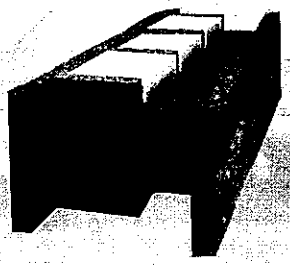
IZOBLOK

BUILDING WALL UNITS

WORKING INSTRUCTIONS

FOR MAKING WALLS OF CAST CEMENT BOUND WOODFIBRE BRICKS



MFC®

MORFICO

Introduction

Dear building contractors,

A cement bound wood fibre block is being placed at your disposal for dry masonry – a product that meets all the requirements of modern and ecological building and is environmental friendly with low energy consumption. This applies to both its production and processing on the building site. Processing is residue-free – all residues are removed from the building site and recycled. It does not burden the environment with packing foil and does require pallets for transport.

The block is light and can be processed easily and quickly (1 m^2 brickwork = 4 blocks + approx. 0.1 m^3 of concrete), which entails a substantial time saving during building construction work. The wall has a high thermal resistance (R = 2.07 to 3.32 m^2 K/W) and excellent accumulation capacity, which represents a high heat energy saving, has a high sonic resistance (RW =50 to 59 dB) and excellent diffusion characteristics, which gives you a healthy and comfortable home. The small thickness of the enclosing and inner load-bearing walls represents a smaller enclosed volume, or larger living space – and this is money saving in the modern day. It is not a problem to build any type of building object using the cement bound wood fibre casing blocks **IZOBLOK** – from high-rise residential and administration buildings or industrial buildings to family homes. Even self-help building projects are easy.

The firm MORFICO, s.r.o. (hereinafter "MORFICO" offers you perfect service that includes:

- project consulting
- modification of projects, which ensures ideal usage of the **IZOBLOK** blocks
- static assessment of **IZOBLOK** walls
- calculation of block and concrete consumption
- technical assistance on site
- possibility for cheap transport of the blocks using a company truck (1 family home = 1 to 2 trucks), pallet- transport of the blocks

With this product, you certainly make a saving - ecology, time and money.

IZOBLOK
BUILDING WALL UNITS

MFC®
MORFICO

1. Foundations

For cement bound wood fibre blocks, the precision to shape and dimension is guaranteed (the maximum permissible deviation is 1 %).

The rest and side-contact surfaces of the blocks are milled and are thus parallel and rectangular. In order to take advantage of this quality when erecting the wall, it is important that the first layer of bricks be precisely horizontal and vertical. This requires a horizontal rest surface for the walls on the foundation and suspended floor structures. Eventual minor disparities of the rest surfaces may be levelled using cement mortar or by wedging the blocks.

A waterproofing strip is laid on the foundation structure under the first layer of bricks. A strip against transmission of noise may be laid under the first layer of bricks on the suspended roof structures.

2. Brick setting and cement grouting

When bricklaying, the corner bricks and bricks at the end of the line are set first and the intermediary bricks are then laid. The ending of a line in holes may be done either using a corner brick, which does not have slots in the side or a basic brick that is cast in a cement bound wood fibre slab (determined by the designer taking into consideration the bonding of the bricks and load-bearing capacity of the wall).

