

INSTALLATION AND MAINTENANCE CERAMIC TILES

Ceramics have undergone a rapid evolution in the last few years. This has been reflected in as much as the ceramic tiles (low porosities, large formats...) as in the areas where they are put to use (large shopping centres, facades, refrigerating chambers...) To optimise the planning of tiling operations one must first study the nature, condition and behaviour of the surface onto which the tiles are to be applied, the fixing system and adhering material, and lastly, the grouting and finishing materials for floor and wall tiles.

THE SUPPORT SURFACE AND ITS FEATURES:

There are many reasons for which a surface may be considered inadequate for applying certain types of tiles with certain types of adhesives and with certain installation techniques.

To achieve the final goal, which is a high quality and durable covering, it is necessary to begin with a surface which is prepared in the best possible way prior to applying the adhesive layer.

CERAMIC BRICK SUPPORT SURFACES:

This type of surface is ideal for ceramic coverings. It is very absorbent and therefore the ambient temperature and humidity must be controlled.

A cement coating of sand mixed with Portland cement is recommended, as the surface is normally not level.

CONCRETE SLAB SUPPORT SURFACES:

When laying tiles onto this type of surface, it is recommended to first make a careful analysis of the surface, carrying out any necessary modifications to prepare the surface for the tiles. As a general rule, several layers, each having its own function, will be needed (insulating, levelling,...)

It is highly recommended that, in order to avoid the negative effects brought about by a lack of flexibility or dimensional stability, the tile should be isolated from the surface with an isolating layer. This could be a sand base, a polyethylene membrane...

Subsequently, it is a good idea to apply a levelling layer to correct any irregularities in the flatness of the surface and thus conveniently apply the adhering material.

PLASTER WALLBOARD SUPPORT SURFACES:

In order to adhere ceramic tiles to plaster wallboards, one must remember that the weight of the tile layer must not be excessive (the use of tiles larger than 30x30cm is not recommended and adhesives should be applied in an evenly applied thin layer).

It is essential to ensure that the panels which are to receive the ceramic tiles are correctly reinforced and attached so they do not warp in any way or become deformed during installation, or afterwards.

PLASTER SUPPORT SURFACES:

Plaster surfaces must be carefully inspected before proceeding with any tiling work. It is essential that the fixing material bonds correctly to the plaster, so it is highly recommended to apply a sealant in order to close the pores.

Check the compatibility of the plaster adhesive and the primer.

OTHER SUPPORT SURFACES (Ceramic, terrazzo or natural stone, wood, metal):

There are certain surfaces which need maximum preparation prior tiling.

- **Ceramic support surfaces:** when applying ceramics in restoration work, they need to be thoroughly cleaned with specialized products to remove all traces of grease and dirt which have adhered to the surface over time. It is recommended to consult the adhesive materials manufacturers to see which procedure is best to follow, and the best products to utilize.

- **Terrazzo or natural stone support surfaces:** the surface must be thoroughly cleaned before laying any tiles; all traces of dust must be removed to ensure optimum adhesion and avoid any posterior detaching. If the natural stone has not been smoothed and has a rough surface, it must be levelled and smoothed with a cement-rich mortar. Recommended fixing materials for this type of surface are adhesive mortars with a high polymeric resin content and reaction resins (epoxy or polyurethane).

- **Wood support surfaces:** on wood surfaces it is a good idea to apply a waterproofing sealant. The recommended adhesive material is a reaction resin (epoxy or polyurethane).

- **Metal support surfaces:** the surface must be clean and in good condition, free of any rust. The recommended adhesive materials are reaction resins (epoxy or polyurethane).

- **Fixing glass tiles:** to correctly apply the glass series, you need a professional polyurethane two-part adhesive, which offers elasticity and no vertical slippage. We recommend SUPERFLEX.

THE INSTALLATION METHOD:

To determine the correct setting system, one must take into account the type and size of the tile, whether it is for interior or exterior applications, and the previously mentioned support surface considerations.

