

European Technical Assessment**ETA 13/0623**
of 25/06/2018

General Part

**Technical Assessment Body issuing the
European Technical Assessment:**

RISE Research Institutes of Sweden AB

Trade name of the construction productPapiruld/Envinsu/Papiruld Standard/Papiruld
Lyd/Papiruld Iso-Let/Øko Isolering/Hansens
Isolering**Product family to which the construction
product belongs**In-situ formed loose fill thermal and/or
acoustic insulation product made of vegetable
fibres**Manufacturer**Papiruld Danmark A/S, Brødeskovvej 40,
DK- 3400 Hillerød, Denmark
www.papiruld.dk**Manufacturing plant(s)**

Same as above

**This European Technical Assessment
contains**

7 pages.

**This European Technical Assessment is
issued in accordance with regulation
(EU) No 305/2011, on the basis of**EAD 040138-00-1201, November 2015 -
In-situ formed loose fill thermal and/or
acoustic insulation products made of
vegetable fibres**This version replaces**ETA 13/0623- 29/06/2013, corrigendum
2017-03-22

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Specific parts

1 Technical description of the product

1.1 Description of the construction product

The product with trade name Papiruld and sub trade names Envinsu/Papiruld Standard/Papiruld Lyd/Papiruld Iso-Let/Øko Isolering/Hansens Isolering consists of >85 % vegetable fibres with <15% binding and flame retardant agents, supplied as in-situ formed loose fill vegetable fibres for manual or mechanical installation.

The vegetable fibre consists of cellulose and are produced from waste paper by mechanical crushing. The product is installed with different densities depending on the area of application (installation density range 28 – 56 kg/m³).

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with the Technical Assessment Body (RISE Research Institutes of Sweden AB), which identifies the product that has been assessed.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he consider necessary.

It is assumed that the product will be installed according to the manufacturer's instructions.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

2.1 Intended uses

The insulation product, to be used in cavities of roofs, walls or floors, between rafters and timber work, supplied as loose fill for manual or mechanical installation.

The assessment of the insulation product only applies if the product is used in structures where it will not be exposed to compression loads, precipitation, wetting or weathering and for construction elements with no contact to water and soil or in constructions with no risk that the critical moisture content will be exceeded.

2.2 Working life/durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the thermal insulation product for the intended use of 50 years when installed in the works provided that the thermal insulation product is subject to appropriate installation (see 1.1). These provisions are based upon the current state of the art and the available knowledge and experience.

The indication given as to the workinglife of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when issuing the EAD nor by the Technical Assessment

Body (RISE Research Institutes of Sweden AB), but are regarded only as s means for expressing the expected economically reasonable working life of the product.

3 Performance of the product and references to the methods used for its assessment

3.1 Essential characteristics and their performance

		Characteristic	Performance
BWR 1	Mechanical resistance and stability	Not applicable	Not applicable
BWR 2	Safety in case of fire	Reaction to fire	Clause 3.1.1
BWR 3	Hygiene, health and the environment	Biological resistance	Clause 3.1.2
BWR 4	Safety in use	Not applicable	Not applicable
BWR 5	Protection against noise	Sound absorption	Clause 3.1.3
BWR 6	Energy economy and heat retention	Thermal conductivity	Clause 3.1.4
		Water vapour diffusion resistance	Clause 3.1.5
		Water absorption	Clause 3.1.6
		Corrosion developing capacity	Clause 3.1.7
		Settlement / density	Clause 3.1.8
		Critical moisture content	Clause 3.1.9
		Specific airflow resistivity	Clause 3.1.10
	Hygroscopic sorption properties	Clause 3.1.11	
BWR 7	Sustainable use of natural resources	Not applicable	Not applicable

3.1.1 Reaction to fire

The reaction to fire of the insulating material has been determined according to EN ISO 11925-2 and EN 13823.

Class D-s2, d0 at installation density $\geq 40 \text{ kg/m}^3$ according to EN 13501-1.

3.1.2 Biological resistance

The determination of the growth of moulds fungus has been determined according to test method A of Annex B of EAD 040138-00-1201, November 2015.

