



BUSINESS COMPANY PROFILE

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THESE ARE AD BLOCKS

Introducing AD Blocks, a cutting-edge innovation in the world of construction developed by Hamt Alkhulij. These advanced blocks boast a remarkable array of features that set them apart from traditional building materials. With their exceptional waterproofing, noise-isolating, and heat-resistant properties, AD Blocks promise to revolutionize the way we build structures. Not only are they cost-effective and environmentally friendly, but their versatility makes them suitable for various construction applications. Join us as we delve into the world of AD Blocks and discover the game-changing potential they hold for the future of sustainable and efficient construction.

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HI THERE!

Welcome to Hamh Alkhulij, a pioneering company specializing in manufacturing and installing innovative gypsum blocks. Our groundbreaking research and development have led to the invention of gypsum blocks that are water-proof, heat-resistant, and effectively ventilated. Moreover, our unique product features noise-cancelling properties, setting new standards in the construction industry. With a commitment to excellence, we redefine construction materials, empowering architects, builders, and homeowners to create exceptional spaces that combine functionality and aesthetics seamlessly. Join us on this transformative journey and experience the unparalleled advantages of our state-of-the-art gypsum blocks.

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Working

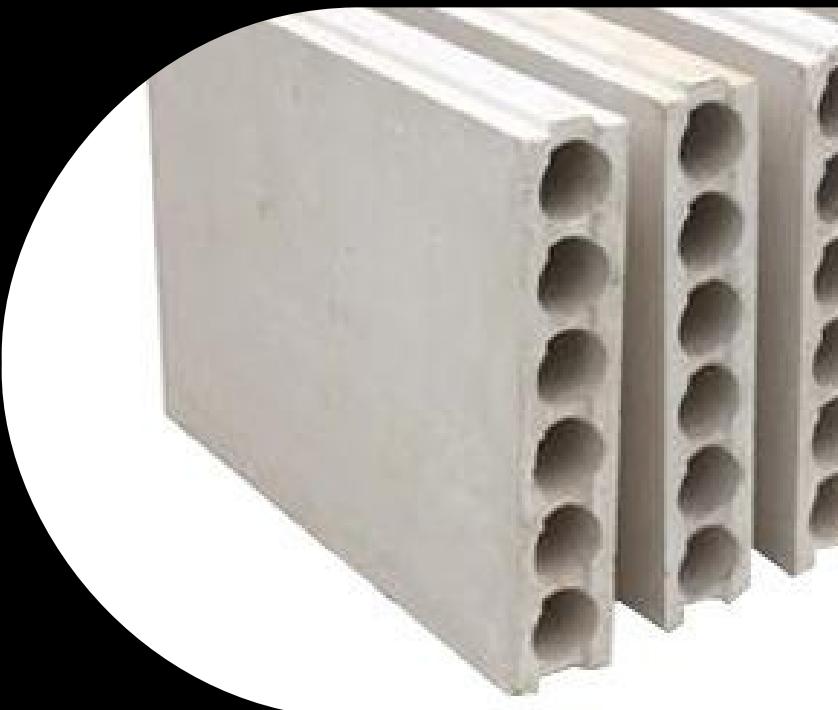
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Product and System

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COST EFFECTIVE PARTITION WALLS

AD-BLOCK revolutionizes construction by significantly cutting building costs. These blocks are assembled without expensive support structures and are bonded with gypsum-based adhesives, eliminating the need for time-consuming plastering and drying. As a result, construction projects are faster and more cost-effective, allowing for increased sales revenue due to higher square meter figures. Additionally, AD-BLOCK's slim walls occupy less space compared to traditional masonry, making it an economically attractive choice for marketing.

In typical residential construction, AD-Blocks of either 40 or 100-mm thickness are commonly employed. The advantage of using 100 mm thick walls is that they are approximately 65 mm slimmer than traditional 12 cm thick walls with plaster on both sides. This small difference may not seem much, but it can add up significantly, saving valuable space equivalent to one to two square meters in an average-sized apartment.





SYSTEM ADVANTAGES



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MODERN PARTITION WALL DESIGNS

Advantages for investors and owners.

- Stable compact walls with high resistance capability against mechanical loads reducing repair and maintenance expense.
- High value retention.
- High economic efficiency through long useful life.
- Simple dismantling with change of usage without incursion into the remaining building substrate.
- Economic large-format AD-Blocks for building units with faster construction times.
- Profit on useful and leased area through slimmer partition walls.
- Late determination of division of space is possible in the building process in case no user is available.

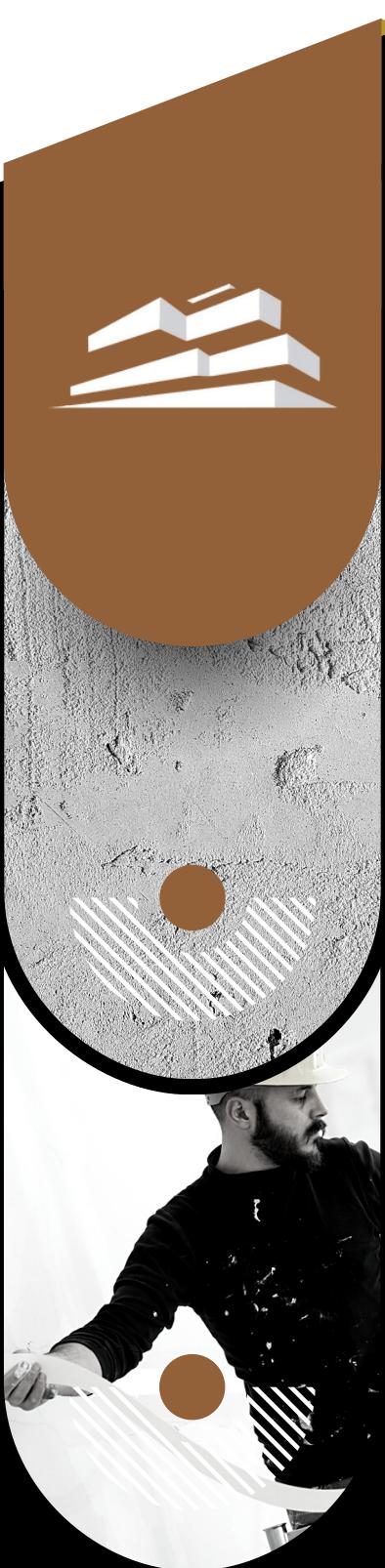


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Advantages for lessees and users.

- Homogeneous compact walls without sub-structure for uncomplicated fixture of furniture and domestic accessories or handles in sanitary are as using normal commercial anchors in any desired position.
- High acoustic insulation for undisturbed living, dwelling and working.
- Later changes to floorplan possible at anytime.
- Mineral basic substance for potentially hygienic walls without microbiological infestation.
- Recommended economically and building biologically
- Without plasticizers and gas emitting substances.
- High living comfort also in cold periods of the year due to low thermal conductivity of gypsum.





Advantages for architects and planners.

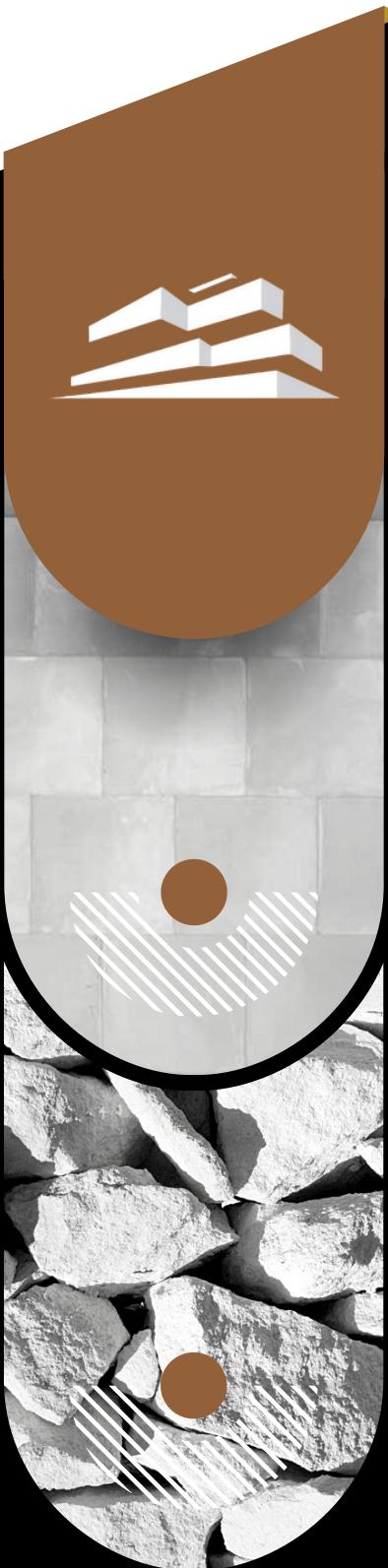
- Ready-finished surface interiors walls without plaster ensure short construction time.
- Door openings or load carrying walls can be positioned freely regardless of support separations and spacing.
- Particularly “quiet walls” in multi-storey residential building through coupled elastic edge mounting [optimized impact point damping].
- Alterations or changes made easy.
- Perfect surface optic of the walls through high dimensional accuracy and plane level filling/-smoothing.
- Variable surface finish.
- Barely any moisture input through dry components.



Advantages prime contractors and building supervision.

- Highest execution security through certified working.
- Rapid assembly sequence due to short drying periods.
- Wall construction largely depending on weather conditions hydrophobized AD-Blocks [first row] and/or hydropedestals against rising damp should be used.
- Homogeneous partition walls made from only four or five components.
- Onsite storage advantage due to Pallet and block sizes.
- First fixing (Electrics etc.) reduced costs due to easy chasing of walls
- High quality levels for surface finishes regulated.
- Simple quality control visually [no covered building units].





Efficient building.

