

### TECHNICAL SPECIFICATION

Insulating slabs made of ISOVER mineral wool. The production is based on defibring method of the minerals composition melt and additional additives and ingredients. The mineral fibres produced are processed into the final slab shape on the production line. The entire fibre surface is hydrophobic. The slabs in the construction should be protected suitably against the weather effects (outer cassette sheathing, diffusion and vapour-proof foil).

### APPLICATION

ISOVER Aku slabs are suitable for plasterboard wall systems with 625 mm spacing as an acoustic and thermal insulation. The material is suitable for fire protection partition walls where the density  $\geq 40 \text{ kg}\cdot\text{m}^{-3}$  is required.

### PACKAGING, TRANSPORT, WAREHOUSING

ISOVER Aku insulation slabs are packed into the PE foil with package height up to 0.5 m. The slabs have to be transported in covered vehicles under conditions preventing their wetting or other degradation. The products are stored indoors or outdoors depending on the conditions specified in the current ISOVER price list.

### BENEFITS

- fire-resistant
- very good thermal insulation performance
- excellent acoustic properties in terms of noise absorption
- low vapour resistance - good water vapour penetrability
- environmentally friendly and hygienic
- completely hydrophobic
- long life span
- resistant to wood-destroying pests, rodents, and insect
- easy workability - can be cut, drilled into, etc.
- dimensional stability during temperature change



### DIMENSIONS AND PACKAGING

| Thickness                                  | [mm]                                 | 40         | 50     | 60     | 70    | 80    | 90    | 100   |
|--------------------------------------------|--------------------------------------|------------|--------|--------|-------|-------|-------|-------|
| Length × width                             | [mm]                                 | 1000 × 625 |        |        |       |       |       |       |
| Volume per package                         | [m <sup>3</sup> ]                    | 7.500      | 6.250  | 5.000  | 3.750 | 3.750 | 3.125 | 3.125 |
| Quantity per palette                       | [m <sup>2</sup> ]                    | 150.00     | 137.50 | 100.00 | 97.50 | 75.00 | 68.75 | 68.75 |
| Declared thermal resistance R <sub>b</sub> | [m <sup>2</sup> ·K·W <sup>-1</sup> ] | 1.10       | 1.40   | 1.70   | 2.00  | 2.25  | 2.55  | 2.85  |

### TECHNICAL PARAMETERS

| Parameter                                                                                           | Unit                                   | Methodology                            | Value                                                         | Designation code                                                                           |
|-----------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Geometric shape</b>                                                                              |                                        |                                        |                                                               |                                                                                            |
| Length <i>l</i>                                                                                     | [% , mm]                               | EN 822                                 | ±2 %                                                          |                                                                                            |
| Width <i>b</i>                                                                                      | [% , mm]                               | EN 822                                 | ±1.5 %                                                        |                                                                                            |
| Thickness <i>d</i>                                                                                  | [% , mm]                               | EN 823                                 | -3 % or -3 mm <sup>1)</sup><br>and +5 % or 5 mm <sup>2)</sup> | Class of thickness tolerances<br>T4                                                        |
| Deviation from squareness of the edge on length and width S <sub>b</sub>                            | [mm·m <sup>-1</sup> ]                  | EN 824                                 | 5                                                             |                                                                                            |
| Deviation from flatness S <sub>max</sub>                                                            | [mm]                                   | EN 825                                 | 6                                                             |                                                                                            |
| Relative change in length Δε <sub>l</sub> , in width Δε <sub>b</sub> , in thickness Δε <sub>d</sub> | [%]                                    | EN 1604                                | 1                                                             | Dimensional stability under the specified temperature and humidity conditions<br>DS (70,-) |
| <b>Thermal technical properties</b>                                                                 |                                        |                                        |                                                               |                                                                                            |
| Declared value of the thermal conductivity coefficient λ <sub>D</sub> <sup>3)</sup>                 | [W·m <sup>-1</sup> ·K <sup>-1</sup> ]  | Declaration according to EN 13162+A1   | 0.035                                                         |                                                                                            |
| Design thermal conductivity λ <sub>D</sub> <sup>4)</sup>                                            | [W·m <sup>-1</sup> ·K <sup>-1</sup> ]  | Measurement according to EN 12667      |                                                               |                                                                                            |
| Specific heat capacity c <sub>a</sub>                                                               | [J·kg <sup>-1</sup> ·K <sup>-1</sup> ] | ČSN 73 0540-3                          | 0.038                                                         |                                                                                            |
| <b>Fire safety properties</b>                                                                       |                                        |                                        |                                                               |                                                                                            |
| Reaction to fire class                                                                              | [-]                                    | Declaration according to EN 13501-1+A1 | A1                                                            |                                                                                            |
| Maximum temperature for use                                                                         | [°C]                                   |                                        | 200                                                           |                                                                                            |
| Melting temperature t <sub>f</sub>                                                                  | [°C]                                   | DIN 4102 part 17                       | ≥ 1000                                                        |                                                                                            |
| <b>Hydrothermal properties</b>                                                                      |                                        |                                        |                                                               |                                                                                            |
| Water vapour diffusion resistance factor μ                                                          | [-]                                    | EN 13162+A1                            | 1                                                             | Declared value for water vapour diffusion resistance factor<br>MU1                         |
| <b>Other properties</b>                                                                             |                                        |                                        |                                                               |                                                                                            |
| Density                                                                                             | [kg·m <sup>-3</sup> ]                  | EN 1602                                | 40                                                            |                                                                                            |

