

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-13/0410**  
**of 8 November 2017**

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

ARBOCEL CLIMASAFE

Product family  
to which the construction product belongs

Insulating material made of loose, free cellulose fibres

Manufacturer

J. Rettenmaier & Söhne GmbH + Co. KG  
Holzmühle 1  
73494 Rosenberg  
DEUTSCHLAND

Manufacturing plant

See Annex B

This European Technical Assessment  
contains

7 pages including 2 annexes which form an integral part  
of this assessment

This European Technical Assessment is  
issued in accordance with Regulation (EU)  
No 305/2011, on the basis of

EAD 040138-00-1201

This version replaces

ETA-13/0410 issued on 4 June 2013

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## Specific Part

### 1 Technical description of the product

The European Technical Assessment applies to the thermal insulation product made of loose, free cellulose fibres with the designation "ARBOCEL CLIMASAFE".

The cellulose fibres are produced from waste paper by mechanical crushing. During the manufacturing process the product is provided with a fire protection equipment.

The European Technical Assessment has been issued for the products on the basis of agreed data/ information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed. The European Technical Assessment applies only to products corresponding to this agreed data/information.

### 2 Specification of the intended use in accordance with the applicable European Assessment Document

The insulating material serves for the production of insulation layers, not exposed to compression loads, by means of machine processing at the place of use. The machine processing is carried out in dry conditions or under the addition of water.

The thermal insulation product can be used for the following intended uses:

- Space-filling insulation in closed cavities of external and interior walls of timber frame constructions and similar structures
- Insulation in closed cavities between rafters and timber beams as well as in cavities of corresponding structures
- Exposed insulation on horizontal or moderately pitched areas ( $\leq 10^\circ$ ), e. g. insulation of topmost storey ceilings which are not subjected to foot traffic, however, are accessible
- Cavity insulation between flooring joist battens and similar substructures

The performances given in Section 3 are only valid if the thermal insulation product is installed according to the manufacture's installation instructions, used in compliance with the specifications and conditions given in Annex A and if they are protected from precipitation, wetting or weathering in built-in state and during transport, storage and installation.

The design value of the thermal conductivity shall be laid down according to relevant national provisions.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the thermal insulation products of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

For sampling, conditioning and testing the provisions of the EAD No 040138-00-1201 "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres" apply.

#### 3.1 Mechanical resistance and stability (BWR 1)

Not applicable

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic                             | Performance                                |
|------------------------------------------------------|--------------------------------------------|
| Reaction to fire<br>test acc. to EN ISO 11925-2:2010 | Class E<br>acc. to EN 13501-1:2007+A1:2009 |

### 3.3 Hygiene, health and the environment (BWR 3)

| Essential characteristic                                                                                                                                        | Performance                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Resistance to the growth of mould<br>test acc. to EAD "In-situ formed loose fill thermal and/or acoustic insulation products made of vegetable fibres", Annex B | Evaluation level 0 acc. to<br>EN ISO 846:1997 |

### 3.4 Safety and accessibility in use (BWR 4)

Not applicable

### 3.5 Protection against noise (BWR 5)

Not applicable

### 3.6 Energy economy and heat retention (BWR 6)

| Essential characteristic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Performance                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal conductivity at mean reference temperature of 10 °C<br>test acc. to EN 12667:2001                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Declared value for a moisture content of the insulation material at 23 °C and 50 % relative humidity:<br>$\lambda_{D(23,50)} = 0.039 \text{ W/(m} \cdot \text{K)}^*$ |
| Conversion of humidity<br>acc. to EN ISO 10456:2007+AC:2009<br>mass-related moisture content at 23 °C/50 % rel. humidity:<br>mass-related moisture content at 23 °C/80 % rel. humidity:<br>mass-related moisture conversion coefficient (dry to 23 °C/50 % rel. humidity):<br>mass-related moisture conversion coefficient (23 °C/50 % rel. humidity to 23 °C/80 % rel. humidity):<br>moisture conversion factor (dry to 23 °C/50 % rel. humidity):<br>moisture conversion factor (23 °C/50 % rel. humidity to 23 °C/ 80 % rel. humidity): | $u_{23,50} = 0.07 \text{ kg/kg}$<br>$u_{23,80} = 0.12 \text{ kg/kg}$<br>$f_{u1} = 0.29$<br>$f_{u2} = 0.29$<br>$F_{m1} = 1.02$<br>$F_{m2} = 1.02$                     |

\* The declared value is representative for at least 90 % of the production with a confidence level of 90 % and applies to the above-named density range. For the admissible deviation of an individual value of the thermal conductivity from the declared value the method described in EN 13172:2012, annex F, applies.