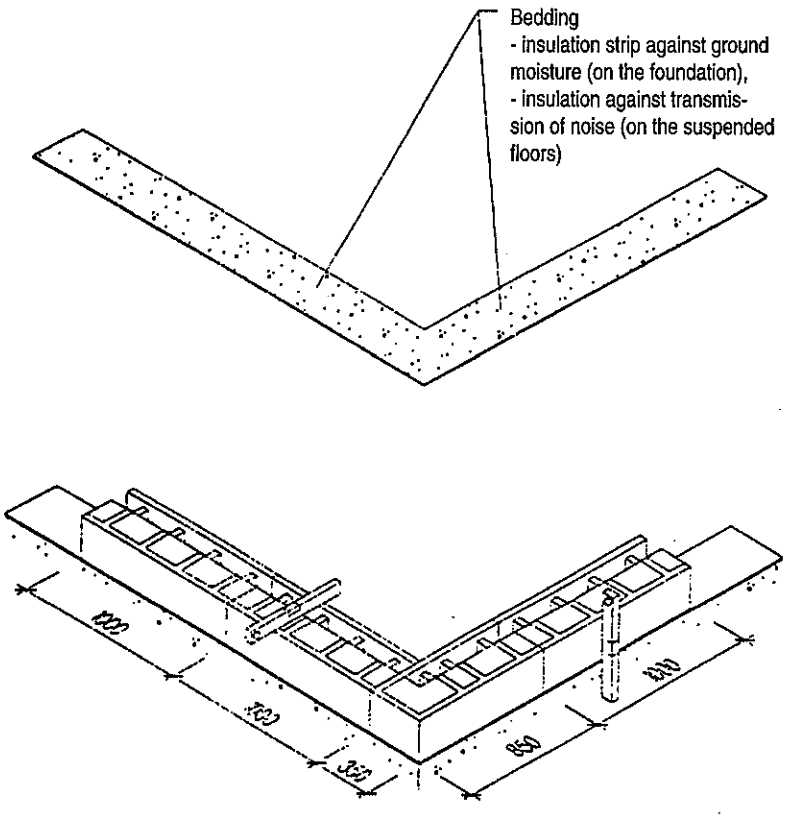


Diagram 1 – Laying of the brickwork (35/14)

The first layer of bricks on the foundation and suspended floor of the basement should be approx. 150 mm above the adjacent finished grade and at minimum 20 mm forward (see diagram 3). If the bricklaying is done below grade, it is essential to lay a waterproofing strip up to a minimum of 150 mm above the finished grade and a drip ledge is installed around the object with a downward slant from the wall. The outer and inner walls with concrete core are erected at the same time. The precision of the bricklaying is checked using a block level.

The bricks are laid on dry bedding with bonding of 250 or 500 mm (according to type). The bonding of the corner is done by alternation of corner bricks.

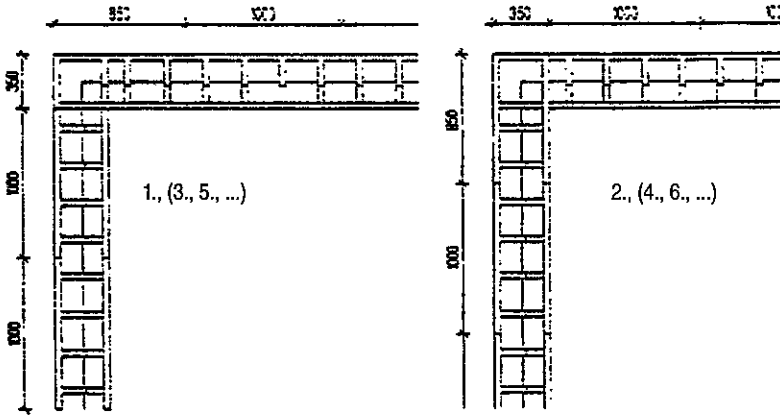
The column of the concrete core must run the full height of the storey, especially in the window piers. After laying a maximum of four layers, the bricks are grouted up to a height of 100 mm below the upper edge of the bricks. The concrete mixture must not be poured under high pressure which would exceed the limit value of the

extension strength of joining ribs of 1.1 kN and bend strength of peripheral ribs of 0.7 kN to prevent shifting, lifting or breaking of the shaped block. The concrete of a group designated by the designer must be so plastic that it safely fills all the cavities in the masonry.

The workability of the concrete mixture depending on the mode of compaction should be from s = 50 to s = 80 mm of the slump cone. The mixture is compacted either by internal vibrator of maximum diameter 30 mm, or using a lath of crossing section 20 x 20 mm. Natural aggregate of maximum granularity 16 mm is added to the concrete mixture.