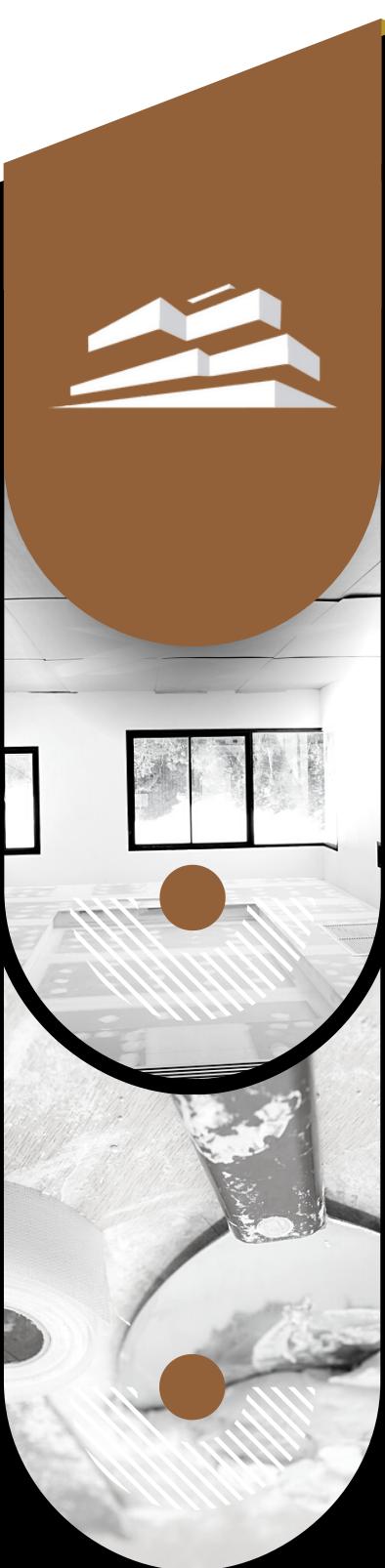
AD-Blocks are excellent building elements designed for quick and efficient construction of non-load-bearing internal walls. They come in various thicknesses, such as 60, 80, and 100 mm, made entirely of solid gypsum. These blocks are sturdy yet lightweight, making them perfect for partition walls. What makes AD-Blocks unique is that they combine the benefits of masonry and dry mortarless construction in one system.

In this system, the blocks are assembled without the need for additional support structures, just like compact construction. The large size of the AD-Blocks (666 x 500 mm) allows for speedy construction. What's interesting is that they use a water-free assembly technique, utilizing only gypsum adhesive without traditional mortar. The elements have a groove and tongue profile, ensuring a tight fit during assembly.

The result is a smooth and even wall surface that doesn't require plastering, except for filling/smoothing the joints or entire surface if needed. If desired, contemporary techniques can be applied to add texture to the surface. Overall, AD-Blocks offer a convenient and effective way to build durable and aesthetically pleasing internal walls.

Today, a popular and efficient construction method involves creating separate rooms using non-load-bearing interior partition walls. These walls are put up after the main framework is built, allowing for flexibility and cost-effectiveness. Designers can even create unique shapes like angles or curves by cutting the boards.





Planning freedom through little weight.

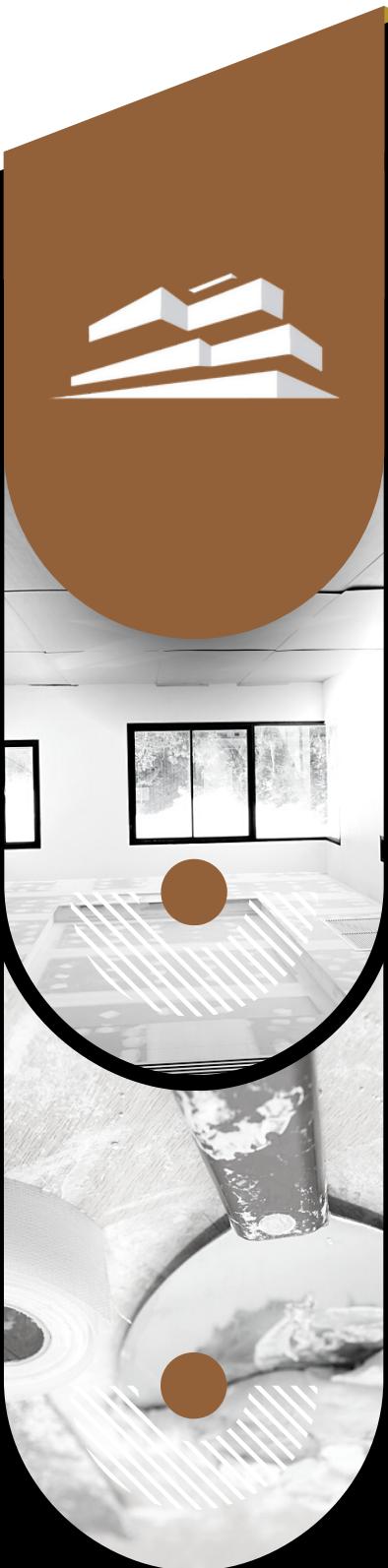
Partition walls made from AD-Blocks offer many advantages, such as optimized support structures and flexible floor plans. They are relatively lightweight, weighing between 50 and 150 kg per square meter, making them a great choice for partition walls. These walls can handle normal floor loads without needing additional reinforcement.

The beauty of this system is that you can add walls whenever needed, even onto floating floorscreed. This is possible because the light partition walls don't put individual loads on the ceiling; instead, they are considered part of the overall load. Therefore, you can easily erect walls at any desired point, and you have the flexibility to add walls later if required, even on floating floor screed. This versatility makes AD-Blocks an excellent option for creating adaptable and functional spaces in buildings.

AD-Blocks are made mostly of raw gypsum, and they contain up to 60% tiny pores. These pores help in achieving very low thermal conductivity, making the material an excellent thermal insulator. This means that the walls made from AD-Blocks can reduce the effects of cold and heat on the wall surface, providing better temperature control inside the building.

The solid AD-Blocks also add to the building's thermal storage capacity, improving its overall thermal performance. Because of this, there is no need to calculate the thermal resistance of the walls. However, there may be exceptions where calculations are required, such as when AD-Blocks are used as an additional layer for outer walls or to separate cold rooms from regularly warm rooms, like doorways or open passages. In such cases, the thickness and thermal conductivity of the AD-Blocks need to be considered. Overall, AD-Blocks offer excellent thermal insulation and contribute to better energy efficiency in buildings.





Regulated air humidity

AD-BLOCK blocks have a unique quality of being able to absorb a large amount of water without getting wet themselves, thanks to their high proportion of macropores and open-pore structure. In some cases, the gypsum can store more than half its volume in water. What's fascinating is that this ability has a positive impact on the living environment.

The gypsum can release the water it absorbed when the room's climate changes. This helps regulate the humidity in interior rooms, creating a comfortable living environment. It balances the extremes of overly moist or dry air, maintaining a pleasant level of humidity. As a result, the gypsum surfaces feel warm and dry, contributing to a cozy atmosphere and a positive influence on room temperature. AD-BLOCK blocks are truly remarkable in creating a comfortable and enjoyable living space.

Gypsum is a time-tested and proven material that has been extensively examined and confirmed to be safe for healthy living. Its biological and non-toxic components contribute to a healthy living environment. Its long-term use in medicine confirms its compatibility with humans. With a pH value of 7, it is neutral, similar to human skin.

Gypsum has several beneficial properties. It is odor-neutral, does not emit harmful gases, and has extremely low radiation, even lower than the earth's crust. Its low conductivity prevents electrostatic discharges, making gypsum surfaces dust-resistant. Being an inorganic material, Moreover, gypsum can absorb moisture and release it based on room conditions, effectively regulating the living climate in interior spaces. This helps maintain a comfortable level of humidity,. Gypsum surfaces feel dry and warm, positively influencing room temperature and promoting domestic comfort. Overall, gypsum is a safe, healthy, and advantageous choice for construction materials.



ACOUSTIC INSULATION

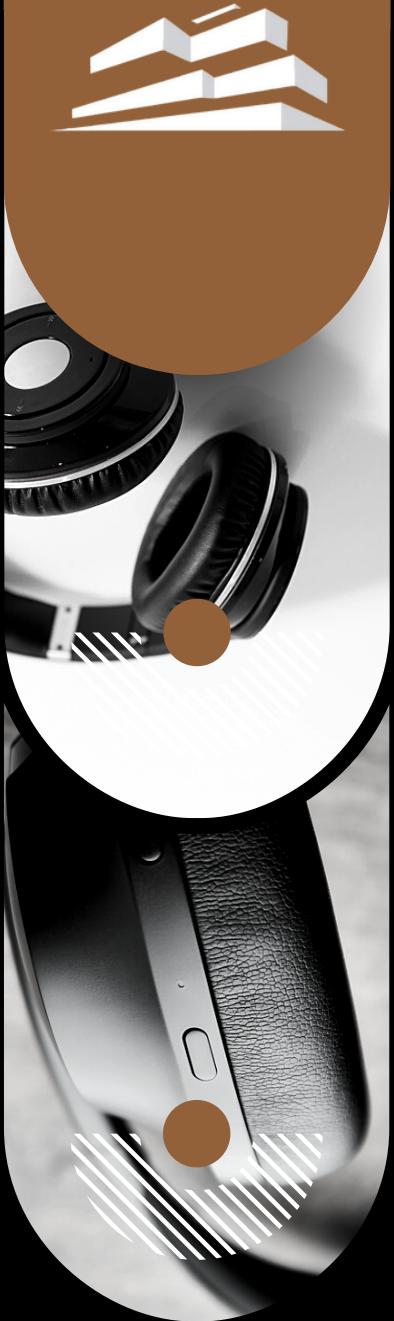


The solid AD-Blocks offer excellent acoustic insulation with optimized edge strips designed using acoustic technology. For situations where high acoustic insulation is needed, like in apartment partition walls or corridor separating walls in hotels and hospitals, double-leaf walls can be securely used.

The quality of acoustic insulation depends on various factors, including the gross density of the gypsum blocks and the wall's design and connection to adjacent walls, ceilings, and floors. To achieve enhanced airborne sound insulation, AD-Blocks marked in red and with a higher gross density of $1,200 \text{ kg/m}^3$ can be used. These considerations ensure that the acoustic requirements are effectively met, providing a quieter and more comfortable living or working environment.



