

Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-PL-14116-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 18.12.2023

Date of issue: 18.12.2023

Holder of accreditation certificate:

**Forschungsinstitut für Wärmeschutz e. V. München
Lochamer Schlag 4, 82166 Gräfelfing**

with the location

**Forschungsinstitut für Wärmeschutz e. V. München
Lochamer Schlag 4, 82166 Gräfelfing**

The testing laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The testing laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and they conform to the principles of DIN EN ISO 9001.

Tests in the fields:

**Tests at thermal insulation materials, building materials, underlays and construction units:
determination of the thermal conductivity and of the service temperature; tests of reaction to fire;
tests of the mechanically-technological, physical and selected chemical properties as well as sampling
of thermal insulation materials on behalf of certification bodies**

**Testing of flexible sheets for waterproofing and thermal insulation products (system of assessment
and verification of constancy of performance 3) within the scope of the Regulation (EU) No
305/2011 laying down harmonised conditions for the marketing of construction products
(Construction Products Regulation)**

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

Abbreviations used: see last page

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Tests of reaction to fire of construction products, for which the reference to a relevant harmonised technical specification is not required (chapter 3. Annex V, (EU) No 305/2011)

Within the scope of accreditation marked with * the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standards or equivalent testing methods listed here with different issue dates.

The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

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1 Tests at thermal insulation materials, building materials, underlays and construction units: determination of the thermal conductivity and of the service temperature; tests of reaction to fire; tests of the mechanically-technological, physical and selected chemical properties as well as sampling of thermal insulation materials on behalf of certification bodies

1.1 Tests of thermal conductivity *

| | |
|---------------------------|--|
| EN ISO 8497 1996 | Thermal insulation - Determination of steady-state thermal transmission properties of thermal insulation for circular pipes |
| ISO 8301 AMD 1 2010-08 | Thermal insulation - Determination of steady-state thermal resistance and related properties - Heat flow meter apparatus; Amendment 1 |
| ISO 8302 1991-08 | Thermal insulation; determination of steady-state thermal resistance and related properties; guarded hot plate apparatus |
| EN 12664 2001 | Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products with medium and low thermal resistance |
| EN 12667 2001 | 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 12939 2000 | Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Thick products of high and medium thermal resistance |
| DIN 52612-3 1984-06 | Testing of Thermal Insulating Materials; Determination of Thermal Conductivity by the Guarded Hot Plate Apparatus; Thermal Resistance of Laminated Materials for Use in Building Practice <i>(withdrawn standard)</i> |
| DIN 52613 1977-01 | Thermal Insulation Testings; Determination of Thermal Conductivity by the Tube Method <i>(withdrawn standard)</i> |
| ASTM C 177 2019 | Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus |

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| ASTM C 518 2017 | Standard Test Method for Steady-State Heat Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus |
| ASTM C 335/C335M 2017 | Standard Test Method for Steady-State Heat Transfer Properties of Horizontal Pipe Insulation |

1.2 Tests of reaction to fire *

| | |
|-----------------------|--|
| EN 16733 2016-07 | Reaction to fire tests for building products - Determination of a building product's propensity to undergo continuous smouldering |
| DIN 4102-1 1998-05 | Fire behavior of building materials and building components - Part 1: Building materials; concepts, requirements and tests <i>(here: Paragraph 6.2 - Building material class B2 and Paragraph 6.3 - Building material class B3)</i> |

1.3 Tests of the service temperature *

| | |
|----------------------|--|
| ISO 8142 1990-03 | Thermal insulation; bonded preformed man-made mineral fibre pipe sections; specification |
| EN 14706 2012 | Thermal insulating products for building equipment and industrial installations - Determination of maximum service temperature |
| EN 14707 2012 | Thermal insulating products for building equipment and industrial installations - Determination of maximum service temperature for preformed pipe insulation |
| DIN 52271 1981-06 | Testing of mineral fibre insulating materials; Behaviour at elevated temperatures <i>(withdrawn standard)</i> |

