Multipor insulation systems

FACADE INSULATION ECO-FRIENDLY DIMENSIONALLY STABLE
INTERIOR INSULATION ROOF INSULATION CEILING INSULATION SYSTEM

SOLUTIONS ENERGY-EFFICIENT INHIBITS MOULD WOODPECKER-PROOF
SOLID NON-COMBUSTIBLE EASY TO INSTALL INHIBITS ALGAE & FUNGI
UNIFORM PERFORMANCE RELIABILITY VERSATILE RESOURCE-FRIENDLY
THERMAL BRIDGE-FREE PRESSURE-RESISTANT WOODPECKER-
ECONOMICAL COST-EFFECTIVE EFFICIENT ENERGY-EFFICIENT
LIGHTWEIGHT CEILING INSULATION FACADE INSULATION UNIFORM
After almost 20 years of continuous use, the mineral-based Multipor insulation system has lost none of its innovative power. On the contrary: Its unique characteristics and versatility, both in new buildings and existing stock, place the Multipor insulation system in a class of its own.

The core component of the system is the Multipor mineral insulation board, which is produced in a resource-friendly way using the raw minerals lime, sand, cement and a pore generator. Another outstanding feature of the system is that it provides certainty in terms of design and construction, and functionality in terms of building physics.

The Multipor mineral insulation board thus satisfies the insulation requirements of any construction project sustainably, effectively and efficiently.

**System reliability for a wide range of applications**

Multipor insulation systems offer solutions tailored to the area of application (see Fig. 1) and to the requirements of the structure to be insulated.

**Multipor external thermal insulation composite system (ETICS)**

An environmentally friendly, solid, dimensionally stable and non-combustible Multipor ETICS facilitates the construction of seamless external walls without thermal bridges, from family homes to multistorey buildings. The extensive, mineral-based system also includes a range of accompanying products such as Multipor finishing render. The Multipor ETICS offers unique advantages in terms of building physics, creating a sustainable facade insulation which retains its value and satisfies the energy performance requirements of both the German Energy Saving Ordinance (EnEV) and energy-efficient housing standards. Multipor material and ETICS

<table>
<thead>
<tr>
<th>Fig. 1: Areas of application as per DIN 4108-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wall</strong></td>
</tr>
<tr>
<td><img src="image" alt="External insulation to wall, behind cladding" /></td>
</tr>
<tr>
<td><img src="image" alt="External insulation to wall, behind render" /></td>
</tr>
<tr>
<td><img src="image" alt="Internal insulation to wall" /></td>
</tr>
<tr>
<td><img src="image" alt="Insulation between party walls" /></td>
</tr>
</tbody>
</table>
approvals ensure safe application at both national and European level.

The insulation system with corresponding approved finishing render is classed as an A-rated construction material. It does not burn, smolder or produce burning droplets, toxic fumes or smoke. Thus the ETICS satisfies all fire protection requirements without the need for customary fire barriers.

With a higher bulk density than other systems, it forms a monolithic system structure which is solid, dimensionally stable, woodpecker-proof and capable of withstanding severe mechanical loads.

The Multipor ETICS combined with a mineral-based, water-vapor-permeable rendering system redries rapidly and has a high heat storage capacity, which stops persistent surface moisture accumulating on insulated external walls. These characteristics prevent the wall from ‘sealing’, and thus inhibit the growth of algae and fungi, based on the principle that ‘the longer it stays dry, the longer it remains algae-free’.