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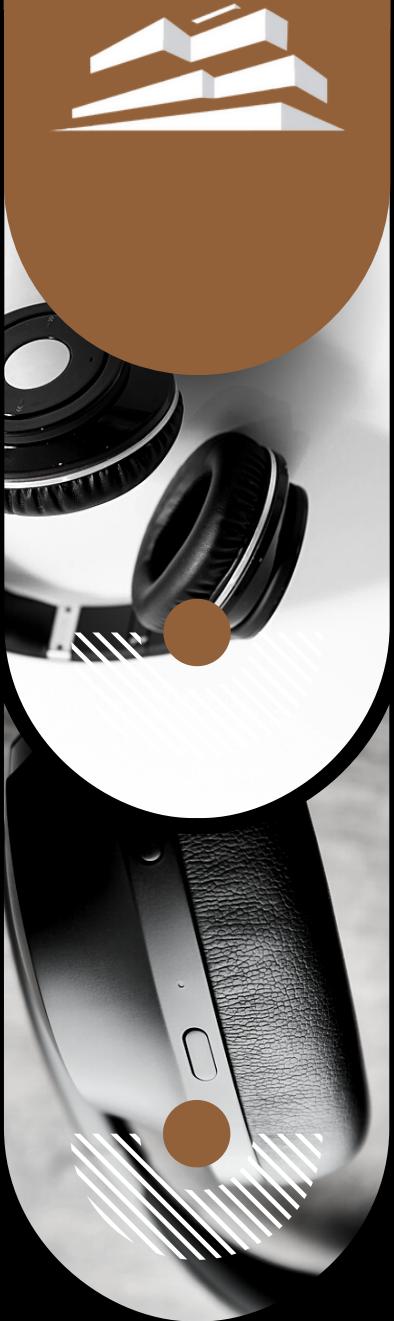
Advantages for lessees and users.

AD-Blocks can be connected to adjacent walls, ceilings, and floors in three ways: rigidly, sliding, or elastically. For walls requiring acoustic insulation, it is recommended to choose the elastic connection method, as all sound insulation values mentioned in this brochure are based on this type of design.

The elastic connection strips are typically made of materials like PE low expansion foam, compressed cork, bituminous felt, or mineral rock wool (with fire protection requirements). These strips help reduce flank transmission and provide optimal acoustic insulation.

To achieve the specified sound insulation values, certain constraints need to be considered during the planning and implementation process. It is essential to ensure secure adhesion through proper keying of the connection strips. This attention to detail will help create an effective and soundproof partition wall system with AD-Blocks.





Advantages for lessees and users.

- All boards and connection joints must be free of hollow spaces and filled completely with gypsum.
- The strips must be laid without gaps and lie close to the adjacent building units. They may in no case be plastered over with filler, if required the filler coating from adjacent building units is to be separated using a trowel cut. The plaster of adjacent walls or ceilings is also to be separated from the partition wall using a trowel cut.
- The use of connection strips which are wider than the wall is ideal. The excess width is cut off after filling and, through this, each acoustic bridge eliminated. Edge strips made from PE low expansion foam are particularly recommended.
- Pipes may not directly touch the wall but should be secured using acoustic insulating fixtures.
- The insulation in double-layer walls must be attached adhesive plaster using gypsum.





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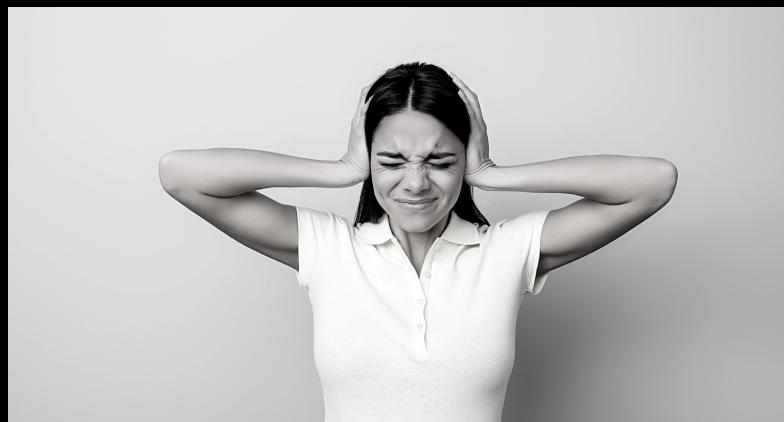


Planning details for acoustic insulation

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different technical acoustic insulation effects are to be considered:

The airborne sound insulation between two adjacent rooms in compact construction primarily depends on the surface-related mass of the separating wall. Walls made from AD-Blocks are considered acoustically rigid. The rated sound insulation mass $R'w,P$ for single-leaf walls can be found in Supplement 1.

When using elastic wall connections (as stated in Footnote 3 of the table), there is an additional bonus of 2 dB. Many single- and twin-skin wall structures have test certificates available, demonstrating sound insulation values that exceed the standard requirements. These certificates can be used to evaluate the acoustic insulation performance.

For single-leaf walls made from AD-Blocks, even with an average gross density, a rated sound insulation mass (Rw,P) of up to 40 dB can be achieved with a 100 mm wall thickness. With higher gross density and the same thickness, it reaches 44 dB. For double-leaf walls, values up to 68 dB have been determined, and they can meet the proposals for increased acoustic insulation according to Supplement 2 to DIN 4109.

The acoustic insulation of a partition wall is not only influenced by its own surface-related mass but also by the type and bonding of all adjacent building units





Installation fittings for partition walls must be secured with a surface-related mass of at least 112 kg/m². For lighter partition walls, a suitability test is required to ensure that they do not transfer installation noises more unfavorably than heavier walls.

When it comes to partition walls made from AD-Blocks with elastic connections, this verification can be conducted through investigations carried out by the Institute for Acoustic Insulation for Testing and Research into Building. The results show that these partition walls perform as favorably as, if not better than, heavy adjacent walls regarding installation noise transfer. As a result, AD-Block partition walls can be confidently used for installation purposes.

Construction with AD-BLOCK offers a remarkable advantage by combining the strengths of solid and dry mortar construction. Its economic, technical, and building-physical benefits can be fully realized through professional workmanship. Therefore, it is advisable to have interior partition walls installed by qualified specialist firms. These firms should possess the necessary expertise and experience in handling high-quality gypsum products, as well as professionally filling and smoothing surfaces. Specifically, firms skilled in stucco and dry mortarless construction are highly recommended. For developer constructors and architects, it is possible to engage other firms for the installation, as long as these firms have sufficient specialist knowledge and experience (training can be provided if needed).





STRUCTURAL FIRE PROTECTION

Gypsum is a non-combustible mineral used in building construction. In the event of a fire, gypsum building units do not provide support to the flames. In technical terms, gypsum does not add to the thermal load in buildings. Its unique crystal structure even actively hinders the spread of fire, making it highly effective for fire protection. Gypsum has proven itself as a reliable and valuable material in ensuring safety against fire hazards.

Gypsum is a mineral building material with the chemical formula $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, composed of calcium sulfate and water (dihydrate). The water molecules are not chemically bonded but are stored within the structure, making up to 20% of the total building unit. When exposed to the heat of a fire, gypsum undergoes a process of dehydration. The crystal water vaporizes, drawing energy from the fire and providing a fire-resistant characteristic to gypsum.

Furthermore, gypsum forms a protective vapor veil when exposed to fire. This veil helps to maintain a relatively low surface temperature on the side away from the fire. The fire protection effect becomes more significant with thicker layers of solid gypsum. For instance, the homogeneous AD-Blocks, which are 100 mm thick and made of gypsum, can resist fire for up to three hours. In parallel tests, the electrical sockets installed in these walls can withstand fire for an impressive four hours.



Shaft walls

AD-Blocks are highly suitable for closing off installation shafts on the room side, meeting the requirements of the Model Building Ordinance for non-combustible building materials. Often, additional conditions regarding the duration of fire resistance need to be fulfilled, and walls made from appropriately dimensioned AD-Blocks can securely meet these requirements.

Fire resistance may be required from both inside and outside, or in either direction. The distinction is not significant for AD-Blocks, as they offer fire resistance in both directions without the need for work on the inaccessible interior side of the shaft.

AD-Blocks can also serve as effective fire protective cladding for steel and wood supporting formwork. Simply bonding the blocks offset on the fire-exposed side of the supports provides up to four-sided cladding, effectively protecting against fire and potential failure.





Light internal firewalls

AD-Blocks offer a simple and cost-effective solution for creating interior firewalls. These firewalls consist of double-leaf configurations with 60 mm thick AD-Blocks. To enhance mechanical stability, a special glass fiber lattice is embedded in the construction. Additionally, a double-sided gypsum plaster is applied to increase fire resistance.

What sets these firewalls apart is their slim profile, measuring only 160 mm in thickness, which is remarkably thinner compared to other solid construction methods that are typically 240 to 300 mm thick. This slim design allows for optimized planning of supporting formwork, especially for room heights up to approximately 3.30 m. As light partition walls, the firewalls can be arranged freely and flexibly at the storey ceilings, without the need for additional wall carriers, sub-structures, or reinforcements.

Elastic connections with rock wool strips ensure that adjacent building materials are effectively integrated into the fire protection system. The bare ceilings should be executed with fire resistance and calculated statically, considering a surcharge of 1.25 kN/m² for the live load, as well as ensuring sufficient lateral distribution. AD-Blocks provide an excellent solution for creating fire-resistant and structurally sound interior firewalls with ease.



DESIGN OF PARTITION WALLS

10 steps to the finished Blocks

Step one

Use a chalk line to mark the line of the wall on the floor.

Ensure the line is plumb (vertically straight) on the connecting walls as well.

Stir the AD-BLOCK adhesive thoroughly.

Apply the stirred AD-BLOCK adhesive to both the floor and the connecting walls.

Set 12 mm thick and 120 mm wide connecting strips made of rock wool (e.g., Rockwool RST or glass wool) into the adhesive bed.

Make sure the connecting strips are properly aligned and securely attached to the adhesive bed on the floor and walls.

Step two

Once the gypsum is sufficiently firm, apply gypsum adhesive thinly to the rock wool strips. Then, carefully set the AD-Blocks in the adhesive bed, ensuring they are properly aligned and secured.

For the subsequent rows of blocks, apply gypsum adhesive to the butt and horizontal joints, and then join the blocks using the groove and tongue system. This ensures a tight and secure fit between the AD-Blocks, creating a strong and seamless wall construction.

Preparation of gypsum adhesive
bed on the rock wool strips

Work AD-Blocks into the bond



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The uppermost row of blocks ends, beveled, ca. 4 cm below the ceiling



Step three

Smooth off any excess gypsum adhesive that may have swelled out and close the joints between the AD-Blocks. Use blows from a rubber hammer to achieve a closer bond between the blocks while aligning them properly. This process ensures a neat and tightly sealed wall, providing a professional finish to the construction.

