

### Applications

The MB-Flachsystem (Flat system) is a heating and cooling system for general residential and office buildings, particularly for renovating and remodelling existing buildings for high loads with a minimal installation height and weight and fast control.

#### Technical data for 2.5 kN/m<sup>2</sup>

|                              |   |
|------------------------------|---|
| Construction height          | 27 mm                                       |
| Pipe covering                | 7 mm  |
| Construction mass (dry room) | 29.0 kg/m <sup>2</sup>                      |
| Construction mass (wet room) | 22.5 kg/m <sup>2</sup>                      |
| Traffic load                 | 2.5 kN/m <sup>2</sup>                       |
| Flooring                     | all, cross joint (tiles up to 600 x 600 mm) |

#### Technical data for 5.0 kN/m<sup>2</sup>

|                              |   |
|------------------------------|---|
| Construction height          | 35 mm                                       |
| Pipe covering                | 15 mm                                       |
| Construction mass (dry room) | 54.0 kg/m <sup>2</sup>                      |
| Construction mass (wet room) | 40.0 kg/m <sup>2</sup>                      |
| Traffic load                 | 5.0 kN/m <sup>2</sup>                       |
| Flooring                     | all, cross joint (tiles up to 600 x 600 mm) |

### Packaging units

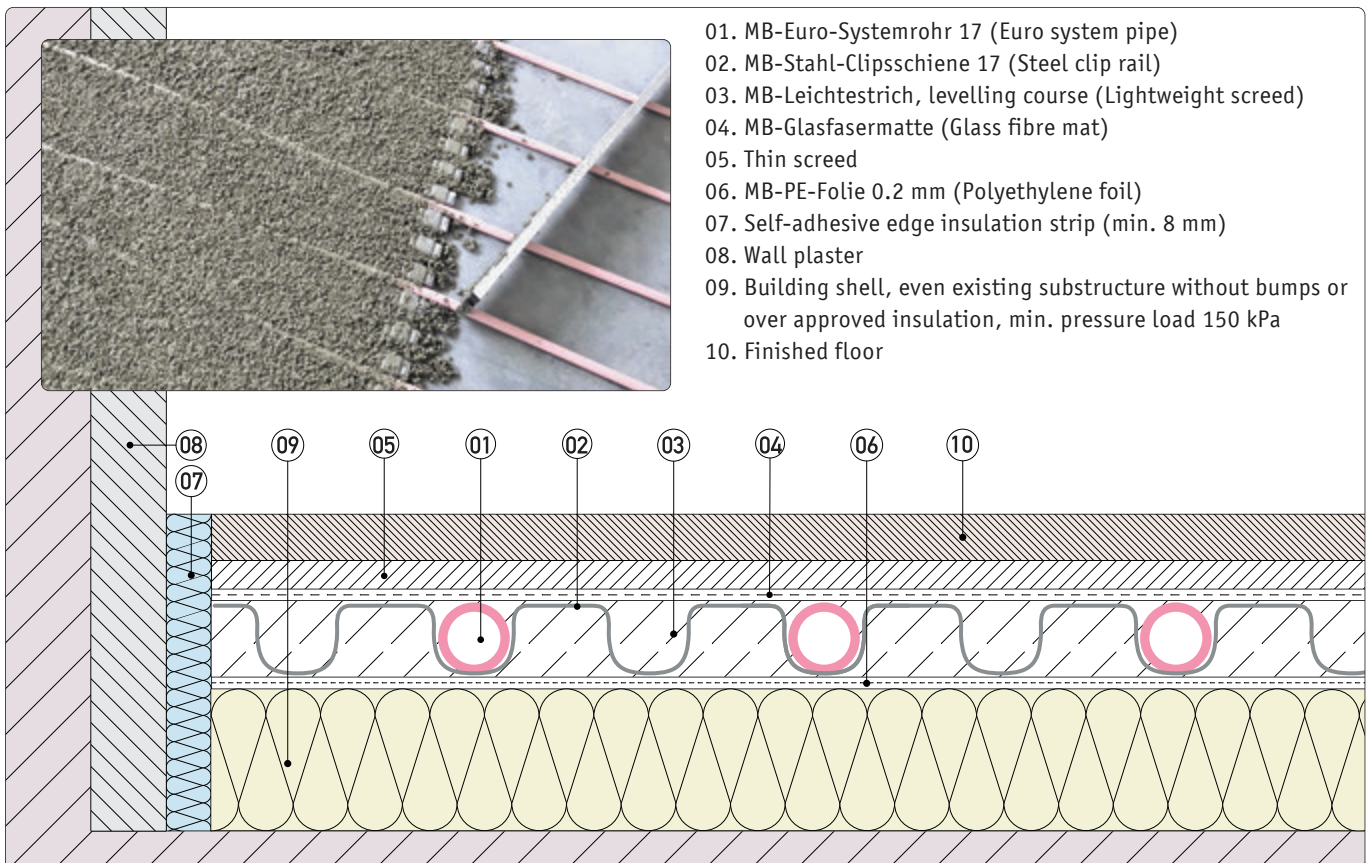
|                                       |                           |
|---------------------------------------|---------------------------|
| MB-Leichtestrich (Lightweight screed) | 21 kg/bag                 |
| MB-Glasfasermatte (Glass fibre mat)   | 26.25 m <sup>2</sup> /rol |
| Thin screed                           | 25 kg/bag                 |

### General floor construction

MULTIBETON develops and produces energy-efficient heating and cooling systems for a vast variety of applications. Planning the floor construction includes the criteria for thermal and sound insulation along with structural requirements. Planning the floor construction must comply with the relevant laws, regulations, directives and standards. The MB-Systemrohr (System pipe) is installed warm and therefore strainless and twist-free in the MB-Stahl-Clipsschiene (Steel clip rail).