It is essential to continuously keep the bedding joints clean. Before completion of each layer, it is necessary to properly clean the rest area for the bricks and construction joints of the concrete core of all dirt.

For a height of one storey, it is recommended to exclude the construction joints in the concrete. If this is not possible, it is necessary to secure the construction joint with reinforced concrete stud connectors of minimum thickness Ø 6, set alternately on the external and inner edge of the concrete core at maximum mutual distance of 500 mm such that they are set in the concrete of the bonding parts to a minimum depth of 200 mm. The construction joint in the concrete core of the wall is not considered if the laying of the concrete is interrupted at minimum 100 mm below the bedding of the last layer of bricks and if the laying of the concrete shall continue within 24 hours after interruption and the construction joint is treated properly.



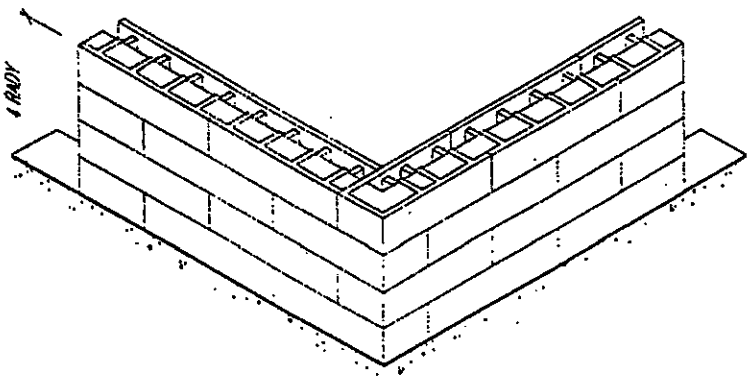


Diagram 2 – Bonding (35/14)