1.4 Tests of dimensions and bulk density as mechanically-technological characteristics *

| | |
|---------------------|---|
| ISO 23766 2022 | Thermal insulating products for industrial installations - Determination of the coefficient of linear thermal expansion at sub-ambient temperatures Method B |
| EN ISO 4590 2016 | Rigid cellular plastics - Determination of the volume percentage of open cells and of closed cells |

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| EN ISO 9053-1 2018 | Acoustics - Determination of airflow resistance - Part 1: Static airflow method |
| EN ISO 16535 2019 | Thermal insulating products for building applications - Determination of long term water absorption by immersion |
| EN ISO 16536 2019 | Thermal insulating products for building applications - Determination of long term water absorption by diffusion |
| EN ISO 29767 2019 | Thermal insulating products for building applications - Determination of short term water absorption by partial immersion |
| EN 822 2013 | Thermal insulating products for building applications - Determination of length and width |
| EN 823 2013 | Thermal insulating products for building applications - Determination of thickness |
| EN 824 2013 | Thermal insulating products for building applications - Determination of squareness |
| EN 825 2013 | Thermal insulating products for building applications - Determination of flatness |
| EN 826 2013 | Thermal insulating products for building applications - Determination of compression behavior |
| EN 1602 2013 | Thermal insulating products for building applications - Determination of the apparent density |
| EN 1603 2013 | Thermal insulating products for building applications - Determination of dimensional stability under constant normal laboratory conditions (23 °C/ 50 % relative humidity) |
| EN 1604 2013 | Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions |
| EN 1605 2013 | Thermal insulating products for building applications - Determination of deformation under specified compressive load and temperature conditions |
| EN 1606 2013 | Thermal insulating products for building applications - Determination of compressive creep |

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| EN 1607 2013 | Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces |
| EN 1608 2013 | Thermal insulating products for building applications - Determination of tensile strength parallel to faces |
| EN 1609 2013 | Thermal insulating products for building applications - Determination of short term water absorption by partial immersion <i>(withdrawn standard)</i> |
| EN 12085 2013 | Thermal insulating products for building applications - Determination of linear dimensions of test specimen |
| EN 12087 2013 | Thermal insulating products for building applications - Determination of long term water absorption by immersion <i>(withdrawn standard)</i> |
| EN 12088 2013 | Thermal insulating products for building applications - Determination of long term water absorption by diffusion <i>(withdrawn standard)</i> |
| EN 12089 2013 | Thermal insulating products for building applications - Determination of bending behavior |
| EN 12090 2013 | Thermal insulating products for building applications - Determination of shear behavior |
| EN 12091 2013 | Thermal insulating products for building applications - Determination of freeze-thaw resistance |
| EN 12114 2000 | Thermal performances of buildings - Air permeability of building components and building elements - Laboratory test method |
| EN 12430 2013 | Thermal insulating products for building applications - Determination of behaviour under point load |
| EN 12431 2013 | Thermal insulating products for building applications - Determination of thickness for floating floor insulating products |
| EN 13467 2018 | Thermal insulating products for building equipment and industrial installations - Determination of dimensions, squareness and linearity of preformed pipe insulation |

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| EN 13470 2001 | Thermal insulating products for building equipment and industrial installations - Determination of the apparent density of preformed pipe insulation |
| EN 13471 2001 | Thermal insulating products for building equipment and industrial installations - Determination of the coefficient of thermal expansion |
| EN 13472 2012 | Thermal insulating products for building equipment and industrial installations - Determination of short term water absorption by partial immersion of preformed pipe insulation |
| EN 13820 2003-12 | Thermal insulating materials for building applications - Determination of organic content |
| EN 17140 2020 | Thermal insulation products for buildings - Factory-made vacuum insulation panels (VIP) – Specification chapter 5.2.6.2 Thermal resistance of the ventilated VIP under ambient pressure due to damage annex D Measurement of $p_{1/2}$ of core materials annex E Barrier performance of the envelope annex F Determination of desiccant service life time annex G Measurement of inner pressure |
| EN 29052-1 1991 | Acoustics; determination of dynamic stiffness; part 1: materials used under floating floors in dwellings |
| EN 29053 1993 | Acoustics; materials for acoustical applications; determination of airflow resistance <i>(withdrawn standard)</i> |
| DIN 18159-1 1991-12 | Cellular plastics as in-situ cellular plastics in building; in-situ polyurethane (PUR) foam for thermal insulation; application, properties, execution, testing <i>(withdrawn standard)</i> |
| DIN 18159-2 1978-06 | Cellular Plastics as in-situ Foam in Building; In-situ Foam Produced from Urea-formaldehyde (UF) Resin for Thermal Insulation; Application, Properties, Execution, Testing |
| DIN 52273 1993-05 | Testing of mineral wool insulating materials; determination of annealing loss <i>(withdrawn standard)</i> |

