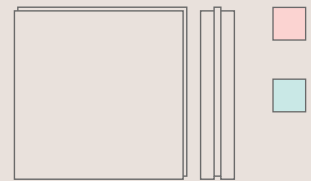


MultiGips

Technical data sheet

Solid gypsum blocks D100-RMAX/DH100-RMAX

Sound insulation board EN 12859



MAIN FEATURES

Building material Factory-made building element that is produced basically from calcium sulphate with smooth surfaces for the construction of non-load bearing partitions, independent wall linings and fire protection of columns, shafts and the like.

Also available as hydrophobic gypsum blocks EN 12859 MultiGips DH100-Rmax, water absorption class H2, with $\leq 5\%$ water absorption after 2h complete immersion in water, with bluish colour, preferred for use in domestic kitchens and bathrooms.

Properties Mineral
High dimensional stability
Tongue and groove profile for positively locking partitions
Basically dry processing with gypsum-based adhesive
Smooth, flat visible surfaces for rapid final treatment; no plaster required
EPD Environmental Product Declaration

Performance as building element Non-load bearing partitions somewhat similar to drywall construction but without the need for substructure framing
Identical properties in cross-section and surface
Less thickness required to satisfy stability, which could result in more usable area
Low weight per unit area for optimum ceiling dimensions
Reduction of structure-borne noise due to elastic connection to adjacent building components (decoupling)
Fire resistance class EI 120, E 120
Good thermal insulation for greater thermal comfort
High resistance to mechanical stresses, and hence less maintenance required

Special features Certified low level of hazardous substances for improved interior air quality helps eliminate health risks. Fulfils the requirements for use in interiors according to the Federal Environmental Agency in the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in the Federal Republic of Germany.
Extremely low emissions.

TECHNICAL FEATURES

| Performance feature | Building material | Water repellent |
|--|-----------------------------|-----------------------------|
| European standard | EN 12859 | EN 12859 |
| Building element thickness | 100 | 100 |
| Length x height (mm) | 500 x 500 | 500 x 500 |
| Block requirement (blocks/m²) | 4 | 4 |
| Colour | Reddish | Bluish |
| Density class | D (dense) high density | D (dense) high density |
| Density [kg/m³] | approx. 1,200 | approx. 1,200 |
| Unit weight (kg) | approx. 31.25 | approx. 31.25 |
| Weight per unit area (kg/m²) of building element, incl. its component | approx. 120 | approx. 120 |
| Strength class | Type R | Type R |
| Bending strength (kN) Minimum average breaking load | 7.0 | 7.0 |
| Moisture content (% by weight) at time of delivery | ≤ 8 | ≤ 8 |
| pH level | 7 – 9 (normal) | 7 – 9 (normal) |
| Water absorption class | H3 | H2 |
| Water absorption | No requirement | ≤ 5% ¹⁾ |
| Reaction to fire EN 13501-1, Euroclass | A1, no contribution to fire | A1, no contribution to fire |
| Areal thermal resistance R | 0.19 | 0.19 |
| Thermal conductivity λ_{23-50} (W/mK) | 0.43 | 0.43 |
| Water vapour diffusion resistance (μ) | 5 – 10 | 5 – 10 |
| Storage | Dry on Euro pallets | Dry on Euro pallets |

1) After two hours of complete immersion in water

BUILDING PHYSICS DATA

| Performance feature | Component |
|--|--------------------------------------|
| Fire resistance class EN 13501-2 | EI 120 ¹⁾ |
| Weighted sound reduction index Rw (dB) EN ISO 717-1 | 46 ²⁾ 42 ³⁾ |

1) Classification of a wall construction consisting of gypsum blocks without mounting parts, with mineral wool interlayer according to EN 13162 (melting point $\geq 1,000$ °C, thickness ≤ 13 mm, compressibility ≤ 3 mm) with maximum permissible wall height ≤ 3.00 m; with maximum permissible wall height ≤ 4.00 m as EI 90. For walls with fire protection requirements, wall heights according to DIN 4103-2 and EN 15318 must be considered as a priority