Step four

In the build-up of the wall, every second row starts with half a block to create bracing and avoid cross-joints. Before fixing the uppermost row of blocks, bevel it off inwards, and fill the space between the row and the ceiling using gypsum adhesive made from 2 parts AD-BLOCK RotWeiss adhesive plaster and 1 part AD-BLOCK adhesive. Prior to this, fix the rock wool strips to the ceiling using gypsum adhesive.

Step five

Fix the glass fiber lattice using AD-BLOCK adhesive, overlapping it on the inner side of the first wall leaf with the widths running horizontally.

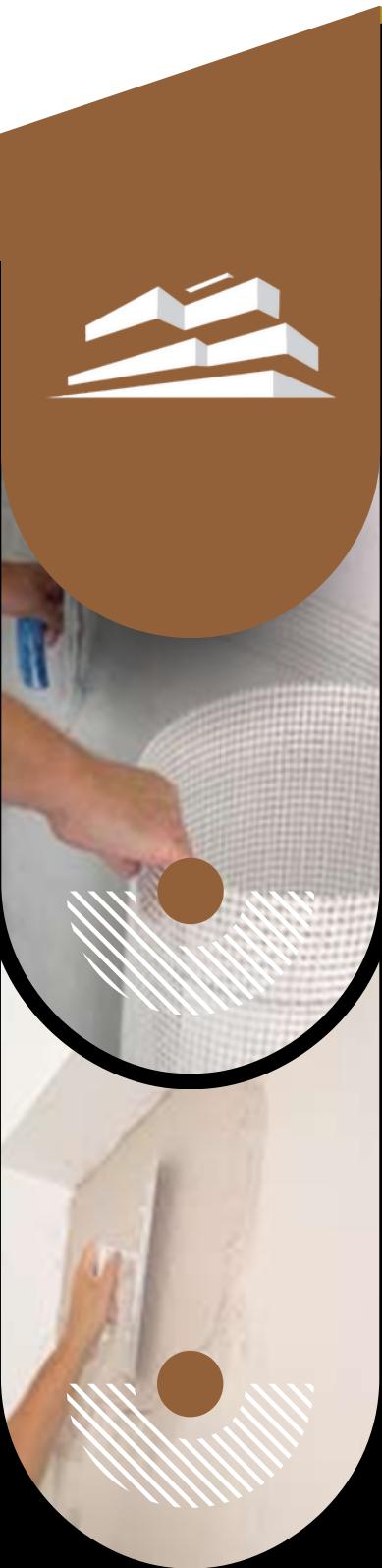
Step six

The second wall leaf is primarily produced similarly to the first one. However, the first block's height is only 250 mm high to create an offset of joints.



Embed the glass fibre lattice

Apply the wall plaster



Step seven

The space between both leaves is continuously filled with AD-BLOCK adhesive as the construction progresses in height.

Step eight

After completion, join both wall leaves using three screws per square meter, without involving a joint.

Step nine

To reinforce the wall, fix the glass fiber lattice vertically on the outside of the first leaf with a 200 mm overlap. Apply a plaster layer that is 18 mm thick using a mixture of 2 parts AD-BLOCK RotWeiss adhesive plaster and 1 part AD-BLOCK adhesive.

Step ten

Fix the glass fiber lattice vertically on the outside of the first leaf with a 200 mm overlap. Apply a plaster layer that is 18 mm thick, using a mixture of 2 parts AD-BLOCK RotWeiss adhesive plaster and 1 part AD-BLOCK adhesive.





WORK PROCESS

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THE WORK

1



2



Mark partition wall position using a chalk line.

Repeat marking using chalk line on fixed AD-BLOCK edge strip.

3



4



3. Apply gypsum adhesive bed.

-
-
-

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Apply gypsum adhesive to the face of the gypsum block and work force-fit.

THE WORK

5



6



Correction of position using rubber hammer and straight edge/level

Remove projecting gypsum adhesive after it has dried slightly

7



8



Completely fill the ceiling connection joint

Cut off overhang of edge strip

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Filling/smoothing

After laying electrical installations, proceed with the following steps:

- Close all holes and gaps in the wall using AD-BLOCK Filler.
- Depending on the desired quality, fill and smooth surfaces in the area of the joints only or cover the full surface using adhesive from AD-BLOCK.
- Note that walls intended for tiling should not be filled or smoothed. In such cases, only remove the gypsum adhesive that has swelled out after hardening.

AD-Blocks offer a simple and cost-effective solution for creating interior firewalls. These firewalls consist of double-leaf configurations with 60 mm thick AD-Blocks. To enhance mechanical stability, a special glass fiber lattice is embedded in the construction. Additionally, a double-sided gypsum plaster is applied to increase fire resistance.

What sets these firewalls apart is their slim profile, measuring only 160 mm in thickness, which is remarkably thinner compared to other solid construction methods that are typically 240 to 300 mm thick. This slim design allows for optimized planning of supporting formwork, especially for room heights up to approximately 3.30 m. As light partition walls, the firewalls can be arranged freely and flexibly at the storey ceilings, without the need for additional wall carriers, sub-structures, or reinforcements. Elastic connections with rock wool strips ensure that adjacent building materials are effectively integrated into the fire protection system.



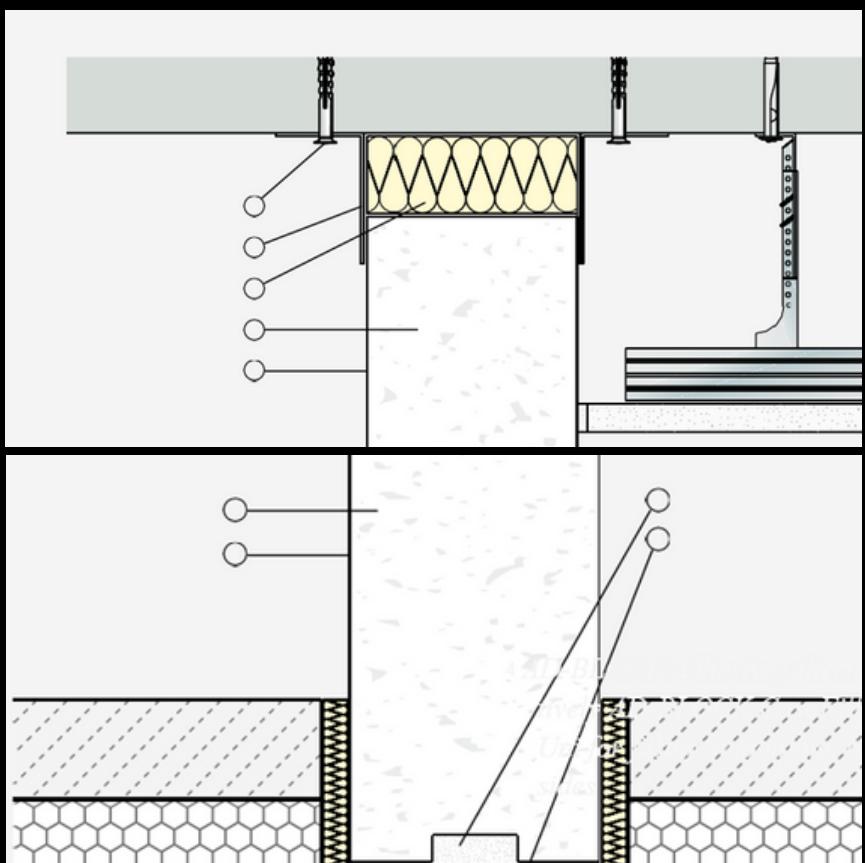


Elastic connection

An optimal elastic ceiling connection is achieved by using PE low expansion foam (120 kg/m^3) as edge connection strips. This helps in achieving excellent acoustic performance for the light partition wall, preventing any solid-borne sound transfer to adjacent building units. To further enhance sound reduction, a trowel cut separates the adjacent ceiling plaster from the partition wall.

For the topmost row of blocks, a slight bevel is created to increase the bonding surface between the filling plaster and blocks. This makes the joint filling process easier and more effective. The ceiling connection joint, with a height of 3 to 4 cm, provides sufficient space to close it completely without any hollow expansion foam. Instead, filling plaster is used to seal the joint effectively.

By implementing these techniques, the light partition wall achieves superior acoustic isolation and offers a highly efficient and reliable solution for sound insulation in building structures.



Openings in partition walls

The sliding connection provides unrestricted movement between the partition wall and adjacent building units. This movement is facilitated by U or double-L metallic profiles or wooden strips, which serve as lateral support for the partition wall. The AD-Blocks must engage at least 15 mm deep into the profile to ensure a secure connection, while meeting fire protection requirements demands a minimum of 20 mm engagement. The remaining hollow space at the wall and ceiling connections is filled with rock wool to enhance insulation and fire protection.

By utilizing the sliding connection with appropriate supporting profiles or wooden strips, the partition wall gains flexibility while maintaining structural integrity and meeting necessary fire safety standards. The inclusion of rock wool further enhances the overall performance of the wall system, ensuring optimal insulation and protection properties.



Selection of the connection/interface

Interior partition walls made from AD-Blocks can be connected to all fixed building units, for example to concrete, masonry of all types, wood and steel form work as well as load-bearing plaster. Depending on the structural situation and required acoustic insulation there are three types of connection for selection:

- elastic connection
- sliding connection
- rigid connection

The recommended standard design for the ceiling connection is the elastic connection. It can effectively compensate for smaller structural deformations, such as the bending of the ceiling, and offers superior acoustic insulation due to its high damping of structure-borne noise.

However, in situations where larger and repeated deformations of adjacent building units are anticipated, especially with more significant bending of the ceiling, a sliding connection is preferable. The sliding design is particularly recommended for connections to wooden beam ceilings or the undersides of roofs, as well as for ceilings with large span widths. If necessary, lateral connections to wooden support constructions can also benefit from the sliding design.

The rigid connection using gypsum adhesive alone should only be considered in exceptional cases, where no or minimal structural deformation is expected, and acoustic insulation requirements are not a primary concern.

By selecting the appropriate connection type based on the specific structural and acoustic needs, the overall performance and longevity of the building components can be optimized.





