

# TECHNICAL MANUAL

**BEST TILE-LAYING PRACTICES**

CERAMIC WALL AND FLOOR TILES

**2021**

**revigres**

Ceramic wall and floor tiles by Revigrés are available in a wide range of aesthetic effects - wood, stone, cement, marble and metal, among others - with all the technical advantages of ceramics: their unalterable features, high durability and easy cleaning and maintenance.

They can be combined in an infinite number of ways to create modern and fashionable environments, in line with the latest trends of architecture and interior design.

Although aesthetics are a decisive factor in choosing one of Revigrés' products, so too are the technical components.

This manual provides the necessary instructions for laying Revigrés ceramic wall and floor tiles correctly, considering their technical features.

The products of the referred companies are merely indicated as an example. There is a number of other companies that supply quality products for this purpose.

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All Revigrés products are classified by:

- **Type** - glazed ceramic wall tiles, glazed porcelain wall and floor tiles, and full-body porcelain wall and floor tiles;
- **Surface finish** - natural (NAT), rectified (RECT), polished (POL), matt natural (MATT NAT) and matt rectified (MATT RECT), structured (ESTR) and antislip (ANTISLIP);
- **Usage** - in selecting the product, it is very important to consider where it will be applied. The following table matches Revigrés product classifications with the places where they are applied. You will find all product classifications in the General Revigrés Catalogue.

		TYPES OF USE		CLASSIFICATION				
				1	2	3	4	5
IN WALL TILES		Façades (exterior wall tiles)		.	.	.	.	.
		Wall tiles		.	.	.	.	.
IN FLOOR TILES		Homes	Bathrooms and bedrooms	.	.	.	.	.
			Anywhere at home, except entrance halls and kitchen triangle (counter – cooker – refrigerator)		.	.	.	.
			Entire home			.	.	.
		Villas	Entire home, except areas in contact with the outside and kitchen triangle		.	.	.	.
			Entire home			.	.	.
		Schools				.	.	.
		Shops · Shopping centers				.	.	.
		Hotels				.	.	.
		Public buildings				.	.	.
		Airports				.	.	.
		Offices · Banks				.	.	.
		Cinemas · Theatres · Museums				.	.	.
		Restaurants · Bars · Cafes				.	.	.
		Sports facilities					.	.
		Public areas					.	.
		Nightclubs					.	.
		Hospitals					.	.
		Supermarkets					.	.
		Railway stations						.
		Industry						.

LIGHT TRAFFIC

MEDIUM TRAFFIC

MEDIUM HEAVY TRAFFIC

HEAVY TRAFFIC

VERY HEAVY TRAFFIC

Notes:

a) During the works, a doormat should be placed at the entrance of any doors leading outside to remove any abrasive particles (e.g.: sand).

b) The values may vary depending on the specific areas where the products are applied.

For more information please contact us by email at: [revigres@revigres.pt](mailto:revigres@revigres.pt)

## 2. BEFORE LAYING

If you wish to combine different products, use material with rectified edges and products of the same calibre. Check to see that enough material has been delivered to complete the work and if all boxes are the same Quality, Shade and Calibre.



Fig. 1 Revigrés Box

### 2.1 TOOLS AND MATERIALS \*

#### Trowels, grout floats and spatulas



**Fig. 2** Notched trowels  
6x6mm; 8x8mm; 10x10mm  
(depending on size of tile).



**Fig. 3** Notched floats and  
spatulas 3x3mm; 6x6mm;  
8x8mm; 10x10mm



**Fig. 4** Notched at a 45° angle  
For greater comfort and less  
effort and uniform layer of  
adhesive cement. 6x6mm;  
8x8mm; 10x10mm; 12x12mm



**Fig. 5** Grout float

#### White rubber mallet



**Fig. 6** White mallets do not leave  
marks on tiles. They come in 3  
different weights: 250g, 500g and  
750g.

#### Spacers



**Fig.7** Essential to allow  
constant and consistently even  
spacing between tiles. Available in  
2mm, 3mm, 4mm and 5mm.

