Technický a zkušební ústav stavební Praha, s.p.

Prosecká 811/76a
190 00 Prague
Czech Republic
tel.: +420 286 019 400
eota@tzus.cz

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

Evaluation Report of ETA 13/0353

issued on 28/05/2021

Technical Assessment Body issuing the ETA	Technický a zkušební ústav stavební Praha, s.p.
Trade name of the construction product	WATISOL VATIZOL
Manufacturer	EKOCELL CZ s.r.o. Kunín č.p. 255 742 53 Kunín Czech Republic www.ekocell.cz
Manufacturing plant	Kunín č.p. 255 742 53 Kunín Czech Republic
Product family to which the construction product belongs	PAC: 4 Thermal insulation products - In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres (free cellulose fibres)
This Evaluation Report contains	7 pages

1 INTRODUCTION

This Evaluation Report contains the test results used for assessing of the insulating material made of loose, free cellulose fibres with designations
WATISOL and **VATIZOL.**

in accordance with the essential requirements as specified in European Assessment Document (EAD) 040138-01-1201 for “In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres”, edition May 2018.

2 AVAILABLE DOCUMENTS

[1] European Assessment Document (EAD) No. 040138-01-1201 for “In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres”, edition May 2018

[2] ETA application form No Z070170077

[3] Technical data sheet

[4] Report No 010-039068 issued on 04/12/2017 by Technický a zkušební ústav stavební Praha, s.p., Branch 0100-Prague, Czech Republic

[5] Test report No 070-045147 issued on 18/03/2013 by Technický a zkušební ústav stavební Praha, s.p., Branch 0700-Ostrava, Czech Republic

[6] Test report No 040-057637 on measurement of specific airflow resistivity issued by the Technický a zkušební ústav stavební Praha, s.p., branch Teplice on 05/04/2018, Czech Republic

[7] Test report No 040-057646 on measurement of sound absorption issued by the Technický a zkušební ústav stavební Praha, s.p., branch Teplice on 06/04/2018, Czech Republic

[8] Test report No FIRES-RF-086-20-AUNS on test of reaction to fire issued by FIRES, s.r.o., Slovak Republic, date of issue 09/12/2020

[9] Test report No FIRES-RF-087-20-AUNS on test of reaction to fire issued by FIRES, s.r.o., Slovak Republic, date of issue 09/12/2020

[10] Test report No FIRES-RF-088-20-AUNS on test of reaction to fire issued by FIRES, s.r.o., Slovak Republic, date of issue 09/12/2020

[11] Test report No FIRES-RF-089-20-AUNS on test of reaction to fire issued by FIRES, s.r.o., Slovak Republic, date of issue 09/12/2020

[12] Reaction to fire classification report No FIRES-CR-197-20-AUPS issued by FIRES, s.r.o., Slovak Republic, date of issue 09/12/2020

[13] Test report No AZL 17/1213-01 on determination of resistance to mould fungus issued by Textilní zkušební ústav on 06/12/2017, Czech Republic

[14] Test report No AZL 17/1213-02 on determination of resistance to mould fungus issued by Textilní zkušební ústav on 06/12/2017, Czech Republic

[15] Test report No 18/420/T005 on determination of hygroscopic sorption performance issued by Centrum stavebního inženýrství a.s., Czech Republic

3 DEFINITION OF PRODUCT AND INTENDED USE

2.1 Definition of product

The cellulose fibers are produced from the sorted recycled waste paper by mechanical crushing. The waste paper used in manufacturing process has to fulfill the quality criteria given by the manufacturer.

The product is intended to be used for the production of insulation layers (which serve as thermal and/or acoustic insulation) by means of machine processing at the place of use. The reaction to fire classification of the products is improved during the production process by adding of fire retardants.

Note: The insulation has to be covered to avoid direct contact with the user of the building.

The machine processing is carried out in dry conditions (99 % of all applications) or under the addition of water (1 % of all applications).

The product can be used for the application for walls (closed cavities of external and interior walls, roofs (closed cavities between rafters and timber beams etc.), ceilings, floors etc.

The product shall only be installed in structures where it is protected from wetting, weathering and moisture, soil.

The ETA is issued for the above-mentioned products on the basis of agreed data/information, deposited with the Technical Assessment Body - Technical and Test Institute for Construction Prague, which identifies the products that have been assessed.

The insulating materials can be used as no load-bearing insulating material for intended uses where vertical or horizontal cavities are completely filled or horizontal, arched or moderately pitched exposed areas are covered.

Table 1: Minimal density of the insulation material regarding the area of application and thickness of the insulation layer

Area of application	Thickness of insulation layer [cm]	Density [kg/m^3]
Flat open area	10	30-35
	20	40
	30	45
	40	55
	50	60
	60	65
Horizontal closed cavity or cavity with the slope to 28°	10	45
	20	50
	30	55
	40	55
	50	60
	60	65
Cavity with slope approximately 45°	10	50
	20	55
	30	55
	40	60
Cavity with slope approximately 68°	10	55
	20	60
	30	65
	40	65
Cavity in the vertical partition or in the outside wall of the house	10	65
	20	65
	30	65
	40	65

Note: In case of application to cavity walls the products must be covered from both sides to avoid risk of moisture.

Note: Tolerance of the density is ± 10 %.