### System installation

Installation follows the MULTIBETON plan. Then follow the MULTIBETON installation and technical guidelines. Planning and creating the MULTIBETON surface heating/cooling must further comply with the relevant laws, regulations, directives and standards. Additional instructions of manufacturers for other trades and the recognised rules of technology and proper trade workmanship must be observed.



01. MB-Euro-Systemrohr 17 (Euro system pipe)
02. MB-Stahl-Clipsschiene 17 (Steel clip rail)
03. MB-Leichtestrich, levelling course (Lightweight screed)
04. MB-Glasfasermatte (Glass fibre mat)
05. Thin screed
06. MB-PE-Folie 0.2 mm (Polyethylene foil)
07. Self-adhesive edge insulation strip (min. 8 mm)
08. Wall plaster
09. Building shell, even existing substructure without bumps or over approved insulation, min. pressure load 150 kPa
10. Finished floor

The illustration and design are non-binding and only exemplary.

**Consumption data** for 27 mm construction height

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| MB-Leichtestrich (Lightweight screed) | 5.0 kg/m <sup>2</sup>               |
| MB-Glasfasermatte (Glass fibre mat)   | 1.05 m <sup>2</sup> /m <sup>2</sup> |
| Thin screed, dry room                 | 22.0 kg/m <sup>2</sup>              |
| Thin screed, wet room                 | 15.4 kg/m <sup>2</sup>              |

**Consumption data** for 35 mm construction height

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| MB-Leichtestrich (Lightweight screed) | 5.0 kg/m <sup>2</sup>               |
| MB-Glasfasermatte (Glass fibre mat)   | 1.05 m <sup>2</sup> /m <sup>2</sup> |
| Thin screed, dry room                 | 47.0 kg/m <sup>2</sup>              |
| Thin screed, wet room                 | 33.0 kg/m <sup>2</sup>              |

**Thermal and impact sound insulation/film**

Insulation with a compression strength of at least 150 kPa may be used with the MB-Flachsystem (Flat system). In addition, sound insulation requirements must be met. XPS insulation should not be used for noise protection reasons. The insulation must be walkable and must not lose its properties when installing the system. If a construction project requires additional sound insulation, this must be expressly requested by the builder beforehand. MB-PE-Folie (Polyethylene foil) must be used over the thermal and impact sound insulation. It protects the insulation against moisture and water vapour.

**Edge insulation strip**

Edge insulation strips have the following important functions, among others: 1. Sound insulation, 2. Compensating expansion in the heated load distribution layer, 3. Insulation between cold building parts and the heated screed. Under the standard, the edge insulation strip must be secured to prevent shifting when the screed is laid. The edge insulation strip must have at least 5 mm to expand. Once the flooring has been laid, the protruding edge insulation strips are cut. The self-adhesive edge insulation strip must be installed on the load-bearing substrate in accordance with relevant standards and regulations.

**State of construction**

Windows and exterior doors should be installed before MULTIBETON underfloor heating is installed. Building service installations and wall plaster have been completed and pipe slits sealed. Ensure there are no draughts on site.

**Joints**

Floating screed expands and contracts by nature. Joints must be placed to allow for this expansion and contraction without damaging the screed. A joint plan showing the type and location of joints must be drawn. The joint plan is drawn by the building planner and must be submitted to the installer as part of the technical specifications.

**Load-bearing surface**

The load-bearing floor must be sufficiently dry to hold the load distribution layer and be even. The flatness tolerances according to DIN 18202 Table 3 Line 4 must be observed. The substrate must not have bumps, pipes or similar or these will show in the finished floor.

On principle, the load-bearing capacity and insulating properties of the existing subfloor must be suitable. In the case of flexible surfaces, movement, sound transmission and noise generation must be expected. Carry out preliminary tests if unsure.

**Construction waterproofing**

Building parts in contact with the ground must be sealed in compliance with the standards. These are floors on the ground floor in buildings without basement, or basement floors. The need and form is determined by the structural design. This seal must be installed before the underfloor heating is installed.

**Levelling courses**

If the required flatness tolerances of the load-bearing floor are not met, it must be levelled with a levelling course. This requirement applies to all load-bearing floors in existing buildings and new constructions. The type of levelling course must be compatible with the planned underfloor heating system and room use.

**Flooring**

Since underfloor heating is quite common, the builder has vast flooring options to choose from. Almost all manufacturers offer flooring suitable for underfloor heating. Flooring such as textile flooring, natural stone, elastic flooring, ceramic flooring, parquet, laminate and even wooden flooring can be used. The finished floor must be installed according to the general installation rules for flooring installers. A trowel polish is required prior to installation. Tiles must be installed over a uncoupling membrane. The installed area must be treated with standard acrylate primer after 3 days.

**Silent cooling**

MULTIBETON underfloor heating is ideal as "silent cooling". These systems are inexpensive, as they only require a cooling unit or a reversible heat pump with the corresponding control unit. The maximum output of "silent cooling" comes from the dew point calculation, the calculated lowest cooling flow temperature and the user's comfort level. At an output of approx. 30 – 50 W/m<sup>2</sup> this ensures comfort in summer and smaller air conditioners can be installed.