## 3. PREPARATION OF THE SUPPORT

### 3.1 CONSISTENCY AND HARDNESS

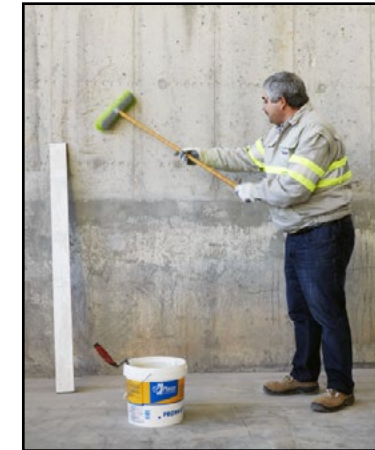


Fig. 8



Fig. 9

**Fig.8/9** Before applying materials, make sure the support (the base) is consistent, clean and dry, ensuring that it has contracted and all possible cracks are stabilised. If the support consists of ceramic or old stone, make sure it is firmly adhered and, if necessary, remove loose bits, filling in gaps with the adhesive. Finally, check for oil or paint on the support that might prevent the adhesive from sticking to the support.

### 3.2 LEVELLING

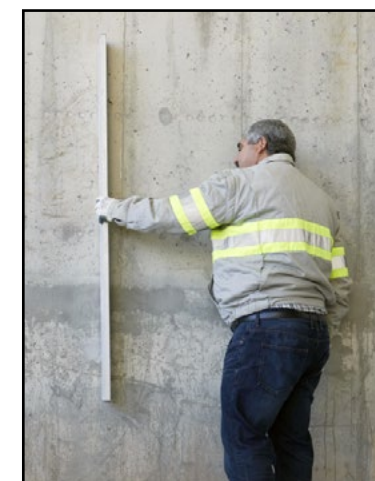


Fig. 10

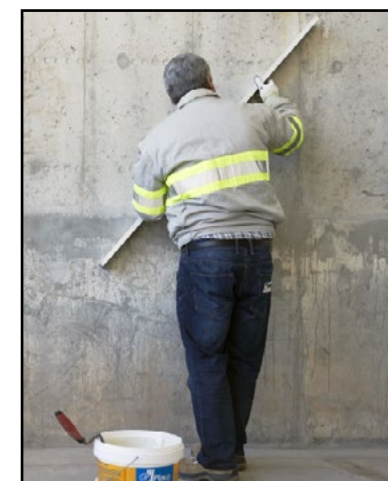


Fig. 11

**Fig.10/11** Check that the surface of the support is even, and any unevenness greater than 5mm should be levelled. Uneven spots in the support may be levelled with up to 10 mm of the adhesive itself. When tiling balconies or terraces, ensure that the slope of the floor is greater than 1.5% for water drainage.

### 3. PREPARATION OF THE SUPPORT

#### 3.3 STABILITY AND BONDING

Make sure that supports that are less stable, such as old wood, OSB and other composite materials, offer adequate stability, and if necessary, replace or reinforce the existing materials.

Adherence of the plaster or screed to the support may be assessed with a hammer, checking for hollow spaces.

The pull-off strength of plaster and screed can be easily tested using a bond strength tester.

On continuous supports - made up of different and/or less stable materials - apply a product, such as an uncoupling membrane (**Fig.12**). This gives you a uniform, stable surface for applying the adhesive and guarantees water-tightness.



**Fig.12** Weberdry fiber reinforced flexible waterproofing

### 4. CHOOSING THE RIGHT ADHESIVE CEMENT

#### 4.1 BONDING LOCATIONS

The adhesive cement should be chosen according to the location where the ceramic wall or floor tile will be installed and its projected use.

Different locations require adhesive cements with different levels of bond strength and elasticity.

Examples of bonding locations:

- 1) Interior walls and floors
- 2) Outdoor flooring
- 3) Swimming-pools
- 4) Facades.



**Fig. 13** webercol flex lev



**Fig. 14** webercol flex M



**Heavy-duty flooring, i.e., for commercial or industrial use - apply, as a minimum, adhesive cements such as webercol ferma multi or webercol flex M. (Fig.13/14)**

#### 4.2 TYPES OF SUPPORT

In view of the growing variety of new systems for new construction and renovation projects, it is increasingly important to correctly identify the type of support at the site when choosing the appropriate adhesive cement. Cement-based surfaces (plaster or screed) are still the most common, but new systems of construction and renovation using other types of support ("viroc" cement bonded particle boards, plasterboards, wood...) are becoming more and more common.



**The more glazed, polished or non-absorbent the support surfaces are, the more demanding are the requirements for the adhesive cement.**

#### 4.3 TILE SIZE

The combination of tiles in different sizes and shapes on a variety of supports also requires adhesive cement with greater elasticity and adherence.