4 ASSESSMENT OF PRODUCT

Table 2: Performances of the product

No	**Essential characteristic** (assessment method)	**Expression of product performance**	**Test report/Classification report**
Basic Works Requirement 2: Safety in case of fire			
1	**Reaction to fire** (EAD 040138-01-1201, Cl. 2.2.1)	B-s2, d0	FIRES-CR-197-20-AUPS
Basic Works Requirement 3: Hygiene, health and the environment			
2	**Biological resistance** (resistance to mold fungus) (EAD 040138-01-1201, Cl. 2.2.5, method A and B)	Method A: Growth intensity: 0 Method B: Class: BA Growth intensity: 0	AZL 17/1213-01 AZL 17/1213-02
Basic Works Requirement 5: Protection against noise			
3	**Sound absorption** (EAD 040138-01-1201, Cl. 2.2.2) - acoustic absorption index α_w - sound absorption coefficient α_p calculated in 1/1 octave bands at the frequency: - 125 Hz - 250 Hz - 500 Hz - 1000 Hz - 2000 Hz - 4000 Hz - class	 1.00 0.60 1.00 1.00 1.00 1.00 1.00 A	040-057646
Basic Works Requirement 6: Energy economy and heat retention			
4	**Thermal conductivity** * (EAD 040138-01-1201, Cl. 2.2.3) $\lambda_{D, 23,50}$ $\lambda_{10, dry}$(30 kg/m³) $\lambda_{10, dry}$(65 kg/m³) $\lambda_{10, dry, limit}$(30 kg/m³) $\lambda_{10, dry, limit}$(65 kg/m³) $\lambda_{10, dry, 90/90}$(30 kg/m³) $\lambda_{10, dry, 90/90}$(65 kg/m³) $\lambda_{10(23,50)}$ (30 kg/m³) $\lambda_{10(23,50)}$ (65 kg/m³) $\lambda_{10(23,80)}$ (30 kg/m³) $\lambda_{10(23,80)}$ (65 kg/m³)	 0.0386 W/m·K 0.0375 W/m·K 0.0364 W/m·K 0.0377 W/m·K 0.0365 W/m·K 0.0380 W/m·K 0.0366 W/m·K 0.0384 W/m·K 0.0380 W/m·K 0.0393 W/m·K 0.0392 W/m·K	070-045147

No	Essential characteristic (assessment method)	Expression of product performance	Test report/Classification report
	For conversion of humidity the following applies: - mass-related moisture contents $u_{23,50}$(30 kg/m³) $u_{23,50}$(65 kg/m³) $u_{23,80}$(30 kg/m³) $u_{23,80}$(65 kg/m³) -moisture conversion factors $f_{u,1}$(30 kg/m³) $f_{u,1}$(65 kg/m³) -conversion factors to high moisture content $f_{u,2}$(30 kg/m³) $f_{u,2}$(65 kg/m³) $f_{u,2}$	 0.0947 0.0435 0.1240 0.0697 0.2505 0.8261 0.7898 1.7672 1.2785	
5	**Water vapor diffusion resistance** (EAD 040138-01-1201, Cl. 2.2.4) water vapor resistance factor μ (climate condition A)	 1.37	070-045147
6	**Water absorption** (for specific applications only) (EAD 040138-01-1201, Cl. 2.2.6)	No performance assessed	---
7	**Corrosion developing capacity** (EAD 040138-01-1201, Cl. 2.2.7)	No performance assessed	---
8a	**Settlement in cavities of walls and between rafters** (EAD 040138-01-1201, Cl. 2.2.8)	settlement 0,0 % (settlement ≤ 1%) class SC O bulk density after settlement: 67.35 kg/m³ bulk density before settlement: 67.33 kg/m³	010-039068
8b	**Settlement under cyclical temperature and cyclic humidity** (EAD 040138-01-1201, Cl. 2.2.8)	No performance assessed	---
8c	**Settlement under impact excitation and constant temperature and humidity conditions** (EAD 040138-01-1201, Cl. 2.2.8)	No performance assessed	---
9	**Critical moisture content** (EAD 040138-01-1201, Cl. 2.2.9)	75 % Note: The critical moisture content is required according to the Swedish building regulations (see section 6:52 of the Boverket's building regulations - mandatory provisions and general recommendations, BBR. BFS 2011:6 with amendments up to BFS 2016:6).	---

No	Essential characteristic (assessment method)	Expression of product performance	Test report/Classification report
10	**Specific airflow resistivity **** (EAD 040138-01-1201, Cl. 2.2.10)	1.7 kPa.s/m^2	040-057637
11	**Hygroscopic and sorption properties** (EAD 040138-01-1201, Cl. 2.2.11)	Hygroscopic sorption and desorption curves	18/420/T005

*) In case of free placing (e.g. on the ceiling or between beams) a reduced insulation layer thickness for calculating the thermal resistance is to be determined from the installation thickness taking account the settlement. Reduction value for intended use in cavities of walls and between rafters is 1 % and was determined from the highest permitted value of settlement (according to Annex B.2 of EN 15101-1) based on test results. Regarding the fact that other types of settlement were not assessed, the reduction value may be different in other cases.

**) This characteristic also relates to BWR 5, bulk density 40 kg/m^3.

Declared values of λ are representative for at least 90 % of the production with a confidence level of 90% and covers the density range (30-65) kg/m^3. For the admissable deviation of an individual value of thermal conductivity from the declared value the method described in annex F of EN 13172 applies.

The performances are only valid for the specified densities.

5 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

See ETA, clause 4.

6 TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN THE APPLICABLE EAD

See ETA, clause 5.