INSTALLATION UTILIZING A THIN ADHESIVE LAYER:

This is the most current installation system, adapted to modern ceramic materials and the wide variety of possible support surfaces. A preliminary layer is usually applied to plumb and level the support surface, whether it may be a coating on the walls, or a mortar base on the floors.

This system is adequate for all types of tiles, especially low-porosity tiles, and is furthermore compatible with all types of support surfaces. There are adhesive products adapted to each type of setting system, and the workability time is high.

The buttering and floating method is recommended on formats over 900 cm² by using a toothed trowel.

RECOMMENDED CUTS:

We recommend the use of circular tools or water jet cutters in order to cut stoneware material and to obtain a clean and suitable cut.

ADHESIVE MATERIALS:

For optimum results, it is vital to select an adhesive which is appropriate (these are known as tile setting adhesives).

It is recommended to follow the guidelines indicated in the new **UNE 138002** standard:12 as "General rules for the execution of coatings with ceramic tiles by adhesion."

The following describes the different gripping materials according to the different demands, which are listed in **UNE EN 212004**, and the tables are attached for the correct selection of the adhesive according to each case.

TYPES OF ADHESIVES (ACCORDING TO UNE EN 12004)

- **C** Cementitious adhesive; adhesive mortars.
- **D** Dispersion adhesives; adhesive pastes.
- **R** Reactive resin adhesives.

These adhesives can be classified into two classes:

- **1** normal.
- **2** improved.

With three optional features:

- **F** Fast setting (for all adhesives).
- **T** Reduced slippage (for all adhesives).
- **E** Extended open time (only cementitious and dispersion).

The standard also contemplates the "improved" characteristic in deformability:

- **S1** Deformable adhesive.
- **S2** Very deformable adhesive.

The following tables show the type of adhesive with the minimum performance that must be selected according to the intended use of the ceramic coating. The factors that determine the type of adhesive for each use are:

- The type of placement support.
- The water absorption capacity of ceramic tile.
- The length of its longest side.

In order to ensure that the chosen adhesive is suitable, it is always advisable to check the manufacturer's technical specifications.

SELECTION OF ADEQUATE ADHESIVE FOR PAVEMENTS:

RESIDENTIAL AND PUBLIC INTERIOR PAVEMENTS INTENDED FOR PUBLIC PEDESTRIAN USE:									
WATER ABSORPTION CAPACITY OF THE TILES		<=3%			>3%				
LENGTH OF THE LONGEST SIDE OF THE TILE IN CM		<=30	<=60	<=90	>90	<=30	<=60	<=90	>90
TYPES OF SUPPORT	Cement screed with radiant heating	C2	C2S1	C2S2	C2	C2S1	C2S2		
	Cement screed without radiant heating	C1	C2		C(i)	C1	C2		
	Calcium sulphate (anhydrite) screed base with radiant	C2	C2S1	C2S2	C2	C2S1	C2S2		
	Calcium sulphate (anhydrite) screed base without radiant	C1	C2		C1	C2			
	Concrete floor or slab	C2		C2S1	C1	C2	C2S1		
	Tiles/ mosaic/ pre-existing stones	C2			C2				
	Metal surfaces	R1*		---	R1*		---		

INTERIOR PAVEMENT FOR COMMERCIAL OR INDUSTRIAL AND MECHANICAL USE									
WATER ABSORPTION CAPACITY OF THE TILES		FOR ANY							
LENGTH OF THE LONGEST SIDE OF THE TILE IN CM		<=30	<=60	<=90	>90	<=30	<=60	<=90	>90
TYPES OF SUPPORT	Cement screed with radiant heating	C2		C2S1	C2S2				
	Cement screed without radiant heating			C2					C2S1
	Concrete floor or slab	C2							
	Tiles/ mosaic/ pre-existing stones								
	Metal surfaces	R1*			R2*	---			

NOTE: In industrial pavements with chemical requirements, it is recommended to select R1 or R2 adhesives in epoxy base.