The larger the tiles, the higher the elasticity and adherence levels required.

Where one of the sides of the tile is at least twice as long as the other side (e.g., 30x60cm, 45x90cm, 60x120cm...) the use of more flexible adhesives is recommended (**Fig.15/16**).



**Fig. 15** webercol flex L






**Fig. 16** webercol flex XL








4. CHOOSING THE RIGHT ADHESIVE CEMENT

4.4 TYPES OF ADHESIVE CEMENT

The choice of the right adhesive cement is extremely important for the final result of the work.  
The following table sums up the appropriate Weber references for different product types, considering the construction system or support used:

Product	Size (cm)	Indoor Walls						
		Plaster and concrete	Ceramics or stone	Plaster or plasterboard	Waterproofing	Composite cement boards	Wood	Metal
	20x20	webercol ferma	webercol flex lev	webercol flex M	webercol flex M	webercol flex M	webercol flex M	webercol XXL
	20x40							
	30x45							
	30x60							
	30x90	webercol flex S		webercol ferma multi	webercol flex lev	webercol flex lev	webercol flex lev	

Product	Size (cm)	Outdoor Walls (< 6 m)		Facades	
		Plaster	ETI - Exterior thermal insulation Webertherm keramic plus	Plaster	ETI - Exterior thermal insulation Webertherm keramic plus
	30x30	webercol flex M	webercol flex L	webercol flex L	webercol flex L
	30x60				
	45x45	webercol flex L			
	60x60	webercol flex XL	webercol flex XL	webercol flex XL	webercol flex XL

Product	Size (cm)	Indoor Floors								Outdoor Floors		
		Screed or concrete	Ceramics or stone	Waterproofing	Heating Floors	Acoustic systems	Composite cement boards	Wood	Metal	Screed or concrete	Ceramics or stone	Waterproofing
	30x30	webercol ferma	webercol flex lev	webercol flex M	webercol flex M	webercol flex M	webercol flex M	webercol flex M	webercol XXL	webercol flex S	webercol flex L	webercol flex M
	30x60											
	45x45	webercol flex S	webercol flex XL	webercol flex XL	webercol flex XL	webercol flex XL	webercol flex XL	webercol flex XL	webercol XXL	webercol flex L	webercol flex XL	webercol flex XL
	60x60											
	60x120	webercol flex XL	webercol XXL	webercol XXL	webercol XXL	webercol XXL	webercol XXL	webercol XXL	webercol XXL	webercol flex XL	webercol XXL	webercol XXL
	90x90											
	60x180											

Note:  
Standard EN 12004 codes the type of bonding material (glue or adhesive) according to the binder (type and glue) and its mechanical performance (class and optional characteristics).

5. INSTALLING / LAYING

5.1 LAYING THE CERAMIC MATERIAL



Fig. 17/18/19 Mix the adhesive cement with clean water using an electric low-speed mixer to obtain an homogeneous paste free of lumps. Let stand for two minutes and mix again.



! For large pieces over 900cm2 in area, apply the adhesive cement to both the tile and the support to ensure maximum contact between the tile and the adhesive cement.

Fig. 21/22/23 Apply the adhesive cement in small sections (1m2 maximum) over the surface of the support, spreading it in thin, tight layers, using an appropriately chosen toothed trowel to remove excess water.



! Make sure to remove all excess adhesive cement from the joints.

Fig.24 Next, tightly press the tile against the support surface to flatten the beads of adhesive cement, ensuring that it spreads so the area is fully covered.  
Fig.25 Tap the tile gently with a white rubber mallet to ensure that the back of the tile fully adheres to the support surface.  
Fig.26 Now and then, lift the tile to see that the bonding technique and the size of the trowel are suitable for the tile size and if the adhesive is being correctly transferred.

It is best to alternate tiles taken from various boxes to ensure uniformity in the variability of the laid product. When laying rows of tiles, it is technically advisable to offset the joints, as long they overlap 1/4 of the adjoining piece. Products with an irregular pattern should be laid randomly, i.e., the pattern should be laid in different directions.