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| DIN 52275-1 1977-01 | Testing of mineral fibrous insulating materials; determination of linear dimensions and bulk density, plain products <i>(withdrawn standard)</i> |
| DIN 52275-2 1978-08 | Testing of mineral fibrous insulating materials; determination of linear dimensions and bulk density, casings |
| DIN 53421 1984-06 | Testing of rigid cellular plastics; compression test <i>(withdrawn standard)</i> |
| DIN 53424 1978-12 | Testing of Rigid Cellular Materials; Determination of Dimensional Stability at Elevated Temperatures with Flexural Load and with Compressive Load <i>(withdrawn standard)</i> |
| DIN 53431 1977-08 | Testing of rigid cellular plastics; determination of dimensional stability <i>(withdrawn standard)</i> |
| DIN 53433 1983-07 | Testing of rigid cellular plastics; determination of water absorption by water immersion <i>(withdrawn standard)</i> |

1.5 Tests of chemical behavior *

| | |
|------------------------|---|
| EN ISO 10304-1 2009 | Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate <i>(Limitation to the determination of the dissolved anions chloride)</i> |
| EN 13468 2001 | Thermal insulating products for building equipment and industrial installations - Determination of trace quantities of water soluble chloride, fluoride, silicate, and sodium ions and pH <i>(Limitation to the determination of the chloride ions and the pH value)</i> |

1.6 Tests of water vapour transmission properties *

| | |
|--------------------------------------|---|
| EN ISO 12570 2000+A1:2013+A2:2018 | Hygrothermal performance of building materials and products - Determination of moisture content by drying at elevated temperature |
| EN ISO 12571 2013 | Hygrothermal performance of building materials and products - Determination of hygroscopic sorption properties |

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|-------------------------|--|
| EN ISO 12572 2016 | Hygrothermal performance of building materials and products - Determination of water vapour transmission properties |
| EN 1931 2000 | Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water vapour transmission properties |
| EN 12086 2013 | Thermal insulating products for building applications - Determination of water vapour transmission properties |
| EN 13469 2012 | Thermal insulating products for building equipment and industrial installations - Determination of water vapour transmission properties of preformed pipe insulation |
| DIN 52615 1987-11 | Testing of thermal insulating materials; determination of water vapour (moisture) permeability of construction and insulating materials <i>(withdrawn standard)</i> |
| ASTM E 96/E 96M 2016 | Standard Test Methods for Water Vapour Transmission of Materials |

1.7 Tests of underlays *

| | |
|-------------------|---|
| EN 1107-1 1999 | Flexible sheets for waterproofing - Determination of dimensional stability - Part 1: Bitumen sheets for roof waterproofing |
| EN 1107-2 2001 | Flexible sheets for waterproofing - Determination of dimensional stability - Part 2: Plastic and rubber sheets for roof waterproofing |
| EN 1109 2013 | Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flexibility at low temperature |
| EN 1296 2000 | Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Method for artificial ageing by long term exposure to elevated temperature |
| EN 1297 2004 | Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water |
| EN 1848-1 1999 | Flexible sheets for waterproofing - Determination of length, width and straightness - Part 1: Bitumen sheets for roof waterproofing |