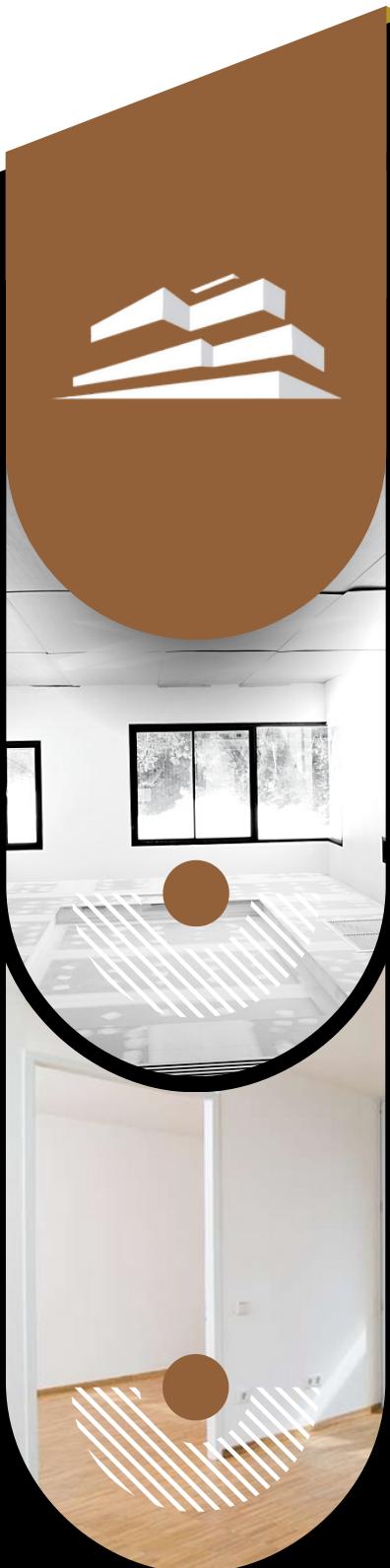
The most important components of the elastic connection are the edge connecting strips. They consist of polyethylene low expansion foam, compressed cork, bitumen felt or rock wool and are, in part, supplied as ready-to-work accessory with the AD-Blocks. Strips made from PE low expansion foam (120 kg/m^3) have proved themselves as universal and economic standard solution. The AD-BLOCK Akustik-Pro edge strip was developed especially for the elastic connection of AD-Blocks.

If the partition wall has to consist entirely of non-combustible materials entirely of non-combustible materials due

to fire protection, then rock wool strips can be employed. The edge connection strips are secured continuously on all sides to the adjacent building units [exception: self-adhesive strips]. The AD-Blocks are then joined closely using a further layer of gypsum adhesive and are then to be set on (floor) or against (wall). The use of AD-BLOCK Filler is recommended at the ceiling connection. Its special composition prevents cracks due to too rapid deflagration and through this ensures a crack-free connection. For technical acoustic reasons the edge connection strips should not be plastered over.

Otherwise the filling/smoothing should be separated again close to the ceiling using a trowel cut. Broad edge strips (12 cm), which after filling/smoothing are to be cut off to match the surface, have in particular proved themselves. With this, any rigid bonding between wall and ceiling is excluded.





Openings in partition walls

The openings in partition walls made from AD-Blocks can be approached in two ways. They can either be left with the erection of the walls or cut out later, but not knocked out.

For larger openings, such as those required for doors, it is advisable to plan and incorporate them during the initial construction of the walls. However, for smaller openings like hatchways or viewing windows, the most economical solution is often to perform the cutting, sawing, or boring of the openings later.

The flexibility to choose between immediate or later design of the openings is a significant advantage, as it allows for easy planning modifications and conversion-friendly adjustments in building units made from AD-Blocks. In renovation projects, new doors can be installed or closed at any desired point without being constrained by predefined spacing or standard widths. In new constructions, the precise positioning of doors can be easily corrected even during the later stages of the building phase.

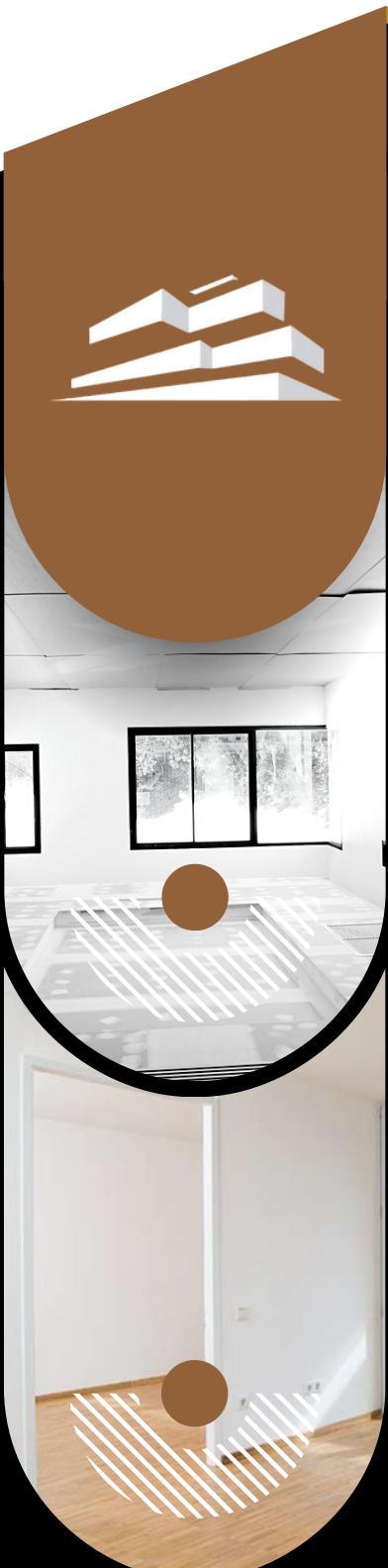
This versatility in designing and installing openings adds to the adaptability and ease of customization when working with AD-Blocks, providing efficient and practical solutions for various building scenarios.

- door openings up to 1 m width larger door openings.
- installation of a single-piece steel frame during build-up of the wall.
- installation of a single-piece steel frame after build-up of the wall using frame anchors.
- multi-piece wooden frames.

Openings in building units made from AD-Blocks up to 1 meter wide do not require a door lintel or additional reinforcement. They can be covered within the continuous AD-Block bond. Ideally, both edge AD-Blocks should extend over the opening by 20 to 30 cm. For the remaining width, an adjusting piece is cut to fit and installed between the edge AD-Blocks.



Larger door openings



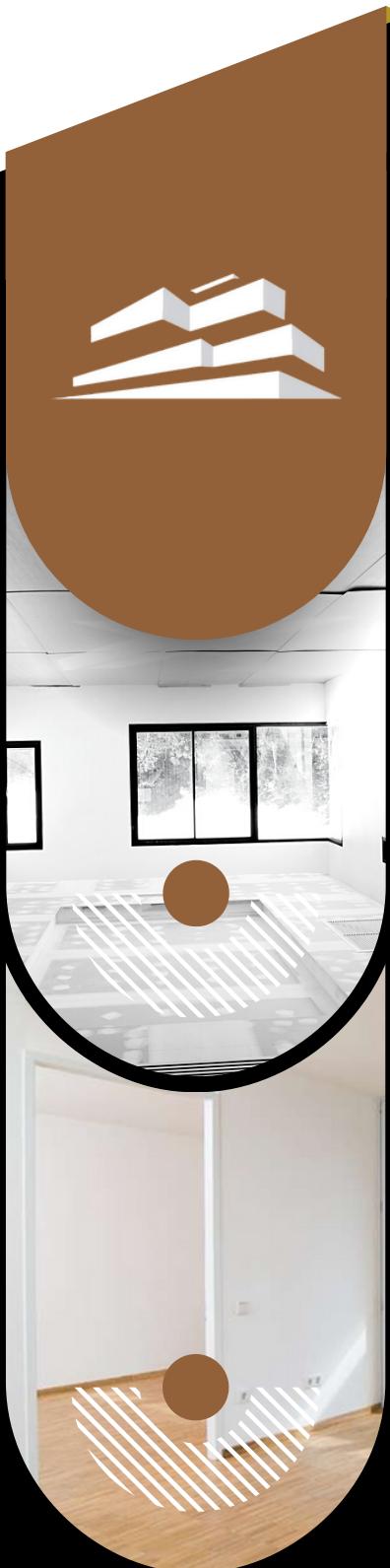
For larger openings, additional measures may be necessary depending on their size and position. A galvanized slotted steel strip with a width of 20 mm and a material thickness of 1.5 mm has proven effective as lintel reinforcement for openings over 1 meter in width. Other suitable profiles can also be used if needed.

The slotted steel strip is placed edge-on in machined or cut joints, a few centimeters above the opening, within the covering block layer. Both sides of the wall should be reinforced, with the joints offset in height by approximately 5 cm from each other. The reinforcement should extend into the wall for about 50 cm on both sides of the opening.

For rooms with larger heights, it is recommended to reinforce the block row lying above the opening as well. Practical experience has shown that cutting and possibly offsetting the lower row of blocks edge-on allows the opening's required height to align precisely with a horizontal joint.

By incorporating suitable reinforcement measures, larger openings can be safely and effectively supported, ensuring the structural integrity and stability of the building units made from AD-Blocks.





Installation of a single-piece steel frame during build-up of the wall

Single-piece steel all-around frames can be installed easily and elegantly together with AD-Blocks. The frame is aligned to the planned position and supported against the ceiling using battens, while wooden cross bars provide additional bracing. During the construction of the wall, AD-Blocks are inserted into the frame's mouth, and the remaining hollow space is filled with gypsum mortar in layers.

For frames that require solid fixation, the blocks are provided with slits that match the frame anchors. However, using adjustable frame anchors that grip into the horizontal joints of the AD-Blocks simplifies the process. Above the frame, both edge blocks should extend over the opening by 20 to 30 cm. An adjusting piece can be installed in the middle, if necessary. Openings over 1 meter in width should be reinforced as described above.