2) With MultiGips AkustikBit 1000; without longitudinal transmission via adjacent building elements

3) With DIN EN 13162 mineral wool insulating material (melting point $\geq 1,000$ °C, thickness ≤ 13 mm, compressibility ≤ 3 mm)

ORDER INFORMATION

| Performance feature | Building material | |
|---|-------------------------------|-------------------------------|
| Material number (D) (DH) | 842 (D) | 843 (DH) |
| Format (mm) | 500 x 500 x 100 | 500 x 500 x 100 |
| Weight (kg/unit) (kg/pallet), approx. | 31.25 kg/unit., 750 kg/pallet | 31.25 kg/unit., 750 kg/pallet |
| Packaging unit/pallet (unit) (package) | 24 pcs., 2 pack. | 24 pcs., 2 pack. |
| Area (m²/pallet) | 6.00 | 6.00 |

DOCUMENTATION

EN multigips.com

EU ce.multigips.de

EPD ibu-epd.com

ENVIRONMENTAL DATA

| Performance feature | Building material, building element |
|---|---|
| Composition | Hardened gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) |
| Emission of hazardous substances [Regulation (EC) No. 1272/2008 (materials)] (preparations 1999/45/EC) | Not liable to marking |
| Performance | |
| Emissions of volatile organic compounds (mg/m³ TVOC after 3 days) | 0.022 ¹⁾ |
| Emissions of very volatile organic compounds (mg/m³ VVOC) | 0 ¹⁾ |
| Carcinogenic substances (mg/m³ after 3 days) | 0 ¹⁾ |
| Natural radioactivity (mSv/a) | ≤ 0.02 ²⁾ |
| Persistence, bio-accumulation potential, toxicity | No PBT characteristics |
| Toxicity | Non-toxic, non-irritant, non-sensitising |
| Carcinogenicity, mutagenicity and toxicity to reproduction | No CMR properties |
| Bio-accumulation potential | No potential (inorganic, mineral) |
| Ecology | Safe in air, water and soil |
| Duration of use ³⁾ (y) | > 50 |

1) Fraunhofer Institute for Building Physics, 10.2010, certified gypsum blocks, thickness 100 mm, medium density approx. 800 kg/m³

2) Evaluation according to Radiation Protection 112 of the European Commission, source: MultiGips Environmental Product Declaration for gypsum blocks

3) Table Duration of Use of Building Components for Life Cycle Analyses according to the Nachhaltiges Bauen (Sustainable Building) (BNB) evaluation system, source: Bundesinstitut für Bau-, Stadt- und Raumforschung (Federal Institute for Research on Building, Urban Affairs and Spatial Development)(BBSR)

DIMENSIONS ACCORDING TO DIN 4103-2 AND EN 15318

Max. permissible dimensions ¹⁾ of building elements made from gypsum blocks D100-Rmax according to DIN 4103-2 (2017-09)

| Connection location/ characteristic | Installation area ²⁾ | Wall height (m) | | Wall length (m) |
|--|---------------------------------|-----------------|--|-----------------|
| | | Single-leaf | | |
| Double-sided support: Closed at least at the top and bottom, large openings possible | 1 | ≤ 7.00 | | Any |
| | 2 | ≤ 5.50 | | Any |
| Four-sided support: No large openings possible | 1 | ≤ 7.50 | | Any |
| | 2 | ≤ 6.00 | | ≤ 16.50 |
| 3-sided connection: attached at bottom and sides, no large openings possible | 1 | ≤ 7.00 | | ≤ 8.00 |
| | 2 | ≤ 5.00 | | ≤ 5.00 |

1) In case of fire protection requirements, the wall height is limited to ≤ 3 m (classification EI 120, E 120); increase of permissible wall height to max 4 m (classification EI 90, E 90)