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| EN 1848-2 2019 | Flexible sheets for waterproofing - Determination of length, width, straightness and flatness - Part 2: Plastic and rubber sheets for roof waterproofing |
| EN 1849-1 1999 | Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 1: Bitumen sheets for roof waterproofing |
| EN 1849-2 2009 | Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastic and rubber sheets |
| EN 1928 2000 | Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water tightness |
| EN 12310-1 1999 | Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; determination of resistance to tearing (nail shank) |
| EN 12311-1 1999 | Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; Determination of tensile properties |
| EN 13111 2010 | Flexible sheets for waterproofing - Underlays for discontinuous roofing and walls - Determination of resistance to water penetration |
| EN 13416 2001 | Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Rules for sampling |
| EN 13859-1 2014 | Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 1: Underlays for discontinuous roofing |
| EN 13859-2 2014 | Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 2: Underlays for walls |

1.8 Sampling

| | |
|----------------------|--|
| va 8-(3a) 2017-04 | Sampling of thermal insulation materials - withdrawal on behalf of EUCEB and GGM |
|----------------------|--|

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2 Testing of flexible sheets for waterproofing and thermal insulation products (system of assessment and verification of constancy of performance 3) within the scope of the Regulation (EU) No 305/2011 laying down harmonised conditions for the marketing of construction products (Construction Products Regulation)

| Decision / resolution of the commission | System ¹⁾ | Technical specification |
|---|----------------------|--|
| 1999/90/EC Membranes – Roof underlays (in buildings) | 3 | EN 13859-1:2010 Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 1: Underlays for discontinuous roofing |
| 1999/90/EC Membranes – Water vapour control layers (in buildings) | 3 | EN 13859-1:2010 Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 1: Underlays for discontinuous roofing |
| | | EN 13859-2:2010 Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 2: Underlays for walls |
| | | EN 13984:2013 Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics |
| 1999/91/EC Thermal insulating products (factory-made products and products intended to be formed in-situ) | 3 | EN 13162:2012+A1:2015 Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification |
| | | EN 13163:2012+A1:2015 Thermal insulation products for buildings - Factory made expanded polystyrene (EPS) products - Specification |
| | | EN 13164:2012+A1:2015 Thermal insulation products for buildings - Factory made extruded polystyrene foam (XPS) products - Specification |
| | | EN 13165:2012+A2:2016 Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products – Specification |
| | | EN 13166:2012+A2:2016 Thermal insulation products for buildings - Factory made phenolic foam (PF) products – Specification |
| | | EN 13167:2012+A1:2015 Thermal insulation products for buildings - Factory made cellular glass (CG) products - Specification |

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| Decision / resolution of the commission | System ¹⁾ | Technical specification |
|---|----------------------|---|
| <p>1999/91/EC Thermal insulating products (factory-made products and products intended to be formed in-situ)</p> | <p>3</p> | <p>EN 13168:2012+A1:2015 Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification</p> |
| | | <p>EN 13169:2012+A1:2015 Thermal insulation products for buildings - Factory made expanded perlite board (EPB) products - Specification</p> |
| | | <p>EN 13170:2012+A1:2015 Thermal insulation products for buildings - Factory made products of expanded cork (ICB) - Specification</p> |
| | | <p>EN 13171:2012+A1:2015 Thermal insulation products for buildings - Factory made wood fibre (WF) products - Specification</p> |
| | | <p>EN 14303:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made mineral wool (MW) products - Specification</p> |
| | | <p>EN 14304:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made flexible elastomeric foam (FEF) products - Specification</p> |
| | | <p>EN 14305:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made cellular glass (CG) products - Specification</p> |
| | | <p>EN 14306:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made calcium silicate (CS) products - Specification</p> |
| | | <p>EN 14307:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made extruded polystyrene foam (XPS) products - Specification</p> |
| <p>EN 14308:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made rigid polyurethane foam (PUR) and polyisocyanurate foam (PIR) products - Specification</p> | | |