EXTERIOR PAVEMENTS									
WATER ABSORPTION CAPACITY OF THE TILES		<=3%	>3%	FOR ANY					
LENGTH OF THE LONGEST SIDE OF THE TILE IN CM		<=30	<=60	<=90	>90	<=30	<=60	<=90	>90
TYPES OF SUPPORT	Cement screed	C2	C1	C2S1	C2S2				
	Concrete floor or slab	C2							
	Tiles/ mosaic/ pre-existing stones	C2S1							
	Metal surfaces	R1*		R2*	---				

ADEQUATE ADHESIVE SELECTION FOR WALLS AND CEILINGS:

INTERIOR WALLS AND CEILINGS									
WATER ABSORPTION CAPACITY OF THE TILES		<=3%			>3%				
LENGTH OF THE LONGEST SIDE OF THE TILE IN CM		<=30	<=60	<=90	>90	<=30	<=60	<=90	>90
TYPES OF SUPPORT	Plastering on a lime/cement base with radiant	C2/D1	C2S1		C2S2	C2/D1	C2S1		C2S2
	Plastering on a lime/cement base without	C1/D1	C2			C(i)/D1	C1	C2	
	Plastering on a plaster base with radiant	C2/D1	C2S1		C2S2	C2/D1	C2S1		C2S2
	Plastering on a plaster base without radiant	C1/D1	C2			C1/D1	C1	C2	
	Large format ceramic brick	C1				C(i)/D1			
	Cement	C2/D1	C2	C2S1		C1	C2	C2S1	
	Tiles/ mosaic/ pre-existing stones	C2		C2S1	C2		C2S1		
	Cement/ fibre cement-based panels	C1/D1	C2		C2S1	C1/D1	C2		
	Wooden surfaces	C2/D1/R1	C2S1/R1*		---	C2/D1/R1	C2S1/R1*		
	Plaster-cardboard panels	C1/D1	C2	C2S1	---	C1/D1	C2	C2S1	---
	Metal surfaces	R1*			---	R1*			---

WALLS AND INTERIOR CEILINGS								
WATER ABSORPTION CAPACITY OF THE TILES		FOR ANY						
LENGTH OF THE LONGEST SIDE OF THE TILE IN CM		<=30	<=30	<=30	<=30	<=30	<=30	
TYPES OF SUPPORT	Plastering on a lime/ cement base	C2S1 / D2		C2S1	C2S2			
	Cement				C2S2			
	Cement/ fibre cement-based panels				C2S2	---		
	Metal surfaces	R1*			R2*	---		

INSTALLATION AND MAINTENANCE

CERAMIC TILES

SPECIAL ARRANGEMENT FOR DETONED SERIES

In order to obtain an excellent aesthetic finish regarding design and to appreciate all their qualities, we recommend you mix floor tiles from different boxes before starting to arrange them.

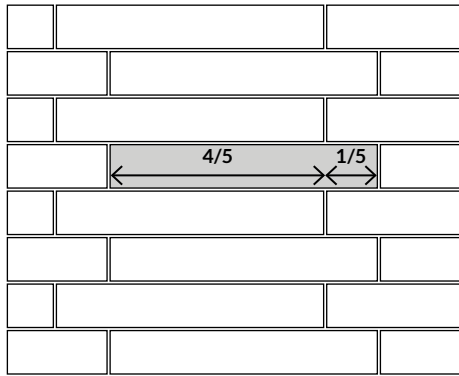
SPECIAL ARRANGEMENT FOR LARGE FORMATS

For large (largest side of 60 cm.) and/or rectangular formats, we recommend the use of levelled systems such as bells or wedges in order to guarantee a proper arrangement.

The self-levelling system has some advantages such as saving time in arranging the pieces or the self-levelling among pieces in order to obtain a totally flat arrangement.

When laying rectangular formats discontinuously, never do so in the centre of the piece.

In order to maintain the aesthetic appearance and avoid difficulties in installation, we recommend that discontinuous laying does not exceed 20% of the side to which it is applied.