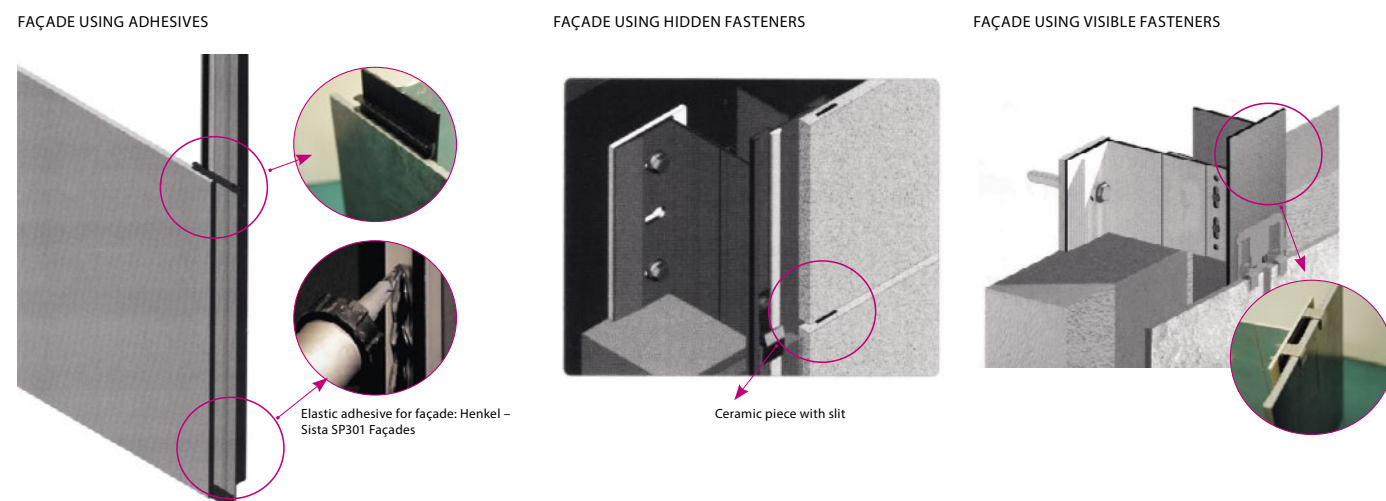
## 5. INSTALLING / LAYING

### 5.2 LAYING LARGE TILES ON FAÇADES

To lay tiles larger than 60x60cm on façades that are more than 6 metres high, we advise against bonding directly on the plaster.

Due to the characteristics of the building and the exposure to weather conditions, the detachment of the cladding is more likely to occur.

In this case, the best solution is the Ventilated Façade System for applying large tiles.



Main advantages of the System:

- Suitable for renovation projects and for use on all kinds of support surfaces.
- Efficient ventilation prevents the appearance of humidity.
- No condensation or efflorescence.
- Good thermal insulation of buildings.
- Quick access for maintenance or repair work.



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## 6. LEVELLING SYSTEMS

We recommend the use of a Rubi Levelling System to ensure the best possible levelling of floor and ceramic tiles. The device is designed to be used after the adhesive has been applied.

The overall advantages of using this levelling system:

- It prevents unevenness when laying tiles on floors or on walls.
- It ensures the tile surface laid is even.
- It prevents tiles from shifting during grouting.
- It is easy and intuitive to use.
- It is compatible with different tile thicknesses.
- Its technical polymer clamps are not sensitive to moisture.

Advantages of Tile Level Quick (Fig.27/28/29):

- It is composed of reusable caps (up to 25 times).
- It is applied using quick-adjusting, precision pliers, adjustable to the thickness of the tile.

Advantages of the Delta Level System (Fig.30):

- It is composed of reusable wedges.
- It eliminates the need for spacers.

Benefits of the Cyclone Level System (Fig.31):

- No additional tools required.
- For best possible visibility.