<sup>1)</sup> Whichever gives the greatest numerical tolerance.

<sup>2)</sup> Whichever gives the smallest numerical tolerance.

<sup>3)</sup> Declared values were set under the following conditions (reference temperature 10 °C, humidity u<sub>dry</sub>, which is reached by drying) according EN ISO 10456.

<sup>4)</sup> It is valid for typical use in construction with risk of condensation. In the case of construction without any risk of condensation it is possible to use the declared value of thermal conductivity.

### RELATED DOCUMENTS

- Declaration of Performance CZ0001-005
- Environmental Product Declaration
- ISO 9001, ISO 14001, ISO 45001, ISO 50001

### TECHNICAL PARAMETERS

| Parameter                                                                                                                                                                 | Unit                                        | Methodology                                   | Value                                           | Designation code |            |                |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------|-------------------------------------------------|------------------|------------|----------------|---------|
| <b>Acoustic properties<sup>5)</sup></b>                                                                                                                                   |                                             |                                               |                                                 |                  |            |                |         |
| <b>The practical sound absorption coefficient <math>\alpha_p</math></b>                                                                                                   | [-]                                         | EN 13162+A1                                   | Level of practical sound absorption coefficient | AP               |            |                |         |
|                                                                                                                                                                           |                                             | EN ISO 11654                                  |                                                 |                  |            |                |         |
|                                                                                                                                                                           |                                             | Measurement according to EN ISO 354           |                                                 |                  |            |                |         |
|                                                                                                                                                                           | Frequency                                   | 125 Hz                                        | 250 Hz                                          | 500 Hz           | 1000 Hz    | 2000 Hz        | 4000 Hz |
|                                                                                                                                                                           | Thickness                                   | 40 mm                                         | 0.15                                            | 0.40             | 0.85       | 0.95           | 0.95    |
|                                                                                                                                                                           | 60 mm                                       | 0.25                                          | 0.70                                            | 1.00             | 1.00       | 1.00           | 1.00    |
|                                                                                                                                                                           | 80 mm                                       | 0.35                                          | 0.95                                            | 1.00             | 1.00       | 1.00           | 1.00    |
|                                                                                                                                                                           | 100 mm                                      | 0.45                                          | 1.00                                            | 1.00             | 1.00       | 1.00           | 1.00    |
| <b>Weighted sound absorption coefficient <math>\alpha_w</math></b><br><b>Sound Absorption Average <math>\alpha_{sfr}</math></b><br><b>Noise Reduction Coefficient NRC</b> | [-]                                         | EN ISO 11654<br>(for NRC according ASTM C423) | Level of weighted sound absorption coefficient  | AW               |            |                |         |
|                                                                                                                                                                           |                                             | Single number value                           |                                                 |                  | $\alpha_w$ | $\alpha_{sfr}$ | NCR     |
|                                                                                                                                                                           | Thickness                                   | 40 mm                                         | 0.70 (MH)                                       | 0.79             | 0.80       |                |         |
|                                                                                                                                                                           |                                             | 60 mm                                         | 1.00                                            | 0.93             | 0.95       |                |         |