2) Horizontal load (0.5 kN/m): Areas with low numbers of people, e.g. in homes, hotels, office buildings, hospitals, including corridors

Installation area 2: Areas with large numbers of people, e.g. large auditoriums, assembly halls, school rooms, exhibition halls and sales rooms

Max. permissible dimensions ¹⁾ single-leaf walls or wall sections with normal load levels for gypsum blocks with medium to high density without cavities according to EN 15318 (2008-01)

| Gypsum blocks (density class) | | Partition wall without wall openings | | | Partition wall with wall openings | | | Partition wall without attachment to ceiling | | |
|-------------------------------|-----------------|---|---------------|---------------|-----------------------------------|---------------|---------------|--|---------------|---------------|
| D ²⁾ | M ³⁾ | Area ⁴⁾ (m ²) | Height (m) | Length (m) | Area (m ²) | Height (m) | Length (m) | Area (m ²) | Height (m) | Length (m) |
| | 60 | 32 | 4.00 | 8.00 | | | | | 1.50 | 1.50 |
| 60 | 70 | 55 | 5.00 | 11.00 | | 2.75 | | | 2.50 | 2.50 |
| 70 | 80 | 77 | 5.50 | 14.00 | | 3.50 | | | 3.50 | 3.50 |
| 80 | 100 | | 5.50 | 16.50 | | 5.00 | | | 4.00 | 4.00 |

1) Dimensions apply for gypsum blocks and hydrophobic gypsum blocks

2) High gross density (D) according to EN 12859: $1,100 \text{ kg/m}^3 \leq \rho \leq 1,500 \text{ kg/m}^3$

3) Medium gross density (M) according to EN 12859: $800 \text{ kg/m}^3 \leq \rho < 1,100 \text{ kg/m}^3$

4) The main selection criterion is the maximum wall area

APPLICATION PRINCIPLES

Application Join gypsum blocks with gypsum adhesive for gypsum blocks EN 12860 in a staggered pattern (optional water repellent gypsum adhesive MultiGips Hydro 90). Wherever possible, the joints of subsequent blocks should not meet. For staggering of the joints, a minimum of 1/4 to 1/2 of the block length is recommended, similar to a masonry construction. In the joint area, or over the full surface, the partitions are smoothed with MultiGips adhesive for gypsum blocks or with the special MultiGips SG 90 Uni surface smoothing plaster. Joints and wall surfaces to which cladding is to be attached need not be smoothed.

Cut the gypsum blocks by handsaw or with a chainsaw. Sawdust must be removed from the cut edges. Cut-outs, e.g. for electrical installations, or small wall openings may not be chiselled out; they must be made with a power tool. Large openings, e.g. for doors, are created via placement of the blocks or are sawed out after the partition has been built. Metal installations such as doorframes or heating circuit distributors must be protected against corrosion. Fill doorframes with the special MultiGips FG 70 Füll- und Zargengips (filling plaster). Mortar which contains cement may not be used (efflorescence).

During construction, the site air temperature and the temperature of the building elements may not fall below +5 °C. Work must be suspended if night frost is expected. If possible, the top floor ceiling should be sealed in order to greatly reduce the effects of moisture during the construction phase. Construction can be carried out regardless of the effects of weather through the use of hydrophobic gypsum blocks at the base of the partition and/or MultiGips Hydro-Sockel (damp course) to prevent rising damp. If screed is to be subsequently installed, the covering of the insulation layer must be properly continued up the walls. In particular with poured asphalt screed, adequate cross-ventilation must be ensured.

Joints Gypsum blocks are connected to adjacent building components by the use of elastic interlayer. In particular for the construction of ceiling connections, care must be taken that the elastic interlayer form a sealed joint without cavities. The edges of the top-blocks can be either horizontal or bevelled. Bevelled edges increase the bonding area for the filling plaster. Dust must be removed from the cut edges, and the edges must be moistened before filling the ceiling joint. The ceiling joint must be completely filled in accord with the intended sound insulation, fire protection and structural engineering requirements.