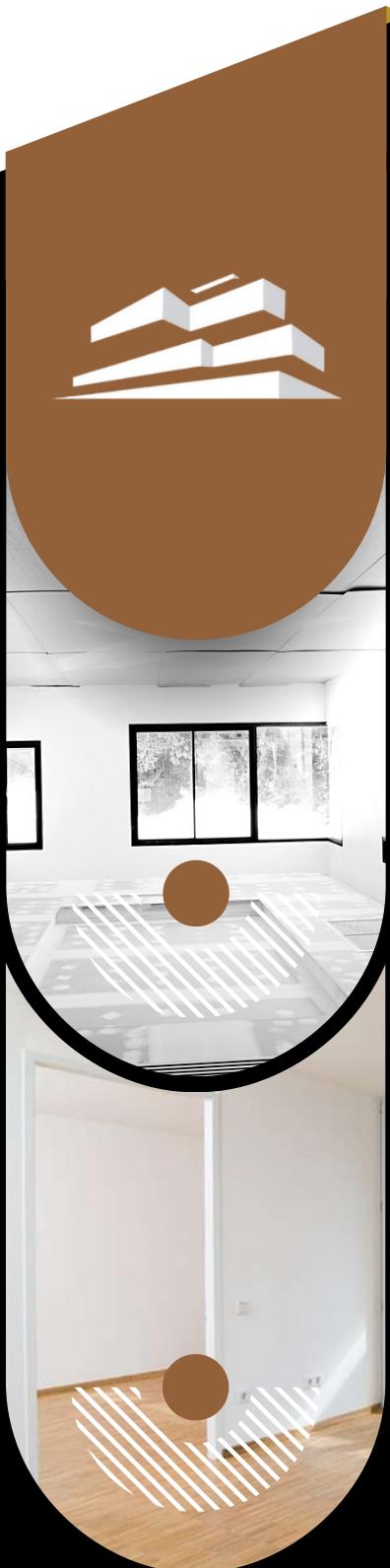
Installation of a single-piece steel frame after build-up of the wall, using frame anchors

During the construction of the wall, the door opening can be omitted or prepared for later adjustments. If using anchors for installation, the dimensions of the opening should match the frame dimensions.

The reveals, which are bevelled on one side of the wall and above, should have gaps to accommodate the frame anchors. Next, install the frame vertically and horizontally, ensuring it is aligned accurately. Brace and secure the frame in place.

Any gaps or hollow spaces on the sides and above the frame should be filled with gypsum mortar, preferably AD-BLOCK Filler





Installation of a single-piece steel frame after build-up of the wall, cast frame

The door opening can be left out during the initial construction of the wall or sawed out at a later time. Depending on the frame profile, the width and height of the opening should be designed up to 15 mm larger than the basic dimensions. Gaps should be cut out in the corners of the lintel to accommodate the plugging of the frame.

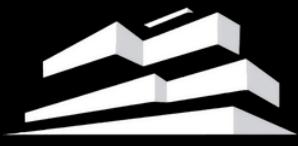
Next, install the frame vertically and horizontally, ensuring it is aligned accurately. Brace and secure the frame in place. Attach paling boards or similar materials to each side of the wall next to the frame using clamps.

Fill the hollow space from above with gypsum mortar, such as AD-BLOCK Filler. While pouring the mortar, lightly tap the frame with a rubber hammer to ensure there are no hollow spaces. Finally, close any remaining gaps to complete the installation of the door frame with a neat and sturdy finish. This method allows for flexibility in designing the door opening and ensures a secure and well-fitted frame.

Wooden frames are typically installed after the construction of partition walls made from AD-Blocks. This task is usually carried out by carpenters or joiners. They can use methods similar to those used for other walls, such as fixing the frame with polyurethane foam or straddling dowels.

When using polyurethane foam, it is advisable to pre-treat the background (gypsum) with primer or bonding bridges. This ensures better adhesion and a more secure fixing of the frame. On the other hand, when using straddling dowels, the expansion force must work both upwards and downwards to ensure a stable installation.





THE INSTALLATION

A



B



C



D



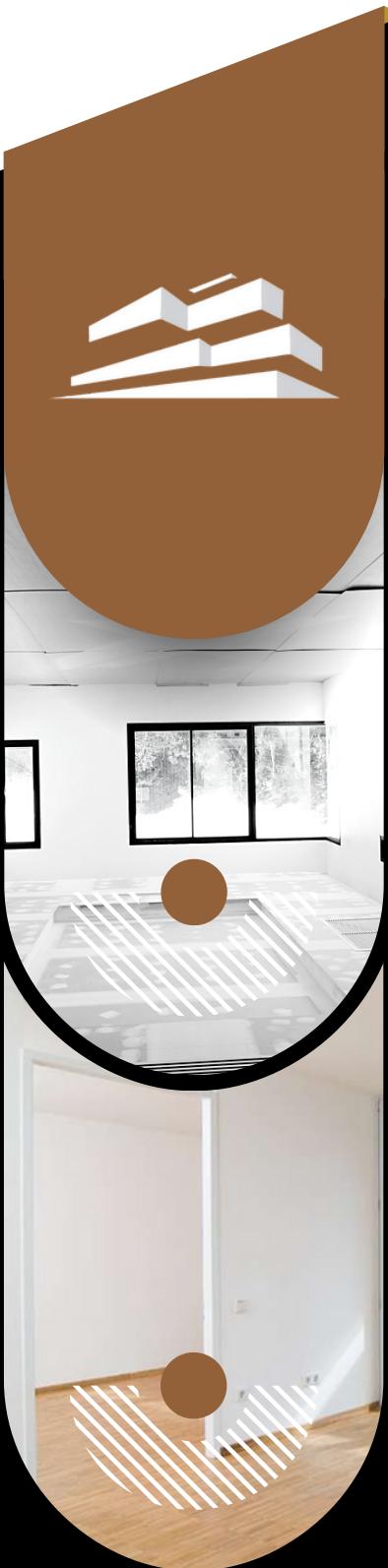
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THE INSTALLATION



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Installation of a single- piece steel frame after build-up of the wall using frame anchors

- (a) The door opening is left out during the build-up of the wall or sawed out at a later time. The dimensions of the opening correspond with the dimensions of the frame with an installation using anchors.
- (b) The reveal is bevelled on all sides using a saw, roughened, and freed of gypsum dust.
- (c) Saw out gaps for the flexible frame anchor and also remove cutting dust. Frames with fixed anchors define the position of the gaps.
- (d) Moisten reveal and gaps thoroughly. Place frame vertically and horizontally true.
- (e) Fix and brace the frame in agreement with the one-meter marking.
- (f) Close gaps and hollow spaces at the side and above using AD-BLOCK Filler.

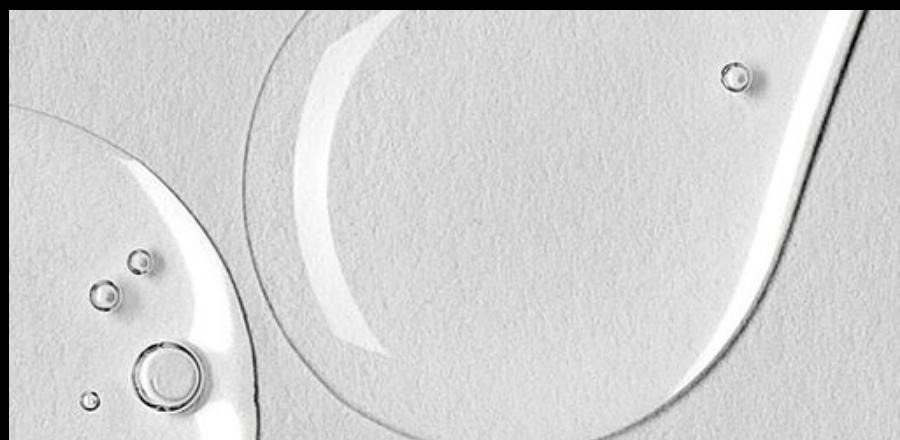


WET ROOMS

AD-Blocks can be used as interior partition walls in all rooms of apartments, administrative, and commercial buildings. They are also suitable for use in kitchens and bathrooms. However, in areas with continuous and regular heavy moisture loading, blocks should not be used, for example in large commercial kitchens or public swimming pools.

For use in domestic kitchens and bathrooms, a water repellent AD-Block is recommended. These blocks consist of hydrophobized plaster of Paris, providing better protection than any applied primer. Importantly, the diffusion capability of the blocks is not prejudiced through the hydrophilization process.

Water repellent AD-Blocks are easily identifiable on the building site as they are marked in blue. These blocks have a water absorption rate of less than 5% by weight after 2 hours of total storage in water. To further enhance the functional security of partition walls, it is advised to use AD-BLOCK adhesive for offset and filling/smoothing of blocks, ensuring a simple and foolproof handling on-site.



ATTACHMENT OF LOADS



In modern apartments, offices, social or sanitary rooms, there is a need for securely attaching numerous fixtures and fittings to the walls. These fixtures include classical wall cupboards, bookshelves, washbasins, television sets, heavy audio-visual equipment, display cabinets in showrooms, as well as medical equipment in hospitals. However, during the building phase, the precise positions of these fittings may not always be known, and modifications to arrangements can occur later due to conversions or changes in usage. Therefore, it is essential for interior rooms to be flexible enough to allow the attachment of heavy loads to all walls at any desirable position.

Partition walls made of AD-Block are designed with a solid cross-section, which enables the attachment of both light and heavy loads securely and in various positions as needed. When using AD-Block partition walls, there is no need to consider spacing or separation, and load-reducing crossbeams or similar supports are not required. Instead, suitable attachment means must be selected, and the following constraints should be observed to ensure safe and reliable fixture installation:





1. Choose appropriate attachment means suitable for the specific load and fitting type.
2. Follow the manufacturer's guidelines for fixture installation on AD-Block walls.
3. Ensure that the attachment points are well-anchored to the AD-Block material for maximum strength.
4. Verify that the load distribution is even and balanced to prevent stress concentration on specific areas of the wall.
5. If uncertain about the load-bearing capacity or installation method, seek professional advice or consult a structural engineer.

By following these guidelines, AD-Block partition walls offer a flexible and reliable solution for securely attaching fixtures and fittings, even heavy loads, to interior walls without the need for additional spacing or support structures.





