

FIXING TO INTERNAL SURFACES

The adhesive used for fixing thin porcelain tiles must be chosen carefully to ensure that it remains perfectly bonded over the years, to avoid deformation and to guarantee the highest level of reliability under all conditions (on internal and external walls and floors). Below is a check-list of fundamental precautions which must be taken when designing the installation system and when actually installing the tiles.

1. Leave a gap of 2-3 mm between the tiles. The joint between tiles is fundamental, especially when fixing this type of tile with its characteristic large format for the following reasons:

- Reduces the influence of dimensional differences between the tiles.
- Helps to reduce the modulus of elasticity and, therefore, the stiffness of the tiled layer. In fact, when fixing tiles butted up against each other, the tiled finish is more or less comparable to a continuous slab and is as stiff as a single tile. If tiles are laid with a small gap, the modulus of elasticity of the tiled surface is reduced since the modulus of elasticity of the grout is much lower than that of porcelain. As a result, grouted joints help a surface follow the different movements between the substrate and the tiled finish due to settling of the structure, hygrometric shrinkage, thermal expansion, etc., thus helping avoid stresses and, therefore, potential detachment of the tiles.

2. Create movement joints: apart from respecting the exact pattern of the structural joints, perimeter deformation and distribution joints must be created every 25 m², or in accordance with relevant national guidelines.

3. The adhesive must be applied with a notched trowel using the double-buttering technique, that is, the adhesive must be applied on both the back of the tile and on the substrate, to guarantee that the tile is buttered 100%. Double spreading is necessary and indispensable to avoid leaving gaps on the back of the tile.

4. The correct choice of adhesive: choosing the right adhesive is fundamental to guarantee that a tiled surface remains sound and reliable over the years. This is why it is important to determine at the outset exactly which type of porcelain is to be laid (with or without reinforcement mesh), the size of the tile, the substrate on which it is to be laid, the final use, etc. The practically zero absorption of this material, together with the possible use of reinforcement mesh, impose the use of class C2 adhesives according to EN 12004 and with class S1 deformability when laying large sized tiles. When large tiles are used, we strongly recommend using two-component, highly flexible class C2 products according to EN 12004.

FIXING TO EXTERNAL SURFACES

General rules

The fixing of thin porcelain tiles on façades, as with conventional thickness clinker and porcelain tiles, needs to be designed correctly before starting. The following fundamental general rules must be strictly adhered to:

- The adhesive chosen must be an improved class (C2), deformable (S1) or highly deformable (S2) type according to EN 12004.

- The adhesive must be applied with a notched trowel using the double-buttering technique, that is, on both the back of the tile and on the substrate, to guarantee that the tile is buttered 100%. The double-buttering technique is necessary and indispensable to avoid problems provoked by voids on the back of the tiles and the collection of rainwater which, in freezing weather, could create stresses and detachment of the tiles. Double-buttering is also necessary so that stresses, caused by different movements in the substrate and the tiled finish due to temperature change for example, are distributed evenly and over a larger area.
- The tiles must be tapped down in position using a rubber trowel to eliminate air pockets between the back of the tiles and the substrate. This precaution will avoid the formation of stresses caused by water vapour during temperature variations.
- Particularly in hot climates and during inclement weather (such as strong winds), we recommend using class E adhesives (with a longer open time) according to EN 12004.
- When fixing during the winter or in cold climates, it is preferable to use quick-setting class F adhesives according to EN 12004. In fact, these adhesives finish setting and reach a high bond strength within a few hours to avoid even lower temperatures during the night below 0°C freezing the mixing water.
- The tiles must be laid with a large joint between them. The width of the joint must be determined according to the local climatic conditions, the size of the tiles and the flexibility of the substrate. Most international standards state that laying tiles without a joint is unacceptable. Joints are particularly important when laying large tiles to help hide variations in flatness. The joints are sealed with ready-to-use cementitious, epoxy or polymer products which have lower elasto-mechanical characteristics than the tiles. Therefore, when deformation occurs in the substrate or in thin porcelain tiles due to high temperature variations, for example, the joints avoid high stresses being transmitted to the adhesive and causing detachment of the tiles.
- Flexible movement joints around 1 cm wide must be included in correspondence with corners and string-courses, and the surface must always be divided into bays of a maximum of 9-12 m². The use of paste polymer grouts (see the following "Grouting" section) allows the size of the bays to be increased, and on smaller surfaces the movement joints may be eliminated.
- Structural joints on the building must be absolutely respected.

GROUTING TILE JOINTS

Grouting tile joints with cementitious products

Grouting tile joints with a high-performance, anti-efflorescence, quick-setting and drying, water-repellent, anti-mould grout, class CG2 according to EN 13888, followed by a thorough cleaning of the surface with a suitable detergent, rinsing of the surface and absorbing excess water with suitable equipment and any other operations required to complete the work according to specifications.