WALL AND FLOOR TILE JOINTS

GROUT JOINTS:

A tile joint is the separation between each ceramic tile and those adjacent. This gap may be functional or aesthetic, or used to compensate for any irregularities between the tiles' sizes. With regards to these joints, the following considerations should be taken into account:

- Generally, a grout joint of not less than 1.5mm is recommended (including rectified products).
- For products with an irregular edge, a grout joint of not less than 3mm should be used.
- Concerning modulars (installing tiles together which have various formats) a grout joint of 5mm is recommended for correct modularity.

EXPANSION JOINTS:

These are areas of unavoidable interruption in the ceramic tiles in order to accommodate possible dimensional variations.

They are classified as follows:

- **Structural joints**, which are those pertaining to the building structure. In this case, the joint must be left in the tiles coinciding with the joints in the structure or walls.
- **Perimeter joints**, those which should be left at the edges of tiled surfaces with other areas such as walls, pillars, steps, etc., to avoid the build-up of structural pressure. These should be continuous and greater than 5mm. They can be hidden by the skirting pieces, and must be filled with an elastic material up to the structural support.
- **Partition joints**, used to divide large areas covered with tiles, to avoid accumulations of contractions and dilatations. The maximum area that should be covered without these joints is 60m² for interior surfaces and half the area in exteriors. Partition joints should be no narrower than 5mm.

GROUTING AND GROUTING MATERIALS.

GROUTING:

It is not recommended to start grouting before the adhesive has completely hardened. A premature manipulation could disturb the positioning and adherence of the tiles.

Grouting is done with a rubber spatula or grouting trowel. The material should be pressed with back and forth movements to ensure that the joints are completely filled.

GROUTING MATERIAL:

Wide ranges of grouting materials for ceramic tiles exist, allowing selection of the most appropriate, depending on the type of tile and environment. Most of these materials contain cement and other components which have specific functions (whitening, mould resistance, smoothness of texture, hardness, flexibility...)

There are also other materials such as epoxies, organic materials and silicon-based, which do not contain cements, and far surpasses cement-based products when it comes to certain functions. Greater care and skill will be needed when using these products.

Cement-based mortars:

Containing hydraulic binders, mineral fillers and organic additives, these need only be mixed with water or another liquid just before their application. They may contain colouring agents in order to obtain colour variations.

These mortars are divided into "normal" or "improved" categories according to their attributes (reduced water absorption, high scratch-resistance...)

They are prepared by adding the amount of water indicated by the manufacturer to obtain a sufficiently thick and homogeneous paste. There are products on the market for both thick and thin joints.

They can be applied to interior and exterior wall and floor coverings. They are compatible with all tile types.

These grouts are not recommended for areas which undergo frequent cleaning with aggressive products, nor in industrial food plants (kitchens, slaughter houses...) or hygienic environments (operating rooms...).

Reactive resin mortars:

Made from synthetic resins (generally epoxies), organic additives and mineral fillers, these grouts harden caused by a chemical reaction. They are available in one or more components. They may contain pigments to provide colouring.

The main characteristics of these products include their resistance to chemical products and bacteria, their high level of adherence, very good resistance to humidity, and excellent abrasion resistance.

Their area of usage is that for areas where hygiene, chemical resistance, high scratch-resistance and excellent resistance to humidity are paramount.

TYPE	NAME
CG1	Material for normal cement joints.
CG2	Material for improved cement joints.
RG	Material for reaction resin joints.

RECOMMENDATION

When using coloured grouts, conduct a staining test on a loose tile prior to grouting your wall floor. Micronized "carbon black" grouts are not recommended.

INSTALLATION AND MAINTENANCE

CERAMIC TILES

USE AND MAINTENANCE

Due to their properties, ceramic tiles are extremely easy to use and need very low maintenance as they are so easy to clean.

When selecting tiles, it is important to take note of the use recommended by the manufacturer, who will classify the material according to its physical and chemical properties. This classification is valid as long as the tiles are used under normal conditions which include: avoiding scratching tiles or blows to the pieces and not exposing the pieces to products which will deteriorate their surface (strong acids such as hydrofluoric acid). It is advisable to protect floors from abrasive materials, using some elements for the cleaning of shoe soles, like a doormat.

