Designation: mw
Version: 01.06.2018
Source: Holzforschung Austria
Preparation: HFA, PLB

# Mineral wool

## General Description

This insulation material is produced from molten stone, cinder or glass and therefore in a kind of wooly constitution. Mineral wool is distinguished into resilient and non resilient insulation materials. Due to its low thermal conductivity, porous structure and elasticity it is used for thermal insulation, airborne sound insulation, sound absorption and impact sound insulation. The list of building materials ÖE, issued by the Austrian Institute of Construction Engineering (Österreichisches Institut für Bautechnik, OIB), mandates that all mineral wool products have to comply with EN 13162 regarding acoustic and thermal protection. The CE-certification of mineral wool products is necessary, either directly on the product itself or on a label affixed to the product. Performance requirements and regulation concerning their use are stated in ÖNORM B 6000.

## Types of products

_ according to ÖNORM B 6000

| Abbreviation | Application range |
|---|---|
| MW-WL | Bound mineral wool (lighter than MW-W), not resistant to compression, for thermal insulation of walls, ceilings and roofs. |
| MW-W | Bound mineral wool, not resistant to compression for thermal insulation of walls, ceilings and roofs. |
| MW-WF | Bound mineral wool, (stronger than MW-W), not resistant to compression, e.g. for thermal insulation of external walls with ventilation. |
| MW-WV | Bound mineral wool, can be stressed in tension perpendicular to the plane of the slab, can be used for self-supporting and ventilated facade systems without sub-structures. |
| MW-WD | Bound mineral wool, resistant to compression, can be stressed in tension perpendicular to the plane of slab, e.g. for thermal insulation of roofs and facades. |
| MW-T | Bound mineral wool, resilient, for impact sound insulation. |
| MW-PT | Bound mineral wool with high resistance in tension perpendicular to the plane of the slab as a plaster lath for external thermal insulating composite systems (ETICS). |

## Technical references

| | |
|---|---|
| ÖNORM B 6000 | Werkmäßig hergestellte Dämmstoffe für den Wärme- und/oder Schallschutz im Hochbau – Produktarten, Leistungsanforderungen und Verwendungsbestimmungen (Factory made materials for thermal and/or acoustic insulation in building construction – Product types, performance requirements and use of funds) |
| EN 13162 | Thermal insulation products for buildings – Factory made mineral wool (MW) products – Specification |
| EN 13501-1 | Fire classification of construction products and building elements<br>Part 1: Classification using data from reaction to fire tests |
| EN ISO 9229 | Thermal insulation – Vocabulary |
| ISO 9774 | Thermal insulation for building applications – Guidelines for selecting properties |

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## Terminology
_ according to EN ISO 9229

For the application of EN 13162 the following definitions apply:
Mineral wool: Insulation material similar in consistency to wool which is produced from molten stone, cinder or glass.
Roll: Rolled insulating material delivered in the shape of a cylinder.
Slab: Rigid or semi-rigid insulating material with rectangular shape and cross-section with constant thickness which is much lower than the other dimensions.

## Fire performance
_ according to EN 13501-1

| | |
|---|---|
| Euroclass | A1 - F |
| Smoke production | s1 -s3 |
| Flaming droplets | d0 - d2 |

## Physical properties
_ according to EN 13162

| | |
|---|---|
| Thermal resistance | $R_D$ [$m^2$ K/W] |
| Thermal conductivity | $\lambda_D$ [W/mK] |
| Vapour diffusion | μ |

## Minimum requirements depending on the application
_ according to ÖNORM B 6000, Table A1

The basic applications of mineral wood in timber construction are presented in Table 1.

| | Wall | | | | Ceiling and roof | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | External insulation | | | Cavity insulation | External insulation | | | Internal insulation | | | |
| Kinds of products /Types of products | with ventilation | thermal insulating composite systems ETICS | timber frame construction with plaster or cladding | timber or metal post and beam construction with panel sheathing and insulation in the cavities betweens posts | warm roof | cold roof, loft conversion | top ceiling, suitable for use in access areas (walking loads) | below screed without impact sound insulation | below screed with impact sound insulation | suspended ceiling | underside of the ceiling, for sound insulation |
| MW-WL | | | ■ 1) | ■ | | ■ | | | | ■ | |
| MW-W | ■ | | ■ 1) | ■ | | ■ | | | | ■ | ■ |
| MW-WF | ■ | | ■ 1) | ■ | | ■ | | | | | ■ |
| MW-WV | ■ | | ■ 1) | ■ | | ■ | | | | | ■ |
| MW-WD | ■ | | | | ■ | ■ | ■ | ■ | | | ■ |
| MW-T | ■ | | | | | ■ | ■ | | ■ | | ■ |
| MW-PT | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ |

1) only underneath cladding

Table 1: Basic applications of mineral wool

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## Minimum requirements for the product types
_ according to ÖNORM B 6000 and EN 13162

| Product types | Thickness | Stress at 10% compression or compressive strength | Tensile strength perpendicular to the plane of the board | Dynamic stiffness | Compressibility | Flow resistance |
|---|---|---|---|---|---|---|
| **MW** | **Ti** | **CS(10)i** | **TRi** | **SDi** | **CPi** | **$AF_r$i** |
| -WL | T1 | - | - | - | - | $AF_r$5 |
| -W | T3 | - | - | - | - | $AF_r$5 |
| -WF | T3 | CS(10)0,5 | TR1 | - | - | - |
| -WV | T3 | CS(10)5 | TR1 | - | - | - |
| -WD | T3 | CS(10)30 | TR7,5 | - | - | - |
| -T | T6 | - | - | SD50 | CP5 | $AF_r$5 |
| -PT | T5 | CS(10/Y) 30 | TR10 | - | - | - |

Table 2: Minimum designation code of individual product types in accordance with their classification according to EN 13162 (excerpt)

Additional requirements for MW-W:
For application in ventilated facades the density must be ≥ 20 kg/m$^3$