|                                                                                                                                                                           |                                             | 80 mm                                         | 1.00                                            | 1.01             | 1.00       |                |         |
|                                                                                                                                                                           | 100 mm                                      | 1.00                                          | 1.05                                            | 1.05             |            |                |         |
| <b>Specific air flow resistivity <math>r</math></b>                                                                                                                       | [kPa·s·m <sup>-2</sup> ]                    | EN 13162+A1                                   | Level of air flow resistivity                   | AFr              |            |                |         |
|                                                                                                                                                                           |                                             | Measurement according to EN ISO 9053-1        |                                                 |                  | 12.3       |                |         |
| <b>Environmental properties / impacts</b>                                                                                                                                 |                                             |                                               |                                                 |                  |            |                |         |
| <b>Volume of Pre-consumer recycled content for production<sup>6)</sup></b>                                                                                                | [%]                                         | ČSN ISO 14021                                 | 73-83                                           |                  |            |                |         |
| <b>Volume of Post-consumer recycled content for production<sup>6)</sup></b>                                                                                               | [%]                                         | ČSN ISO 14021                                 | 0                                               |                  |            |                |         |
| <b>Non-hazardous waste disposed<sup>7)</sup></b>                                                                                                                          | [kg /FU <sup>8)</sup> ]                     | EN 15804+A1,<br>ČSN ISO 14025                 | 0.841                                           | NHWD             |            |                |         |
| <b>Total use of non-renewable primary energy resources</b>                                                                                                                | [MJ /FU]                                    | EN 15804+A1,<br>ČSN ISO 14025                 | 39                                              | PENRT            |            |                |         |
| <b>Global Warming Potential</b>                                                                                                                                           | [kg CO <sub>2</sub> ekv. /FU]               | EN 15804+A1,<br>ČSN ISO 14025                 | 4.53                                            | GWP              |            |                |         |
| <b>Ozone Depletion</b>                                                                                                                                                    | [kg CFC 11 ekv. /FU]                        | EN 15804+A1,<br>ČSN ISO 14025                 | 2.34E-07                                        | ODP              |            |                |         |
| <b>Acidification potential</b>                                                                                                                                            | [kg SO <sub>2</sub> ekv. /FU]               | EN 15804+A1,<br>ČSN ISO 14025                 | 0.0329                                          | AP               |            |                |         |
| <b>Eutrophication potential</b>                                                                                                                                           | [kg PO <sub>4</sub> <sup>3-</sup> ekv. /FU] | EN 15804+A1,<br>ČSN ISO 14025                 | 0.00282                                         | EP               |            |                |         |
| <b>Photochemical ozone creation</b>                                                                                                                                       | [kg C <sub>2</sub> H <sub>4</sub> ekv. /FU] | EN 15804+A1,<br>ČSN ISO 14025                 | 0.00442                                         | POPC             |            |                |         |
| <b>Abiotic depletion potential for non-fossil resources</b>                                                                                                               | [kg Sb ekv. /FU]                            | EN 15804+A1,<br>ČSN ISO 14025                 | 6.89E-08                                        | ADP-elements     |            |                |         |
| <b>Abiotic depletion potential for fossil resources</b>                                                                                                                   | [MJ (Calorific value) /FU]                  | EN 15804+A1,<br>ČSN ISO 14025                 | 37.2                                            | ADP-fossil fuels |            |                |         |

<sup>5)</sup> Informative non-declared value beyond scope of CPR, obtained by concrete tests.

<sup>6)</sup> According to ČSN EN ISO 14021 part 7.8 Recycled content.

<sup>7)</sup> In this case it is standard mixed waste.

<sup>8)</sup> FU = functional unit (1 m<sup>2</sup> of insulation by 100 mm thick for live cycle phases A1-A3).



Example of product application ISOVER Aku