**Multipor interior insulation system**
The vapor-permeable, capillary-active Multipor interior insulation system can be used to insulate the inside of walls in buildings of historic or cultural value. This system has already been used to upgrade the energy performance of several million square meters of wall – breathing new life into old buildings by creating comfortable living spaces and valuable new uses (adaptive-reuse projects). Listed buildings can also be sensitively modernized in strict accordance with the requirements for historic building conservation – to current energy performance standards and without diminishing the overall appearance. Compatible Multipor system components such as Multipor lightweight mortar and reinforcement mesh make it possible to retrofit modern interior insulation without the need for costly, error-prone vapor barriers. Excess room moisture is absorbed by the mineral insulation boards and subsequently released back to the indoor air. In this way Multipor not only improves the thermal insulation value and the surface temperature, it also regulates the moisture balance in a natural way, which has a beneficial effect on the indoor climate.
2.0 Multipor insulation systems

The use of Multipor interior insulation systems that have been tested for harmful substances provides the ideal basis for healthy living. This has been confirmed by the latest VOC analysis conducted by the independent eco-INSTITUT in Cologne.

**Multipor interior insulation system with clay mortar**

Multipor mineral insulation boards and Multipor clay mortar are the ideal combination for upgrading the energy performance of half-timbered buildings. Both materials have building-physical properties which complement each other perfectly. The vapor-permeable insulation system compensates for undesirable condensation and prevents moisture damage in the long term. This creates a healthy indoor climate and protects historic wall structures that are worthy of preservation. Multipor clay mortar is a blend of powdered clay and natural sands which contains no chemical aggregates.

Its ecological properties make it suitable for allergy sufferers.

### Multipor ceiling insulation system

The non-combustibility and thermal insulation of Multipor mineral insulation boards and Multipor lightweight mortar guarantee low heating costs and a high level of fire protection when used to insulate garage and basement ceilings. Quick and straight-forward adhesive installation makes the job of fitting insulation in new or existing buildings particularly cost-effective. This is why mineral-based Multipor ceiling insulation systems are used in residential and office buildings as well as special buildings such as shopping malls and stadiums.

### Ventilation shaft insulation

Air quality plays an increasingly important role in modern buildings. Fresh air – sometimes in vast quantities – is drawn in via solid, suitably sized ventilations shafts, supplied to air conditioning systems and then distributed around the building. The walls of the ventilation shafts must be insulated with material that meets specific quality requirements. Multipor mineral insulation board together with its system components meets these high standards and is the ideal insulating material for ensuring high indoor air quality.
Multipor insulation systems

There are various ways of insulating pitched and flat roofs, but only Multipor roof insulation systems are capable of handling any conceivable load. Thanks to their non-compressibility, high compressive strength and non-combustibility, they are suitable for all types of application – from loaded to unloaded pitched and flat roofs. ‘Cut-to-fall’ insulation constructed with Multipor mineral insulation boards also guarantees that flat roofs will drain effectively.

**Screed insulation**

Multipor mineral insulation boards are used in floor structures due to their high compressive strength and non-compressibility. Whether for refurbishing lofts or as industrial floor screed insulation – with a layer structure of an appropriate thickness, Multipor fulfills all expectations regarding energy conservation and load distribution.

**Thermal insulation**

Owners and users of buildings spend around one quarter of Germany’s total energy consumption in maintaining comfortable room temperatures. Modern buildings constructed to the latest energy-saving standards have made little impact on this statistic. In contrast, buildings constructed before 1980 that have not been refurbished are real energy guzzlers. And they account for more than 75% of the entire building stock.

Retrofitting Multipor insulation systems can reduce energy consumption significantly, and effectively in terms of building physics. The energy-efficient refurbishment of the existing housing stock not only makes economic sense, it also increases property values and improves housing quality.

Multipor insulation systems always provide a level of thermal insulation compliant with EnEV standards or energy-efficient housing standards.

In addition, they markedly improve the insulating properties when fitted to interior walls, ceilings, roofs or external facades. The effectiveness of the insulation is expressed in terms of thermal resistance (R-value in m²K/W) (see Table 1).

**Fire protection**

The natural, mineral raw materials contained in Multipor make it a non-combustible class A1 building material as per DIN EN 13501-1.