Sound insulation In case of sound insulation requirements the connections of the partitions have to be designed with elastic interlayer. If there are no sound insulation requirements and negligible bearing forces, the connections may be rigid (without elastic interlayer).

NOTE: For partitions with certified sound insulation characteristics, the joints must be made with elastic interlayer as stated in the table "Building Physics Data".

Fire protection If the walls are to meet fire protection requirements, the joints must be made according to the national regulations. For example, elastic joints may be made if insulating material according to EN 13162 is incorporated in the form of rock wool strips.

NOTE: An assessment report by Exova Warringtonfire is available which presents a considered opinion regarding the expected fire resistance performance of a non-load bearing partition wall assembly as previously tested to German DIN 4102-2 at iBMB MPA Braunschweig. It can be concluded that the proposed partition wall assembly should be capable of providing 120 or 240 minutes integrity and insulation performance (dependent upon thickness).

SAFETY AND DISPOSAL

Possible risks The material is categorised as non-hazardous according to Regulation (EC) No. 1272/2008

Disposal Recommendation Disposal according to official regulations.

European List of Waste 17 08 02 Gypsum-based construction materials other than those mentioned in 17 08 01. Disposal as landfill, landfill category 1 and 2 according the German ordinance on the list of waste.

Packaging Bags or other packaging material must be optimally emptied and can be recycled after appropriate cleaning.

Transport Non-hazardous within the sense of international transport regulations.

Safety data sheet The information in the current safety data sheet at ce.multigips.de applies.

CALCULATION AND DELIVERY INFORMATION

On the basis of practical experience. Deviations due to changes to general conditions such as wall dimensions, room layout, type of construction, transport routes, etc. must be taken into account.

| System components | Unit | Material requirement | Delivery units Form of packaging | Packaging unit |
|---|--------------------------------|-----------------------------|---|---------------------------------|
| Gypsum blocks MultiGips D100-Rmax sound insulation board | m ² /m ² | 1 | 3.0 m ² /package (= 12 pcs.) 6.0 m ² /pallet (= 24 pcs.) | 1 pallet (2 packages/pallet) |
| Elastic interlayer AkustikPro 120-3/120-3 sk AkustikBit 1000 | m/m ² | 1.3 | 25 m roll 1 m strips | 4x 25 m rolls 50 m/package |
| Gypsum-based adhesive for gypsum blocks Adhesive ClassicWeiss 90 Adhesive SuperWeiss 120/SuperWeiss 200 Adhesive Hydro 90 | kg/m ² | approx. 1.0 – 1.5 | 25 kg bag | 40 pcs./pallet |
| Fill ceiling joint, close electrical slots FG 70 Füll- und Zargengips | kg/m ² | approx. 2 – 3 | 25 kg bag | 40 pcs./pallet |
| Gypsum filler (backfilling doorframes) FG 70 Füll- und Zargengips | kg/doorframe | approx. 17 | 25 kg bag | 40 pcs./pallet |
| Gypsum smoother (smoothing partition surface) SG 90 Uni | kg/mm/m ² | approx. 0.8 | 25 kg bag | 42 pcs./pallet |

LITERATURE

EN 12859 (2011-05) Gypsum blocks – Definitions, requirements and test methods

EN 12860 (2002-07) Gypsum based adhesives for gypsum blocks – Definitions, requirements and test methods

DIN 4103-2 (2017-09) Internal non-load bearing partitions – Part 2: Partitions made of gypsum blocks

EN 15318 (2008-01) Design and application of gypsum blocks

NOTE: In Germany gypsum blocks according to EN 12859 are used for non-load bearing partitions on the basis of German standard DIN 4103-2. The European standard EN 15318 for design and application of gypsum blocks is not applicable in Germany as it contradicts national building authority requirements.

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