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| Decision / resolution of the commission | System ¹⁾ | Technical specification |
|---|----------------------|--|
| <p>1999/91/EC Thermal insulating products (factory-made products and products intended to be formed in-situ)</p> | 3 | <p>EN 14309:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made products of expanded polystyrene (EPS) - Specification</p> |
| | | <p>EN 14313:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made polyethylene foam (PEF) products - Specification</p> |
| | | <p>EN 14314:2009 + A1:2013 Thermal insulation products for building equipment and industrial installations - Factory made phenolic foam (PF) products - Specification</p> |
| | | <p>EN 14315-1:2013 Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation</p> |
| | | <p>EN 14316-1:2004 Thermal insulation products for buildings - In-situ thermal insulation formed from expanded perlite (EP) products - Part 1: Specification for bonded and loose-fill products before installation</p> |
| | | <p>EN 14317-1:2004 Thermal insulation products for buildings - In-situ thermal insulation formed from exfoliated vermiculite (EV) products - Part 1: Specification for bonded and loose-fill products before installation</p> |
| | | <p>EN 14318-1:2013 Thermal insulating products for buildings - In-situ formed dispensed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam dispensed system before installation</p> |
| | | <p>EN 14319-1:2013 Thermal insulating products for building equipment and industrial installations - In-situ formed dispensed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam dispensed system before installation</p> |

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| Decision / resolution of the commission | System ¹⁾ | Technical specification |
|---|----------------------|--|
| <p>1999/91/EC Thermal insulating products (factory-made products and products intended to be formed in-situ)</p> | <p>3</p> | <p>EN 14320-1:2013 Thermal insulating products for building equipment and industrial installations - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 1: Specification for the rigid foam spray system before installation</p> |
| | | <p>EN 14933:2007 Thermal insulation and light weight fill products for civil engineering applications - Factory made products of expanded polystyrene (EPS) - Specification</p> |
| | | <p>EN 14934:2007 Thermal insulation and light weight fill products for civil engineering applications - Factory made products of extruded polystyrene foam (XPS) - Specification</p> |
| | | <p>EN 15501:2013 Thermal insulation products for building equipment and industrial installations - Factory made expanded perlite (EP) and exfoliated vermiculite (EV) products - Specification</p> |
| | | <p>EN 15599-1:2010 Thermal insulation products for building equipment and industrial installations - In-situ thermal insulation formed from expanded perlite (EP) products - Part 1: Specification for bonded and loose-fill products before installation</p> |
| | | <p>EN 15600-1:2010 Thermal insulation products for building equipment and industrial installations - In-situ thermal insulation formed from exfoliated vermiculite (EV) products - Part 1: Specification for bonded and loose-fill products before installation</p> |
| | | <p>EN 16069:2012+A1:2015 Thermal insulation products for buildings - Factory made products of polyethylene foam (PEF) - Specification</p> |
| | | <p>ETA-98/0009 Insulation panels and insulation felts</p> |

¹⁾ of assessment and verification of constancy of performance

The requirements for a testing laboratory are fulfilled according to article 43 of the Construction Products Regulation. Testing methods, which are necessary for determining the product type and cannot be executed by the holder of the certificate, are described in the list of subcontractors.

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The testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use harmonized technical standards with different issue dates.

3 Tests of reaction to fire of construction products, for which the reference to a relevant harmonised technical specification is not required (chapter 3. Annex V, (EU) No 305/2011)

Reaction to fire*

| | |
|------------------------|---|
| EN ISO 1182 2010 | Reaction to fire tests for products - Non-combustibility test |
| EN ISO 1716 2018 | Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value) |
| EN ISO 11925-2 2010 | Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test <i>(here: Euro-class E)¹⁾</i> |

In connection with:

| | |
|----------------------------|---|
| <i>EN 13501-1 2018</i> | <i>Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests</i> |
|----------------------------|---|

¹⁾ *Testing methods within the standard, which cannot be executed by the holder of the certificate, are described in the list of subcontractors.*

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Abbreviations used:

| | |
|-------|--|
| ASTM | American Society for Testing and Materials |
| EN | European Standards |
| EUCEB | European Certification Board for Mineral Wool Products |
| ETA | European technical approval |
| GGM | Gütegemeinschaft Mineralwolle e.V. |
| ISO | International Standardization Organization |
| va- | In house method of the CAB |

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