Class 0 (No growth of moulds visible under the microscope), according to table 4 of EN ISO 846.

3.1.3 Sound absorption

No performance assessed (NPA).

3.1.4 Thermal conductivity

Lambda fractile value at 10°C, at dry conditions has been determined at the reference temperature of 10 °C at dry conditions according to Annex A, clause 1 of EAD 040138-00-1201, November 2015.

The fractile value of thermal conductivity for the density range 36 - 52 kg/m³, representing at least 90 % of the production with a confidence level of 90 % and is,

$$\lambda_{10,dry,90/90} = 0,0388 \text{ W}/(\text{m} \cdot \text{K})$$

Mass-related moisture conversion coefficient (f_{u,1}) for conversion of $\lambda_{10,dry}$ to $\lambda_{23,50}$ has been calculated by following the procedure described in Annex A, clause 2 of EAD 040138-00-1201, November 2015 and is,

$$f_{u,1} = 0.24$$

Lambda declared at 23°C and 50% relative humidity $\lambda_{D(23,50)}$ has been calculated by following the procedure described in Annex A, clause 3 of EAD 040138-00-1201, November 2015 and is,

$$u_{23/50} = 0,092 \text{ kg/kg}$$

The calculated lambda declared at 23°C and 50% relative humidity for the density range 36 - 52 kg/m³, representing at least 90 % of the production with a confidence level of 90 % is,

$$\lambda_{D(23,50)} = 0,040 \text{ W}/(\text{m} \cdot \text{K})$$

Mass-related moisture conversion coefficient to high moisture content (f_{u,2}) has been calculated by following the procedure described in Annex A, clause 4 of EAD 040138-00-1201, November 2015 and is,

$$f_{u,2} = 0.42$$

the mass-related moisture content at 23°C and 50% relative humidity is

$$u_{23/50} = 0,092 \text{ kg/kg}$$

the mass-related moisture content at 23°C and 80% relative humidity is

$$u_{23/80} = 0,152 \text{ kg/kg}$$

Moisture conversion factor (dry-23/50 and 23/50-23/80) has been calculated in accordance with ISO 10456:2010, equation (4) and are,

$$F_{m1} = 1,022$$

$$F_{m2} = 1,026$$

3.1.5 Water vapour diffusion resistance

The water vapour diffusion factor has been assumed to be between 1 and 4 according to EAD 040138-00-1201, November 2015, Clause 2.2.4.

$$\mu = 1-4$$

The most unfavourable factor μ depending on construction has to be used for calculation.

3.1.6 Water absorption

No performance assessed (NPA).

3.1.7 Corrosion developing capacity

The corrosion developing capacity has been determined according to test method identical to EN 15101-1, Annex E.

Copper coupon: CR- Tested passed. No perforations of the copper coupon were observed.
Zinc coupon: Perforations of the Zinc coupon were observed.

The results indicates that water may cause chemical constitutes to migrate to thin zinc-coated steel elements adjacent to the insulation therefore shall the instructions given in point 2.1 of this ETA be considered.

3.1.8 Settlement / density

No performance assessed (NPA).

3.1.9 Critical moisture content

According to clause 2.2.9 of EAD 040138-00-1201, November 2015 the critical moisture content shall be stated as 75 %. Testing and assessing procedures are currently not available for insulation products covered by EAD 040138-00-1201, November 2015.

3.1.10 Specific airflow resistivity

The specific airflow resistivity of the insulating material has been determined according to the standard EN 29053, Method A. The mean value of the airflow resistance per unit length at a density of 40 kg/m³ is 10.0 kPa·s/m² or 17.1 kPa s/m² at a density of 50 kg/m³.

3.1.11 Hygroscopic sorption properties

No performance assessed (NPA).

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 1999/91/EC¹ - of 25 January 1999 (and Corrigendum) as amended by 2001/596/EC of 8 January 2001 of the European Commission the system of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011) is 3:

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at RISE.

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By RISE Research Institutes of Sweden AB

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¹ *Official Journal of the European Communities no. L 178, 14.7.1999, p. 52*