---

**Table 1: Thermal resistance (R-value) [m²K/W] of Multipor mineral insulation boards**

<table>
<thead>
<tr>
<th>Design value of thermal conductivity (λ) [W/(mK)]</th>
<th>Board thickness [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.042</td>
<td>50  60  80  100  120 140 160 180 200 220 240 260 280 300</td>
</tr>
<tr>
<td>0.047</td>
<td>– – – – 2.553 2.979 3.404 3.830 4.255 4.681 5.106 5.532 5.957 6.383</td>
</tr>
</tbody>
</table>

*Available by request or as double-layer construction*
In combination with mineral-based Multipor lightweight mortar for bonding and reinforcement, the system as a whole is also classified as non-combustible. For ceiling, roof and facade insulation in particular, this provides a high degree of certainty that the design and execution will comply with fire protection requirements. It also increases the level of certainty for users and investors when used as interior insulation.

Environmentally friendly production of Multipor mineral insulation boards

Mineral-based, vapor-permeable Multipor insulation systems have a track record going back almost 20 years. Recognizing the need for innovative, user-friendly insulation solutions, we developed Multipor by refining the lower thermal conductivity of Ytong autoclaved aerated concrete (AAC).

Sand, lime, cement and water – the mineral-based natural raw materials found in AAC – provided the inspiration for developing a purely mineral-based natural insulation. Its outstanding building-physical properties can be attributed to the technical expertise gained in Ytong AAC production.

Multipor mineral insulation boards are manufactured in a similar way to Ytong AAC. Ground quartz sand, lime and cement are mixed with other raw materials to form a raw slurry, then a pore generator is added before the mixture is poured into molds. This produces tiny, uniform pores, measuring 0.5 to 1.5 mm. A nature-identical mineral (tobermorite) forms during subsequent steam curing which largely determines the properties of the mineral insulation board. Incidentally, our environmentally friendly processes ensure that any steam, condensate and production waste generated are returned to the production cycle. Finally, Multipor mineral insulation boards are stacked in small, manageable packs on Euro pallets and shrink-wrapped in recyclable film.

Certified environmental protection

Multipor mineral insulation boards are made from natural, environmentally safe raw materials. They contain no fibers or other harmful substances. The European Product Declaration (EPD) issued by the German Institute for Construction and Environment (IBU) establishes their ecological credentials. Multipor is Europe’s only mineral insulation board to have been awarded natureplus certification and to have been VOC-tested by the eco-INSTITUT in Cologne.

Delivery and handling

Multipor insulation systems together with all system components should ideally be delivered straight to the point of use wherever possible to avoid unnecessary costly and time-consuming interim transport. However, if interim storage is required, a stable, level and dry storage site will ensure a smooth construction workflow and prevent damage to the materials. Our experienced hauliers have vehicles equipped with a hydraulic crane or fork lift to ensure that individually packed or palleted insulating boards are carefully placed on a flat substrate beside the vehicle.

Fig. 2: Loading instructions
It is also possible to set down the materials close to the installation site by arrangement, subject to feasibility.

We can provide more compact vehicles to deliver goods to smaller construction sites by special arrangement. These vehicles are also suitable for supplying small additional quantities. Use only suitable, approved lifting gear for unloading and handling. Pallet trucks can also be used to transport Multipor mineral insulation boards on hard surfaces. The clamp on the lifting gear must pass round the pack and underneath the pallet to grip the load securely during unloading. Under no circumstances should the clamp grip or press the Multipor mineral insulation boards directly (see Fig. 2), nor should pallets be stacked. Care must also be taken to prevent any cables, chains or slings used during unloading from damaging the material.

Small, manageable packs of Multipor mineral insulation boards are bundled on a pallet which is shrink-wrapped to protect it from the weather. The shrink-wrap also serves to keep the packaging unit stable and should not be removed until just before use.

A complete building system
The product range of Multipor insulation systems includes mineral insulation boards, accessories, tools and services which together are designed to offer practical and cost-effective solutions for all component applications. Our Multipor technical advisers will gladly answer any questions about our products. They will advise you on the correct use of the insulating material and help you plan efficiently and with confidence – for instance by conducting building-physical analyses using modern hygrothermal calculation methods.

Find your Multipor technical adviser on the contact page of our website at www.multipor.com.