When tiling is completed, any traces of cement can be successfully removed with a diluted acid solution (for example vinegar). However, an acid wash of any type should not be carried out on newly laid tiles as the acid will react with the cement.

After installation and initial cleaning, it is important to protect the area with cardboard or thick plastic film, in order to avoid the tiles to be damaged by the rest of works to be made until construction is finished.

In general, maintenance consists in a periodical cleaning of the tiles with either water or a mild detergent diluted in water. This should be enough to return the tiles to their original conditions.

Occasionally, some colouring products can cause stains or incrustations which cannot be removed with normal cleaning. In these cases, specific cleaning agents and procedures should be used according to the type of tile and the nature of the stain. Damage to tiles is usually caused by over-aggressive cleaning products or products which are not suited to the type of tile. As a general rule, before using a cleaning product over the whole surface, carry out a test on a small, hidden area.

The following table shows some of the most frequent stain types, and the recommended products for their cleanind. Remember to always test a small patch of floor with the cleaning product before proceeding to larger, more visible areas.

TYPE OF DIRT	RECOMMENDED PRODUCT	SUPPLIER
Cement, pencil, lime water, metal scratches, oxides.	DETERDEK	FILA
Waste from epoxy connections.	CR10	FILA
Fats, foods, rubber, dyes, marker, blood, nicotine, urine, vomit, oil, etc.	PS/87	FILA
Painted graffiti, varnish, paint, spray, acrylics.	NO PAINT STAR	FILA
Coffee, tea, juice, soft drinks.	SR/95	FILA
Candle wax or scratch repair, tree resins, adhesive tape residue.	FILASOLV	FILA
Silicone, glue.	ZERO SIL	FILA

PLACEMENT & MAINTENANCE OF CERAMIC TILES WITH PVD COATING

(Physical Vapour Deposition)

Due to its manufacture, this product can present variations of calibre, texture, design, and tone. These variations give the product its own personality and unreproducible characteristics. Therefore, no claims will be accepted for these reasons.

For its placement, we recommend that the pieces be handled with care to avoid scratches. Also that the pieces remain clean and dry. We recommend using ELASTICER adhesive (FIXCER) or a similar product.

It is necessary to avoid that the remains of placement material harden and remain adhered to the surface of the pieces. To clean the remains of placement material before they have hardened, use a sponge and plenty of water. In future cleanings, the use of a soft, damp cloth and neutral soap is recommended, avoiding the use of energetic detergents or abrasive cleaning products and elements, which could cause irreversible effects on the pieces.

To cut glass pieces, it is recommended to use a water-cooled cutting disc.

RECOMMENDED USE

CERAMIC TILES:

Our products have been designed for different uses and, after technical tests, they have been divided into six groups, depending on their resistance to chemical products, abrasion, etc.

THE RESULTS OF THESE TESTS HAVE BEEN ESPECIFIED IN EACH ONE OF THE MODELS AND HAVE BEEN OBTAINED ACCORDING TO THE ANALYSIS CARRIED OUT BY THE EXTERNAL LABORATORIES AND BY OUR OWN LABORATORIES.

- A** Glazed wall tiles. Not recommended for floors.
- B** For light transit areas with soft soled footwear, such as private bathrooms and bedrooms without direct access to the outside. Any abrasion should be avoided.
- C** For medium transit areas with soft soled or normal footwear, for example, rooms in the living areas of a home with the exception of entrances, and other rooms that may have a lot of traffic.
- D** For medium transit areas with normal footwear. Recommended for all areas of private home (kitchens, entrances, corridors and terraces), as well as offices, consulting rooms and other places of similar use. Medium resistance to abrasion.
- E** For areas of regular transit, such as commercial zones, hotels, exhibition rooms and shops. Fairly high resistance to abrasion.
- HIGH TRANSIT** HIGH TRANSIT, floor tiles especially designed for areas of heavy transit. Highly resistant to wear.