Grouting tile joints with a high-performance, polymer-modified, water repellent technology for grouting tile joints up to 6 mm wide, class CG2 according to EN 13888, followed by a thorough cleaning of the surface with a suitable detergent, rinsing of the surface and absorbing excess water with suitable equipment and any other operations required to complete the work according to specifications.

RECOMMENDED ADHESIVES

FLOORING & CLADDING		NORMAL HARDENING		FAST HARDENING	
SUPPORT TYPE	MANUFACTURER	ADHESIVE	ISO 12003 / ANSI	ADHESIVE	ISO 12003 / ANSI
FLOORING AND CLADDING ON CEMENT BASE	MAPEI	KERABOND + ISOLASTIC ULTRALITE S2	C2ES2 / A188.4, A118.11	ELASTORAPID	C2FTES2 / A118.4, A118.11
	SIKA	CERAM- 235 Flexible	C2TE / A118.4		
	KERAKOLL	SPECIAL PORCELAIN (No Fiberglass)	C2TE / A118.4		
	LATICRETE	H 40 Eco Flex GOLD	C2E/A118.4, A11 A118.4	GOLD Rapid	A118.4
FLOORING ON HEAT RADIANT FLOOR	MAPEI	KERABOND + ISOLASTIC ULTRALITE S2	C2ES2 / A188.4, A118.11	KERAQUICK LATEX PLUS	C2FTS1 / A118.4, A118.11
	SIKA	CERAM- 237 Flex floors	C2E /118.4, A118.11		
	KERAKOLL	H 40 Eco Flex	C2E /118.4, A118.11		
	MAPEI	KERABOND + ISOLASTIC ULTRALITE S2	C2ES2 /A188.4, A118.11	ELASTORAPID	C2FTS2/ A118.4, A118.11
FLOORING & CLADDING ON GYPSUM WALLBOARD AND FIBER CEMENT	SIKA	CERAM- 237 Flex floors	C2E /118.4, A118.		
	KERAKOLL	SPECIAL PORCELAIN (No fiberglass)	C2TE / A 118.4		
	LATICRETE	H 40 Eco Flex XLT GOLD	C2E / 118.4, A118.11 ANSI A118.4, A118.11 A118.4	XLT Rapid GOLD Rapid	ANSI A118.4 / A118.11 A118.4
	MAPEI	KERALASTIC KERALASTIC T	R2/ A118.3 R2T/A 118.3	KERAQUICK + LATEX PLUS	C2FTS2/ A118.4, A118.11
FLOORING & CLADDING METAL, WOOD, PLYWOOD	KERAKOLL	H 40 Eco Flex	C2E /118.4, A118.11		

INDOOR

RECOMMENDED ADHESIVES

FLOORING & CLADDING		NORMAL HARDENING		FAST HARDENING	
SUPPORT TYPE	MANUFACTURER	ADHESIVE	TYPE	ADHESIVE	TYPE
CLADDING FACADE (CERAMIC WITH OUT FIBER GLASS)	MAPEI	KERABOND + ISOLASTIC ULTRALITE S2	C2ES2/ A118.4, A118.11	KERAQUICK LATEX PLUS	C2TES1/ A118.4, A118.11
	SIKA	CERAM- 260 Flexible	C2TES2/ A 118.4, A118.11		
	KERAKOLL	H 40 Eco ExtraFlex	C2TES1/ A118.4, A118.11		
	LATICRETE	PLATINUM	C2TES1/ A118.4, A118.11	PLATINUM Rapid	C2TES1/ A118.4, A118.11
	MAPEI	KERALASTIC T	R2T / A118.3		
	SIKA	CERAM-260 Flexibel	C2ES1/ A118.4, A118.11		
CLADDING FACADE (CERAMIC WITH FIBER GLASS)	KERAKOLL	H 40 Eco ExtraFlex	C2TES2/ A 118.4, A118.11		
	LATICRETE	PLATINUM	C2TES1/ A118.4, A118.11	PLATINUM Rapid	C2TES1/ A118.4, A118.11
	KERAKOLL	H 40 Eco ExtraFlex	C2TES1/ A118.4, A118.11		
	SIKA	CERAM-260 Flexibel	C2TES2/ A 118.4, A118.11		
	LATICRETE	PLATINUM	C2TES1/ A118.4, A118.11		
	MAPEI	KERALASTIC T	R2T / A118.3		
FLOORING	LATICRETE	PLATINUM	C2TES2/ A 118.4, A118.11	PLATINUM Rapid	C2TES1/ A118.4, A118.11
	MAPEI	KERALASTIC T	R2T / A118.3		

OUTDOOR

NEOLITH

Sintered Porcelain

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A decorative horizontal band at the bottom of the page consisting of a grid of small black squares.