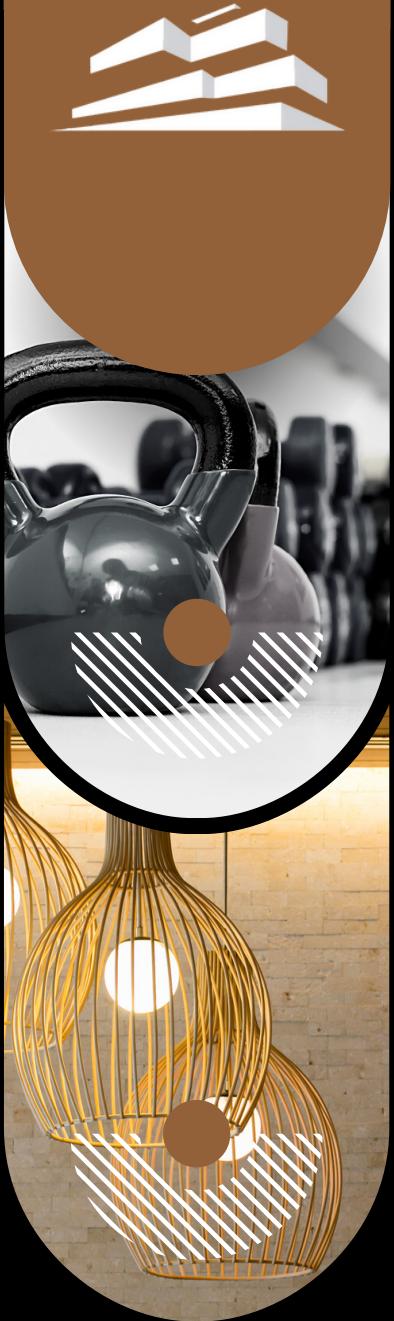
Light console loads

Light console loads up to 0.4 kN/m (40 kp/m) can be safely attached to AD-Block walls using normal commercial expansion and screw anchors without additional verification. This applies to fixtures such as small bookshelves or small wall cupboards.

Heavy console loads

- For heavy console loads ranging from over 0.4 to 1.0 kN/m, with a vertical line of action (lever arm) not exceeding 0.5 m from the wall surface, AD-Block walls must meet specific criteria to ensure structural safety:
 - 1. The wall thickness should be at least 80 mm.
 - 2. The height of the wall must not exceed 2/3 of the maximum permitted wall height.
 - (For example, with 80 mm thick walls and openings in Installation Area 1, the maximum wall height is 4.50 m, resulting in a 2/3 value of 3 m.)
 - Under these conditions, the walls can safely handle normal console loads up to 1.0 kN/m with a 50 cm lever arm without further verification. If using 100 mm thick apartment partition walls, wall heights under loading up to 4.66 m are achievable.
 - For console loads exceeding 1.0 kN/m or with a lever arm greater than 0.5 m, the structural safety of the wall with its existing dimensions must be ensured. Extra caution should be taken to verify that the wall can handle the additional stress safely.
- Overall, AD-Block walls can support various console loads, but specific requirements must be met to guarantee the structural integrity and safety of the installation.





Dowels

Numerous commercial dowels and anchors can be employed for mounting fixtures in AD-Blocks. To be taken into account in each case are the values given by the manufacturer of the dowel for the depth of the drilling and the recommended working load.

Screws

The maximum load-bearing capability given by the manufacturer of the dowels is achieved only by using screws with the largest possible diameter. Therefore as far as possible always use the respectively largest given screw diameter, never a smaller one. The use of particle board screws can reduce the holding value in comparison with wood screws.

Drillings

The drilling should be carried out using drills in the normal drilling procedure (without impact), so that the drilling hole is not too large. For the same reason, with plastic straddling dowels, the drill diameter should be selected 1mm smaller than the dowel diameter. After drilling the boring dust should be removed carefully from the drill hole. Too large and/or an unclean drilling hole reduce the holding value of the dowel.





Edge separations

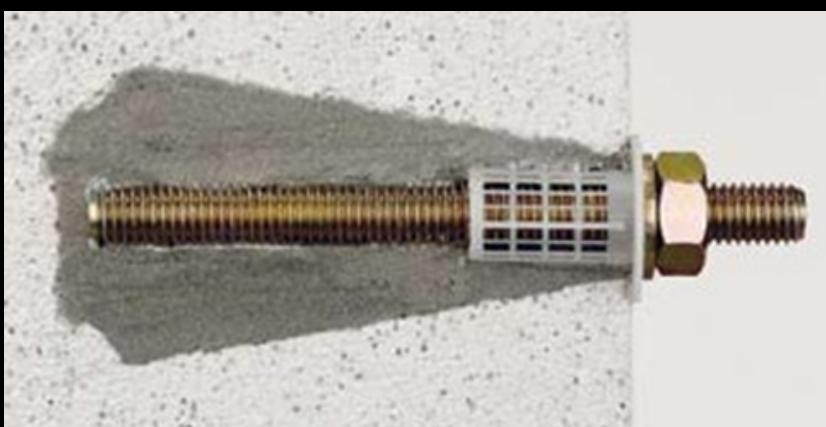
In order to prevent spalling, there is to be sufficient separation between the drilling hole and the edges of the wall(at the wall connection or at the door opening). In the case that this is not possible, for example with frontal fixtures within the doorframe, the straddling dowel and thus the expansion force of the dowel must run parallel to the edge. For these cases straddling dowels with out pressure are recommended.

Sanitary attachment

To securely install washbasins on AD-Block partition walls, bolts with holding plates are used on the rear side of the wall. For single-leaf walls, a recess is cut on the rear side to accommodate the holding plate or bar. After inserting the dowel, the recess is filled with gypsum to ensure a flush reception.

Wall-suspended WCs may experience uncontrolled and high impact loading at a relatively long lever arm. Despite the high breaking loads of individual types of dowels in AD-Block walls, it is recommended to attach these sanitary objects to carrier supports. These carrier supports can be integrated into double-leaf installation walls or facing formwork made from AD-Blocks.

Pre-assembled systems consisting of carrier supports and wall-installation flushing tanks are suggested for securing wall-suspended WCs. These systems are fixed according to the manufacturer's instructions on the bare floor and to the rear wall leaf. The front leaf of AD-Blocks should be at least 80 mm thick and must fit precisely on the assembly element. The assembly element has drillings for threaded rods to secure the WC and the outflow pipe.



INSTALLATIONS



Electrical and datalines or similar installations can be installed very easily and discretely in AD-Blocks, both immediately after erecting the wall and also subsequently with later reconstruction or conversion.

Preparation, laying and covering of lines

Routing for cables in AD-Block partition walls can be done using a scoring tool, pipes, or machining. For electrical sockets, a drill bit is used. Chiseling out slits and socket holes is strictly prohibited. Use only corrosion-protected securing fixings for installing electrical installations. Close the slits with gypsum mortar, ensuring a sufficient covering of at least 1 cm over the component. Suitable gypsum mortars for closure include AD-BLOCK adhesive or AD-BLOCK Filler.

Pipes

Pipes can be laid in AD-Block partition walls while considering certain constraints. Metal pipes must be protected against corrosion, and to avoid condensed water and cracks due to heat expansion, suitable lagging is necessary. However, pipes within the cross-section can weaken the acoustic insulation of the wall, so it's generally better to use sound-dampening fixtures on the wall. For installations with a large number of pipes, it is recommended to consider a double-leaf installation wall made from AD-Blocks with or without a facing. This approach should be examined for various installations, irrespective of their type, to ensure optimal acoustic insulation.

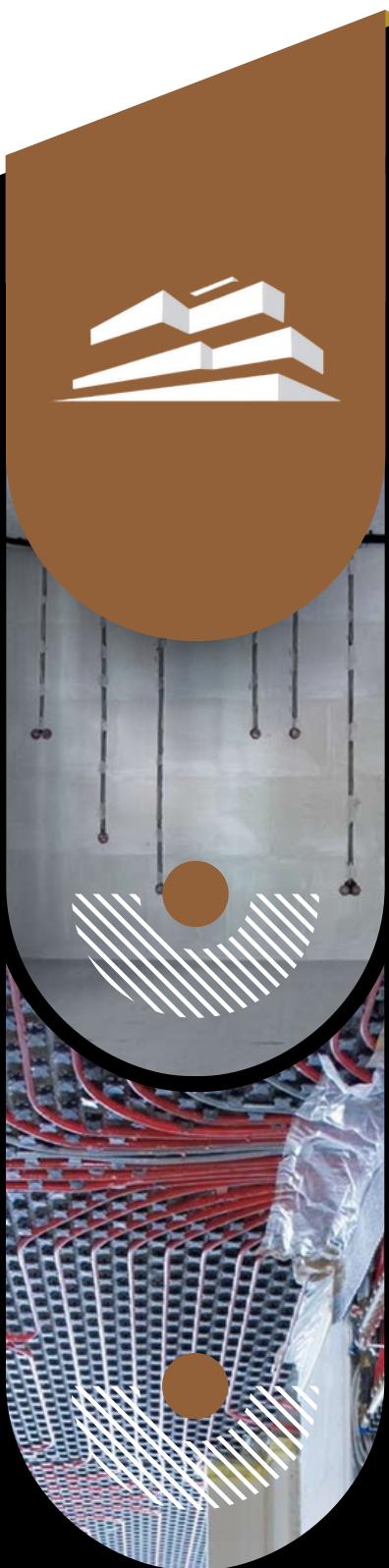


FIRE PROTECTION

Partition walls made from AD-Blocks can meet fire protection requirements while allowing flexibility in the installation of electrical sockets, switches, and distribution boxes. These electrical elements can be placed at any desired position, as long as they are not directly opposite each other. When passing individual electrical lines through the wall, the remaining cross-section must be completely filled with gypsum mortar.

In cases where multiple electrical lines or other penetrations are planned, appropriate fire protection measures must be taken. This can include the use of fire-protected doors, fire protection or access covers, fire-retarding sealing of lines, or fire protection glazing to ensure compliance with fire safety standards.

