthodes d'identification et méthodes d'essai des
mousses PU adhésives monocomposant pour systèmes
d'isolation thermique extérieure par enduit sur isolant
(ETICS)

Wärmedämmstoffe für Gebäude - Methoden der
Identifizierung und Testmethoden für Ein-
Komponenten-PU-Klebstoffschaum für
Wärmedämmverbundsysteme (WDVS)

This European Standard was approved by CEN on 23 April 2018.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17101:2018) has been prepared by Technical Committee CEN/TC 88 “Thermal insulating materials and products”, 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of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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Introduction

This European Standard covers moisture curing one-component PU foams (1C-PU foams) dispensed from pressurized containers and used as adhesive foam.

1 Scope

This document specifies methods of identification and test methods for the performance evaluation of one-component PU foams used as adhesive foam.

Other foams are not covered by this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 312, *Particleboards — Specifications*

EN ISO 9229, *Thermal insulation — Vocabulary (ISO 9229)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 9229 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

PU adhesive foam

moisture curing one component polyurethane (PU) foam dispensed from pressurised containers

3.2

foam density

density of the free expanded and cured PU adhesive foam

3.3

tack free time

time period between dispensing and formation of an adhesion-free surface of a PU adhesive foam

3.4

cutting time

time period between dispensing of the PU adhesive foam and when it can be clean cut, without destroying the foam structure

3.5

post application expansion behaviour

increase of the distance between the substrate and the applied insulation board from dispensing of the PU adhesive foam until full curing is achieved

4 Symbols and units

For the purposes of this document, the following symbols and units apply.

b is the width in mm

d is the thickness in mm

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ρ_a is the foam density in kg/m^3

m is the mass in g

V_0 is the volume level of water before the specimen immersion in ml

V_1 is the volume level of water and specimen following immersion in ml

t is the time in min

F is the force in N

S is the area in mm^2

τ is the shear strength in kPa

5 Test methods

5.1 General

Measureable attributes of polyurethane adhesive foam are:

- foam density;
- tack-free time;
- cutting time;
- post application expansion behaviour;
- cohesion strength;
- shear strength;

Table 1 provides the clause number for each test method, specimen sizes, conditioning and test conditions and the number of measurements required to evaluate each characteristic.

Table 1 — Test methods, test specimens and conditions

Clause	Dimensions of the test specimen	Minimum number of measurements to obtain one test result	Conditioning and test temperature/relative humidity
5.3 — Foam density	Diameter strings: (20 to 30) mm Length: 200 mm ± 15 mm	5	(23 ± 2) °C (50 ± 5) % r.h.
5.4 — Tack free time	Diameter (20 to 30) mm	3	
5.5 — Cutting time	Diameter (20 to 25) mm	3	
5.6 — Post application expansion behaviour	(500 ± 2) mm × (500 ± 2) mm Spacers: 8 mm ± 0,5 mm thick	1 (Derived from 6 time interval measurements)	
5.7 — Cohesion strength	(50 ± 1) mm × (50 ± 1) mm Spacers: 8 mm ± 0,5 mm thick	5	
5.8 — Shear strength	(100 ± 1) mm × (100 ± 1) mm Spacers: 8 mm ± 0,5 mm thick	3	

5.2 Common rules applicable to all tests

5.2.1 General

- a) Canisters from the same batch shall be used to evaluate all properties, as detailed in 5.3 to 5.8.
- b) The application of PU adhesive foams for testing shall be performed using the adapter or the gun as specified by the test sponsor.
- c) The test canister(s) shall be conditioned at (23 ± 2) °C, (50 ± 5) % r.h. for at least 24 h prior to the test.
- d) Each canister shall be shaken vigorously at least 20 times just before application and the first (50 ± 5) g of PU adhesive foam shall be discarded.
- e) The test specimen shall be prepared and conditioned at (23 ± 2) °C, (50 ± 5) % r.h.
- f) All tests shall be performed at (23 ± 2) °C, (50 ± 5) % r.h.

5.3 Foam density

5.3.1 Test apparatus and materials

- 5.3.1.1 Canister(s), with PU adhesive foam for evaluation.
- 5.3.1.2 Application substrate, e.g. PolyEthylene-foil, paper or cardboard.
- 5.3.1.3 Sharp and clean cutting knife, e.g. scalpel or craft knife with thin blade.
- 5.3.1.4 Balance, with an accuracy of 0,1 g.
- 5.3.1.5 Measuring cylinder graduated in increments no greater than 10 ml.