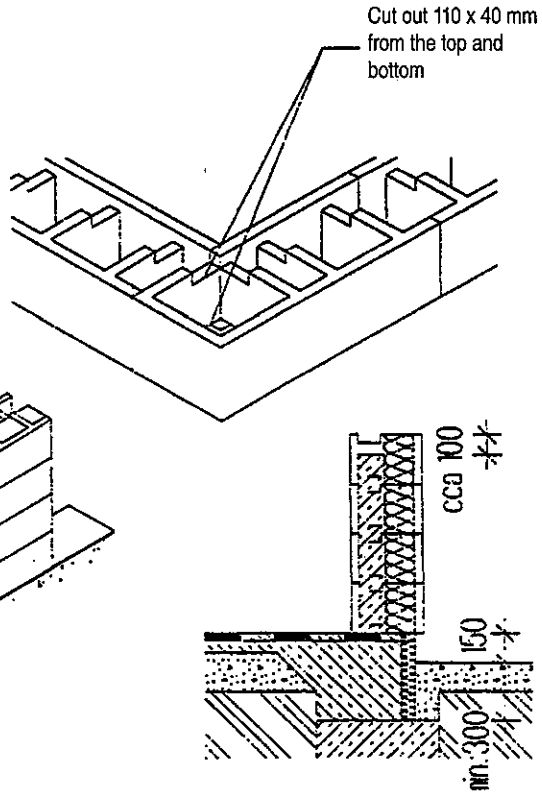


Diagram 3 – positioning of brickwork on the foundation

3. Attachment of inner walls and partition walls to the external walls

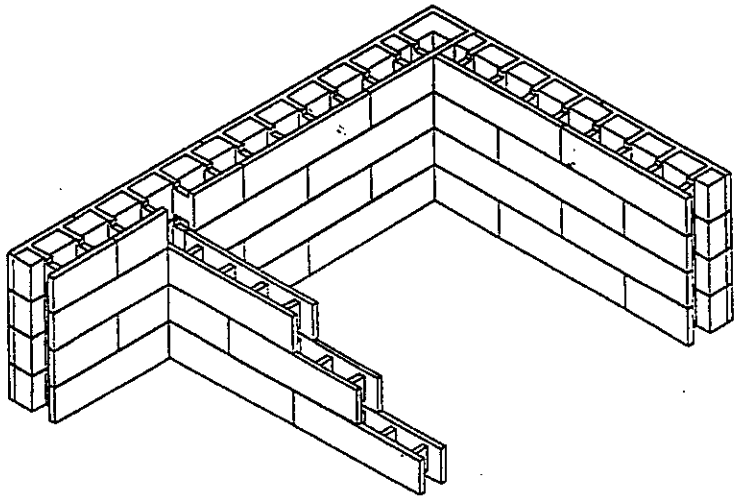


Diagram 4 - Attachment of inner walls to the external walls

The designer determines the attachment of the walls taking into consideration the acoustics requirements. This may be done in two ways:

a) By cutting the inner side of the brick in the outer wall to the width of the inner wall.
b) By setting end-block reinforcement in the joint between the bricks according to the project.

The grouting of the external and inner walls and partition walls with concrete core is done according to the rules outline in paragraph 2.

4. Sill walls and lintels

For sill rails, a 2 Ø V 10 construction reinforcement is set in the upper slot of the brick partition such that its end is at minimum 750 mm from the edge of the opening. If the pillar between the openings is narrower than 1500 mm, the reinforcement is not interrupted. If the required 750 mm from the edge of the opening is not available for attachment, the rods are bent into the wall.

The beams may be made of basic brickwork or cement bound wood fibre – the designer always determines this.

- When using basic bricks, the lower and upper reinforcement beams are set in the slots of the bricks according to the project. The beam is set in formwork and concreted with the rest of the masonry.
- When using cement bound wood fibre blocks, the reinforced beam is set according to the project and the same procedure as outlined above applies.

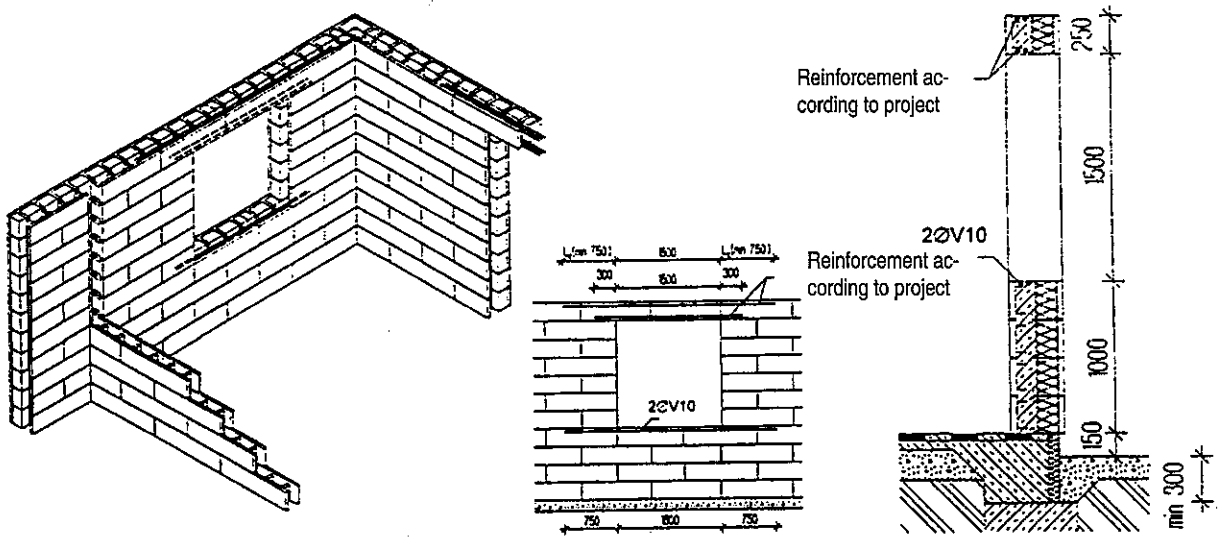
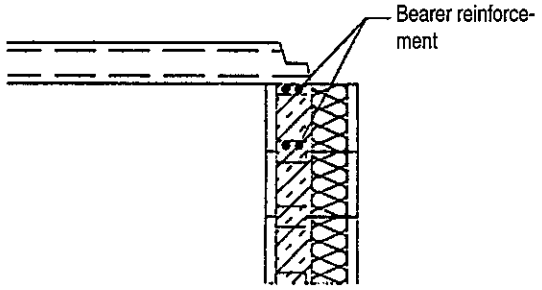