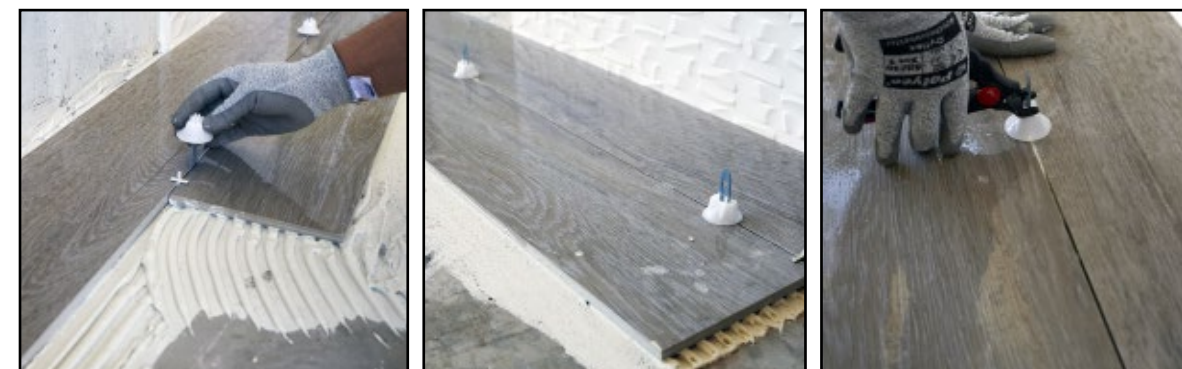


Fig. 27/28/29 Tile Level Quick, Rubi

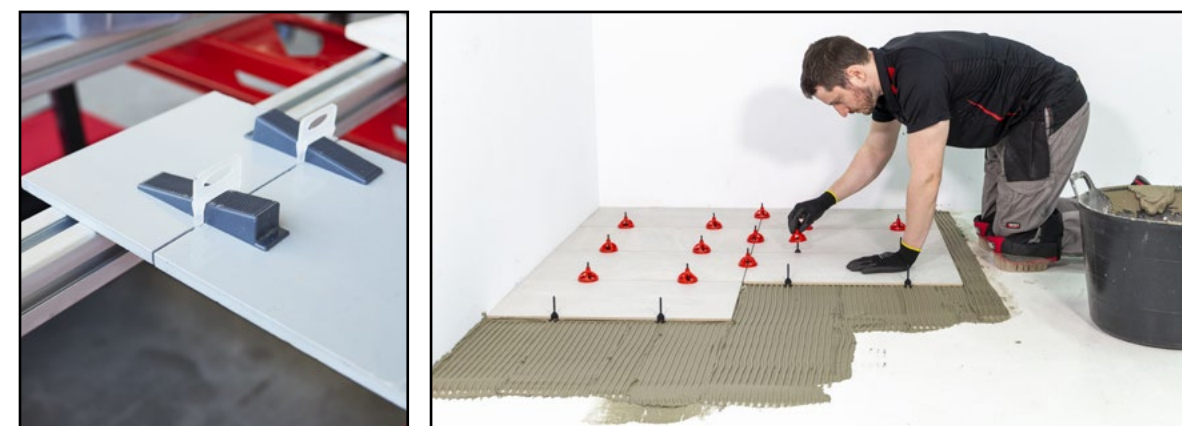


Fig.30 Delta Level System, Rubi Fig.31 Cyclone Level System



## 7. JOINTS

### 7.1 TYPES OF JOINTS

To prevent ceramic tiles from detaching and/or breaking, the following types of joint should be considered and applied:

**LAYING JOINT** - Regular space left between tiles when they are laid.

Minimum recommended space:

4 mm: in NAT, MATT NAT finishes

2 mm: in RECT, MATT RECT, SOFT, LAP, POL finishes

5 mm: on outdoor floor and wall tiles

The grouting material to be used depends on the type of use that will be given to the ceramic tiles and the intended aesthetic effect (the EN13888 standard specifies the definitions and specifications of the grouting material).



**Fig. 32** webercolor premium: Smooth finish grout for indoor and outdoor use



**Fig. 33** webercolor evolution: grout ready to use indoor

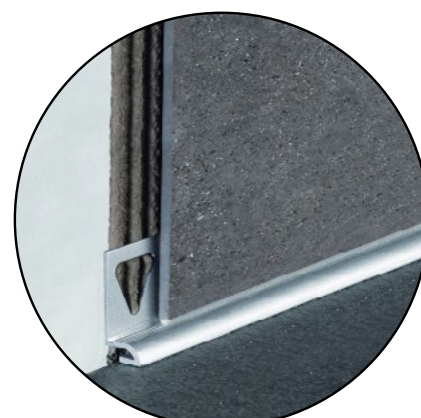


**Fig. 34** weberepox easy: epoxy grout for use indoors, outdoors and swimming-pool



**Fig.35** The webercolor range provides a variety of solutions for the desired look.

**PRIMETER OR CORNER JOINT** - Used where planes intersect, where wall and floor meet, or at wall corners. Polyurethane or silicone adhesive mastic should be used in these joints or otherwise use suitable deformable corners.