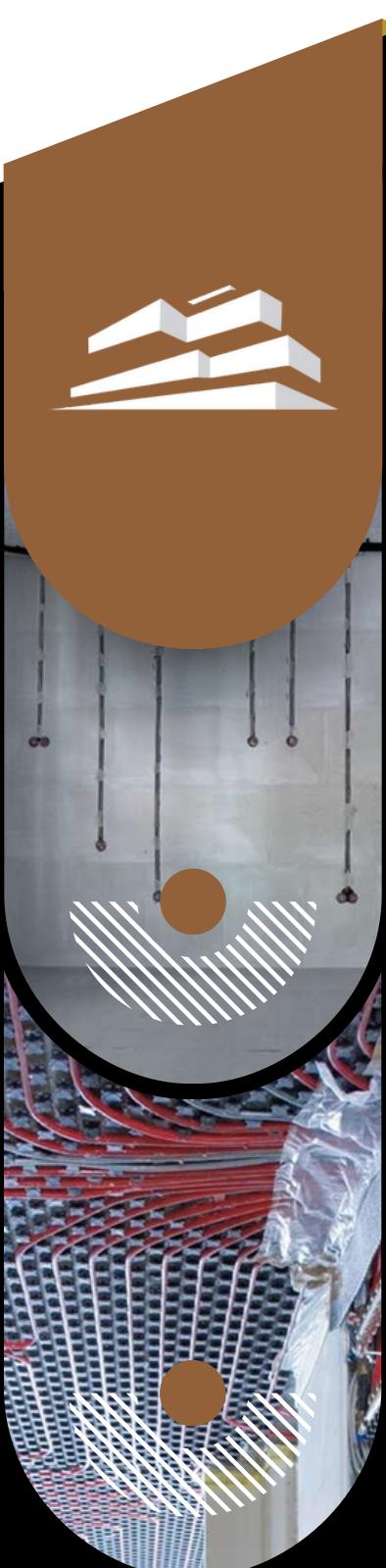




Geometric constraints for installation slits in partition walls made from AD-Blocks are as follows:

1. Horizontal slits, which are half the thickness of the wall in depth, should not be longer than 1 meter.
2. Longer horizontal slits may not exceed 1/3 of the wall thickness in depth.
3. Avoid having parallel horizontal slits with a separation of less than 50 cm.
4. Vertical pipelines should be laid singly in slits.
5. The separation between two slits on the same side of the wall should be equal to the wall thickness.
6. Vertical slits, whose depth does not exceed half the wall thickness, can be of any length.
7. Deeper vertical slits should not be longer than 1 meter.
8. All installed components must be covered with at least 1 cm of material.
9. If slits are executed differently, this must be considered when determining the wall thickness.
10. Only the remaining thickness may be considered as the wall thickness for slits that are not closed off.





These constraints ensure proper installation and structural integrity of the partition walls.

Small openings in partition walls made from AD-Blocks are permitted without reducing the dimensions if they meet the following criteria:

1. The clear dimensions of the opening are smaller than 1/4 of the storey height or the wall length.
2. The complete area of the opening is smaller than 1/10 of the wall area.

Such openings may be sawed out, machined out, or drilled. For instance, when installing a heating circuit distributor for floor heating, the opening for the housing should be dimensioned according to the thickness of the wall.

"AD-BLOCK can be easily worked and precisely cut according to specifications using straight-back, chain, or alligator saw. The groove and tongue profile, along with the simple working using gypsum adhesive, allows for the reuse of half blocks. This makes Multi-Gips AD-Blocks highly economical as waste material and disposal costs are minimized."





General information on design

- Ensure that all cut surfaces of matched or bevelled AD-Blocks are thoroughly cleaned of gypsum dust. Avoid chiseling out openings, breaches, or slits; instead, use saws, cutters, or scoring tools to produce them.
- Doors and other openings can be omitted during wall erection or later sawed out of the finished wall. All metal items built into the wall, like supporting reinforcements or door frames, must be protected against corrosion.
- Avoid using mortar containing cement in the walls, even for installing door frames.

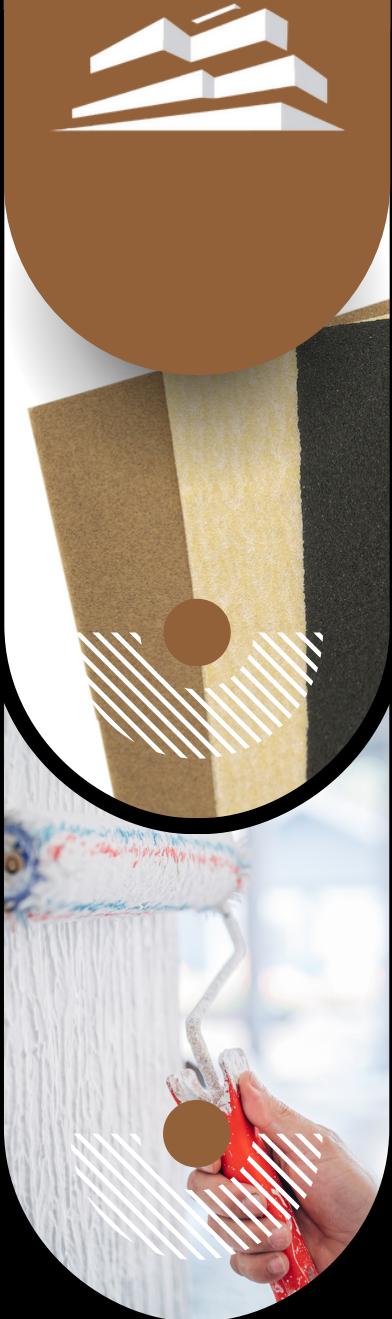
AD-Blocks can be worked and securely connected as long as adjacent surfaces are firm and free of frost. It is recommended to work at temperatures above 5 °C. Make sure the roof is closed to prevent moisture during the building phase.

- Cement or anhydrite floor covering, as well as liquid flooring, can be applied later as long as the covering layer is properly installed up the walls, and excess material is trimmed after it hardens.
- For poured asphalt flooring, ensure good cross-ventilation to allow the released heat to escape. Avoid using poured asphalt in interior rooms without sufficient ventilation.

When using one-sided wall AD-Blocks attached only at the bottom, anchor them to the floor using suitable profiles.



SURFACES AND WALL FINISH



AD-Blocks fit precisely together using groove and tongue, creating a smooth and even finish without the need for plaster. The wall surface meets the requirements for acoustic insulation and fire without additional plastering.

AD-Blocks are filled/smoothed completely only in the area of joints or when high visual standards are required, such as in firewalls. With proper cross-ventilation, the walls can dry within a few days and are ready for the final wall finish.

Filling/smoothing

Before beginning the filling/smoothing process, make sure to close all slits and gaps that were created for inserting doors or laying installations. Suitable gypsum mortars, such as Multi-Gips adhesive, can be used for this purpose.

During the block installation process, any adhesive that swells out of the joints should be wiped off while it is still slightly hardened. This helps to achieve a cleaner and more even finish.

Before smoothing, any ridges that may still be present after hardening should be knocked off. Depending on the surface quality required as per the performance specification, you can choose to either fill and smooth only the joints or the entire wall surface.





Surface covering using tiles or natural stone

Walls that will be covered with tiles or natural stone do not need to be filled or smoothed, even in the area of joints. Only gypsum adhesive needs to be used to attach the tiles or natural stone to the wall surface. The tiles or natural stone will provide the desired finish and do not require additional filling or smoothing.

Once the wall surfaces are primed, tiles or blocks can be applied using thin-bed adhesive. If the AD-Blocks are water-repellent, priming is not necessary due to their reduced absorbent behavior. To enhance water repellency, tile joint mortar with a sealant additive can be used on ceramic surfaces. For even better water resistance, joint filling with epoxy resin mortar is recommended. This combination of materials ensures a durable and water-resistant finish for tiled surfaces.

Characteristics and quality of surfaces

The quality and appearance of filled/smoothed wall surfaces can vary greatly and be subjective. Performance specifications often use vague terms like "smooth, painter finished, free of highlights," which may not clearly define the desired surface quality. This can lead to differing opinions on whether the finish meets the requirements.

To enhance the consistency and quality of wall surface finishes with gypsum blocks, the German Association of Gypsum Industries has developed an advisory leaflet on surface quality. This leaflet provides guidelines and standards to help achieve the desired level of finish for wall surfaces, ensuring better communication between customers, contractors, and builders. By following these guidelines,





The advisory leaflet outlines four distinct levels of quality, ranging from Q1 to Q4, each accompanied by objective and clear criteria. These quality levels serve as a reference guide for planners and contractors when preparing performance specifications and tenders.

By incorporating these quality levels into the project documentation, everyone involved in the construction process can have a common understanding of the expected finish for the wall surfaces. This helps to avoid misunderstandings and ensures that the desired level of finish is achieved according to the specific requirements and expectations.

In summary, utilizing the quality levels Q1 to Q4 from the advisory leaflet promotes consistency, transparency, and effective communication between all stakeholders involved in the construction project, ultimately leading to satisfactory and successful outcomes.

Introducing additional criteria for the assessment or acceptance of filled/smoothed surfaces, such as specific light conditions (e.g., natural light or artificial lighting to highlight surface imperfections), is at the discretion of the customer or the project requirements. However, it is essential for the customer to ensure that comparable light conditions are available during the execution of the filling/smoothing work to ensure a fair and accurate evaluation.



GENERAL INFORMATION ON SURFACES



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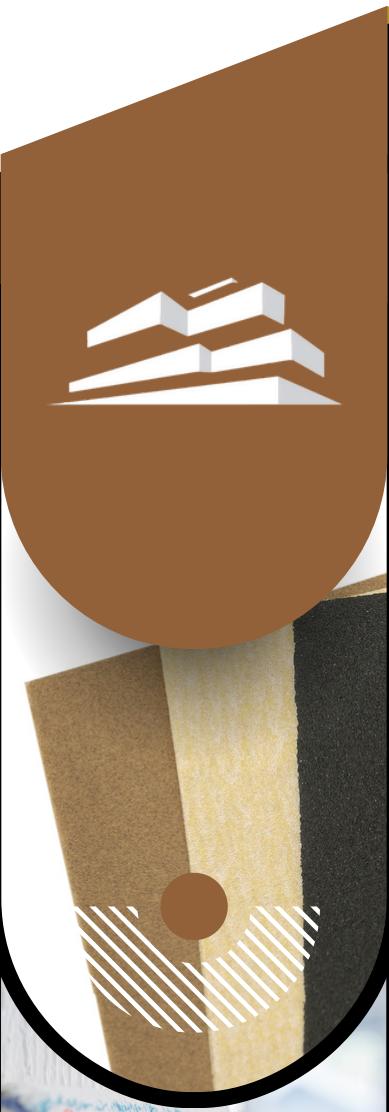
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Before smoothing, any ridges that may still be present after hardening should be knocked off. Depending on the surface quality required as per the performance specification, you can choose to either fill and smooth only the joints or the entire wall surface.





GENERAL INFORMATION ON SURFACES

Coating using paints or wallpapers

Before applying paint or wallpaper, it is important to prime the wall surface to ensure even absorbency. Floatation is not necessary and not allowed. You can use normal dispersion, latex, oil, and enamel paints as coatings. Water-based paints should be used as per the manufacturer's specifications. Depending on the surface quality achieved after filling and smoothing, you can use various commercial smooth and textured wallpapers or painter's fabrics for wall covering.





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