Diagram 5 – Reinforcement of sill rails and lintels

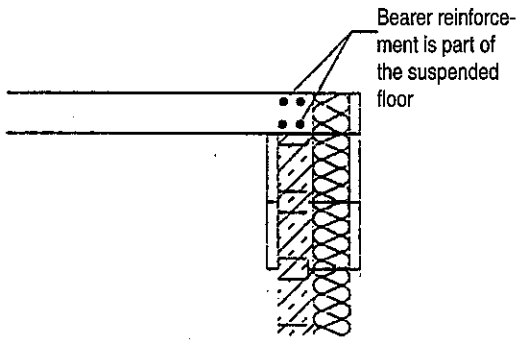
5. Mounting of suspended floors

Cement bound wood fibre brickwork allows for use of any type of suspended floor structure. The last layer of bricks may be cut according to the height of the floor (when cutting, the outer wall of the brick may be left intact and this subsequently forms the side insulation of the suspended floor).



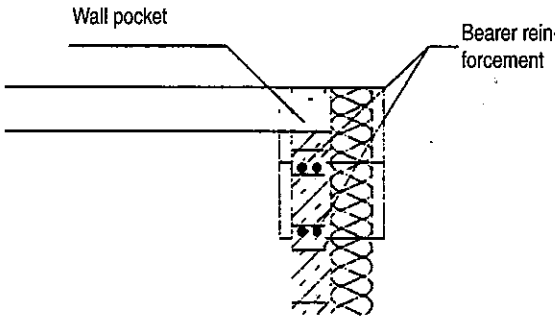
a) prefabricated floor

- When using prefabricated roof structures, the bricks are concreted at the level of the positioning surface of the suspended floor. A circumferential beam reinforcement is set in the concrete core in the last layer of bricks according to the project. The suspended floor prefabricate is set in the cement mortar bed.



b) monolithic floor

- When using monolithic suspended floor structures, the bricks are concreted at the level of the lower edge of the suspended floor structure, optionally the last layer of bricks is concreted at the same time as the suspended floor structure. An anchoring reinforcement of the suspended floor structure may be set in the concrete core – determined by the designer. The reinforcement of the circumferential beam is part of the suspended floor reinforcement.



c) girder floor

- When using a beam suspended floor structure (steel and concrete girders or wooden beams), pockets are cut into the bricks for setting of the beams, which are bedded before concreting the wall. A circumferential bearer reinforcement, which may be stronger at the pockets is set in the concrete core under the beams – determined by the designer.

Diagram 6 – Positioning of suspended roof on the masonry

The suspended floor is set on the full thickness of the concrete core, if the designer does not decide otherwise. The depth of the setting of the suspended floor structure (minimum bedding depth is given by the manufacturer of the suspended floor structure) does not include the cement bound wood fibre side of the bricks, but only the bearing concrete core.