| Essential characteristic                                                                         | Performance                                                                                                               |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Water vapour diffusion resistance coefficient<br>test acc. to EN 12086:2013, climate condition C | $\mu = 1$ bis $2^{**}$                                                                                                    |
| Corrosion developing capacity                                                                    | No performance assessed                                                                                                   |
| Settlement                                                                                       |                                                                                                                           |
| Settling under impact excitation                                                                 | $\leq 13\%$ at a minimum density of $30 \text{ kg/m}^3$ and a maximum thickness of 330 mm                                 |
| Settling under vibration in wall cavity                                                          | SC 0 acc. to EN 15101-1:2013 ( $\leq 1\%$ ) at a minimum density of $45 \text{ kg/m}^3$ and a maximum thickness of 160 mm |
| Settling under defined climatic conditions                                                       | $\leq 14\%$ bei $(40 \pm 2)^\circ\text{C}$ / $(90 \pm 5) \text{ r.F.}$ at a minimum density of $30 \text{ kg/m}^3$        |
| Critical moisture content                                                                        | No performance assessed                                                                                                   |
| Airflow resistance <sup>***</sup><br>Test acc. to EN 29053:1993, Procedures A                    | $\geq 2.0 \text{ kPa.s/m}^2$                                                                                              |
| Hygroscopic sorption properties                                                                  | No performance assessed                                                                                                   |

<sup>\*\*</sup> The most unfavourable value for the construction work shall be applied each

<sup>\*\*\*</sup> Also relevant concerning BWR 5

### 3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was investigated for this product.

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

In accordance with the European Assessment Document EAD No. 040138-00-1201, the applicable European legal act is: 1999/91/EC.

The system to be applied 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 with Deutsches Institut für Bautechnik.

Issued in Berlin on 8 November 2017 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
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## ARBOCEL CLIMASAFE

### Annex A

The performances of the thermal insulation products given in Section 3 are valid if the following will be considered concerning installation and use:

- Densities at built-in stage:

| Area of application                                                                                                | Density [kg/m <sup>3</sup> ] |
|--------------------------------------------------------------------------------------------------------------------|------------------------------|
| Cavity insulation in walls                                                                                         | 45 - 60                      |
| Cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities | 40 - 60                      |
| Cavity insulation in floors, exposed insulation on horizontal and moderately pitched areas ( $\leq 10^\circ$ )     | 30 - 50                      |

- The density is determined by calculation as a quotient from the mass of the material brought in and the full volume.
- The thermal insulation layer has a constant installation thickness taking account of the nominal thickness. For that purpose suitable height marks are to be arranged by the executing company in sufficient distances before the processing. The executing company check the installation thickness and the density.
- When calculating the thermal resistance of the construction elements, the nominal thickness of the thermal insulation layer is applied as follows:

| Processing of the insulation material                                                                              | Nominal thickness                                            |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Cavity insulation in walls                                                                                         | clear span of the filled cavity                              |
| Cavity insulation in pitched roofs, cavity insulation in floors in case of subsequent blowing into closed cavities | clear span of the filled cavity                              |
| Cavity insulation in floors, exposed insulation on horizontal, and moderately pitched areas ( $\leq 10^\circ$ )    | installation thickness of the insulation material minus 20 % |

- The requirements concerning ventilation openings and the ventilation section above the thermal insulation layer are considered.
- In case of installation on pitched or arched areas slipping of the thermal insulation product is prevented by suitable measures.
- In case of use as space-filling thermal insulation in closed cavities it is made sure by appropriate measures (e. g. control drillings) that the cavity is completely filled with the thermal insulation product.
- The installation instructions given by the manufacturer shall be taken into account. Machine installation of the insulating materials shall be performed by companies trained by the manufacturer. In case of processing under the addition of water it shall be ensured that the main share of water is evaporated before closing the cavity. The time period necessary for this depends on the climatic conditions of the surroundings. Only building materials allowing an evaporation of moisture may be used as facing.
- The thermal insulation products are only processed by companies stated in a list of the manufacturer which have adequate experience in installing the material. Concerning this matter the manufacturer has trained these companies.

## ARBOCEL CLIMASAFE

### Annex B

#### Manufactureing plants

- 1.) J. Rettenmaier & Söhne GmbH + Co. KG  
Holzmühle 1  
73494 Rosenberg
- 2.) Hahn GmbH & Co. KG  
Am Bahnhof  
24796 Bredenbek
- 3.) JRS Prozesstechnik  
Calenberger Mühle 1  
30982 Pattensen
- 4.) Celltechnik Lodenau  
Hauptstraße 40  
02929 Rothenburg
- 5.) Rettenmaier UK Manufacturing Ltd  
Robin Hood House  
Strawberry Way  
Forresttown  
Mansfield  
NG 190FY  
ENGLAND