6. Installation slots

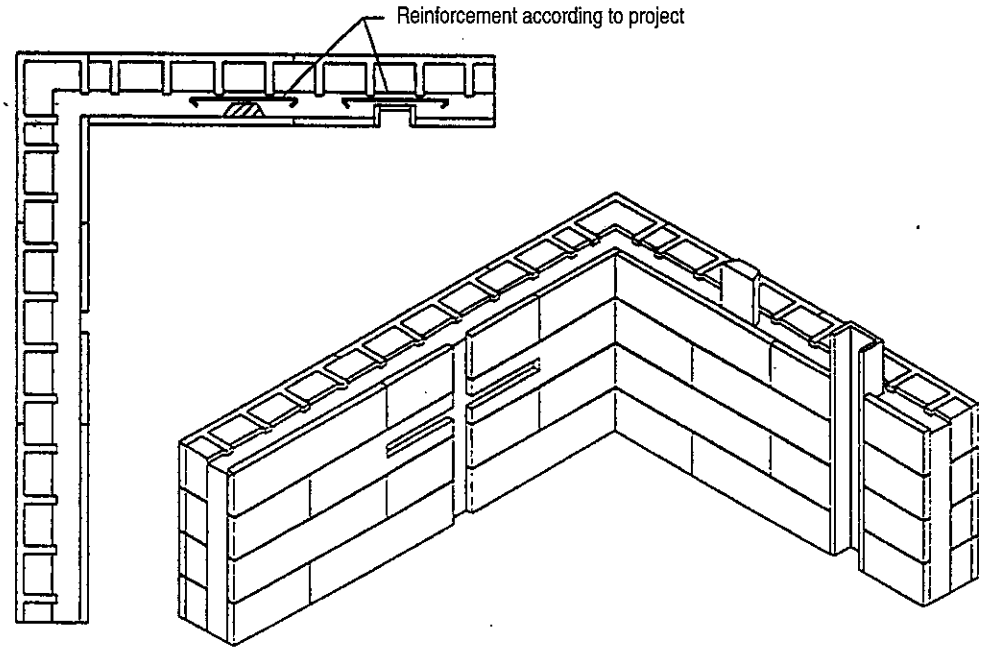


Diagram 7 – Examples of slots in the masonry

For installation of small sections, it is enough to cut out or mill slots in the cement bound wood fibre bricks (it is possible to mill up to the concrete core).

For installation of larger sections, we create slots either by cutting the wall of the brick and bedding of slots in the concrete core or conically cut the wood or polystyrene beam, which is set before application of concrete to the concrete core of the brick. After hardening of the concrete, the wall of the brick is cut and the beam is removed. The possible reinforcement of such a weakened concrete core is determined by the designer.

7. General – examples of usage

The cement bound wood fibre bricks may be combined with other building materials and elements (reinforced concrete or steel pillars in the masonry, steel, prefabricated or monolithic concrete beams, brick, plasterboard or wooden partition walls and the like.). The brick may be cut, drilled, milled and nailed. When milling the bricks, it is necessary to ensure precision of cut. The snippings of the bricks can usually be used in the regular brickwork.

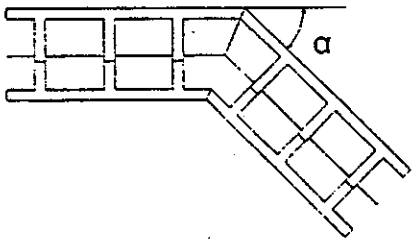


Diagram 8 – corner bonding ($\alpha < 90°$)

8. Plaster

The plaster is a decorative and protective building work, it is the first that everyone sees. For this reason, it is necessary to devote due attention to the material used in the production of plaster, the actual application of the plaster and compliance with the correct technological procedures.

A saving on plaster is a waste of money. If the share of the costs of a high quality plaster is only 2.5 - 3 % of total building costs, bad quality work and unsuitable materials may several times raise the cost during rehabilitation.

The cement bound wood fibre blocks are a good carrier of plasters. Selection of material and application of plasters is subject to ČSN 72 2430 / October 1992 – Mortar for building purposes, Part 1 and 4, Processing directives for dry plaster mortar (2nd Edition), which were prepared and published by the Austrian Working Association for Plasters in June 1995 and the experience of Austrian building companies.

Before start of plastering, the roof structure and the external circumferential wall must be finished. The door and window frames must be installed and the distribution installations must be finished in order to prevent damage to the plaster because of additional modifications. The air and wall temperature must not be less than + 5 °C for 3 days before start of the plastering, during the plastering and during the maturity of the plaster. When producing mortar at low temperatures, the temperature of the components must not fall below + 5 °C and the temperature of the fresh mortar must not fall below + 10 °C. For air temperatures of above + 20 °C and dry or windy weather, the plaster must be treated – moisten at minimum 10 days after application, protect it against direct sunlight and wind and the like in order to prevent quick drying. The drying time depends on climatic conditions and the situation on the building site.

The base for the plaster must be adequately mature, firm and dry, without loose particles and dust. The core concrete must be properly bonded with the cement bound wood fibre blocks. A minimum of 28 days is essential to attain the desired strength of the concrete; actual drying of the walls may however take a much longer time. The plaster may be applied if the temperatures stated above are attained and if the humidity of the wall before application of the plaster is not more than 14 percent (upon customer request, a MORFICO, s.r.o. representative shall measure the humidity). The external wall must be protected from rain or other possible moisture. The installation slots must be filled with suitable material and treated in order to prevent cracking of additional plaster layers.

8.1. Plaster made on the building site

The interior plasterwork is applied in one or two layers, the façade coating is applied in two layers – the preliminary spray is not considered as a plaster layer. The strength of the plaster layers should decline outwards. The plaster may not be applied to dirty, wet or frozen walls. The walls must be left to dry before application of the plaster (natural drying is preferred).

Interior plasterwork – spray, base layers and top layers

- Spray of thickness approx. 5 mm is a mixture of cement and sharp sand of fraction 0 - 4 up to 0 - 8. The mixing ratio 1 volume part of cement to approx. 2 to 3.5 volume parts of sand. The water volume must be appropriate – too much water will create a "glassy" spray surface, which is unsuitable as abase for the plaster and does more damage than good. Such a surface must be roughened using a wire brush.

If the surface of the spray is too rough - apexes, it is necessary to smoothen it with a steel finisher. The spray shall be applied in such a manner that all the bed and cross-joints of the bricks are covered and at minimum 50 percent of the rest of the wall surface. The spray must be left to mature in order to prevent cracking of the plaster – the minimum technological break before further plastering is 14 days. If the next plaster layer shall contain gypsum, the technological break is extended to 3 weeks!

- The base layers of minimum thickness 10 mm are of lime, cement or gypsum and clean sand of fraction 0 - 4. The mixing ratio is 2 volume parts of lime and 0.4 volume parts of cement or gypsum to approx. 6 volume parts of sand. The minimum technological break is 1 day for 1 mm of plaster (however, minimum 14 days)
- The top layers of thickness approx. 10 mm should be of lime, lime-gypsum or gypsum. When using brand plasters, it is necessary to comply with the manufacturer's instructions.

Interior plasterwork – spray and top layers

- Spray – see above
- It is recommended that the top layers of thickness approx. 15 mm be lime-gypsum or gypsum. When using brand plasters, it is necessary to comply with the manufacturer's instructions.

Façade coating – spray, base layers and top layers

The façade coating is applied after finishing the concrete layers of the floors and application of interior plasters as soon as the perimeter wall attains the desired humidity - maximum 14 percent.

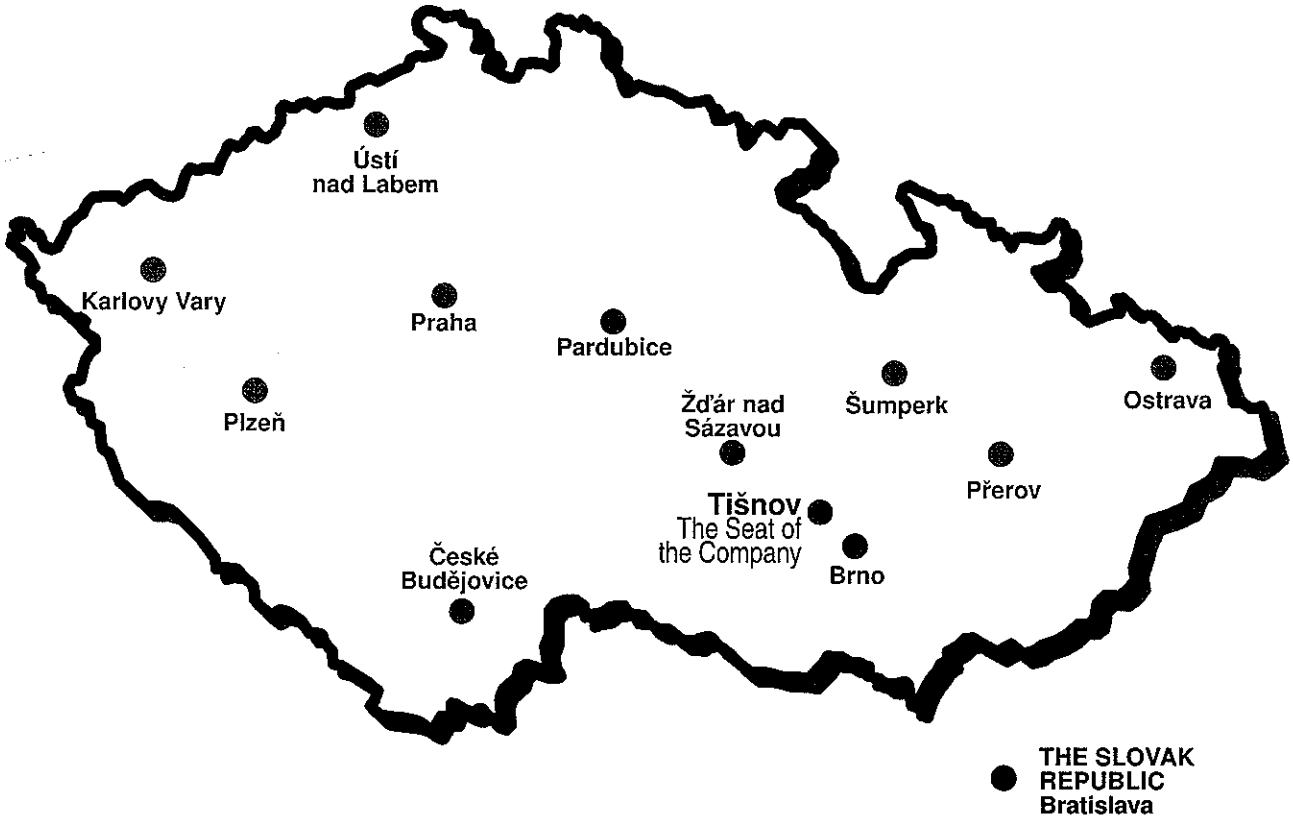
- Spray – the same as applies to interior plasterwork.
- The base layers of minimum thickness 15 mm are of hydraulic lime or hydrated lime (air-hardening lime must not be used for façade coatings), cement and clean sand of fraction 0 - 4. The mixing ratio is 2 volume parts of lime and 1 volume part of cement to approx. 8 volume parts of sand. The minimum technological break is 1 day for 1 mm of plaster!
- The top layers are applied in appropriate thickness to an adequately mature and moistened base layer. When using brand plasters, it is necessary to comply with the manufacturer's instructions.

Reinforcement of plasters

Every wall is prone to tension, which may cause cracks in the plaster. Since the plaster absorbs very little tension, it is recommended to reinforce the plaster with a fabric of mesh 8 x 8 mm, with attested resistance to alkalis, minimum gram weight 145 g/ m^2, positioned in the upper third of the layer.

MARKET NET

THE CZECH REPUBLIC



MORFICO

MORFICO, s.r.o.
Červený Mlýn 170
Tišnov 666 01
e-mail: morfico@tisnow.cz
www.morfico.cz

Your Salesman