**FRACTION / EXPANSION JOINTS** - These joints subdivide the wall or floor covering into smaller areas to release tension.

Their use is recommended in areas with the following dimensions:

Interior floors: Over 32 m<sup>2</sup>, or when one side is more than 8 metres long.

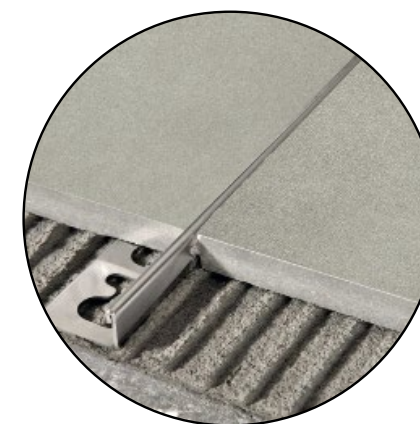
Exterior floors: Over 25 m<sup>2</sup>, or when one side is more than 5 metres long.

Interior walls: Over 32 m<sup>2</sup>, or when one side is more than 8 metres long.

Exterior walls: A horizontal expansion joint should be inserted every 3 metres, and a vertical one every 5 metres.

Polyurethane adhesive mastic should be used in these joints.

**STRUCTURAL JOINTS** - Regular space between two structures, as per design. Under no circumstances must these joints be filled with any sort of material.





7. JOINTS

7.2 GROUTING

- Remove excess adhesive cement from the joints before applying the grout.
- Wait 24 to 48 hours before initiating grouting (carefully read the technical data sheets of the adhesive cement that was used).
  - Make sure the joints are clean and dry to avoid contamination and spots of discolouration.



**Fig.36/37/38** Apply the material diagonally over the joints, using a grout trowel. Spread the grout in the joints between the tiles uniformly to increase their durability.



**Fig.39** Clean the surface (with a sponge or damp cloth) and avoid using too much water, which will create spots in coloured grout. Make sure to remove all excess grout from the ceramic tiles.

Polished tiles should be sealed with a protective liquid before grouting to avoid staining with the joint pigment (i.e., Protector PRW200, Fila). It is recommended to first test the effect of the grouting material on a spare tile, especially when a bright or dark-coloured grout is used. In this case, a primary protective coating should be applied to the ceramic tiles.



**Fig.40/41** Float trowel, Rubi



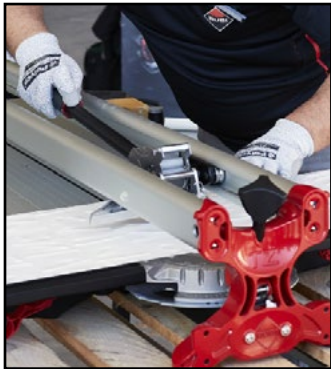
**Fig.42** Balde de limpeza, Rubi



**Fig.43** Fila CR10

8. CUTTING AND HOLES

For cutting and making holes in ceramic wall and floor tiles, the following systems are recommended:



**Fig.44** TZ 1300 Manual Cutter



**Fig.45** TX 1020 Manual Cutter



**Fig.46/47** Diamond polishing pads



**Fig.48** MULTIDRILL Guide









**Fig.49** DRYGRES diamond drill bits



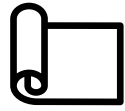
**Fig.50/51** EASYGRES diamond drill bits

For porcelain tiles, which have low water-resistance and high mechanical strength, use specific discs and drill bits. The following tables sum up the appropriate Rubi references.

 	Manual Cutter	
	TS-43, 57, 66 e 75 MAX	
	TR- 600 e 710 MAGNET	
	TX-710; TX1020; TX1250 MAX	
	TZ - 850, 1020, 1300 e 1550	
 	Electric Cutter (Wet) - RUBI	Wheel
	DV-200-1000	CPC / CPX / TVH
	DC-250-850 e 1200	
	DS-250 N 1000, 1300 e 1500 LASER & LEVEL	
	DX-250 PLUS 1000 e 1400 LASER & LEVEL	
	DX-350 N 1000 e 1300 LASER & LEVEL	
 	Electric Cutter (Dry)	Wheel
	TC-125	TVA / VIPER / CPR / CPJ / TCR / TVR
	KIT-TC125	

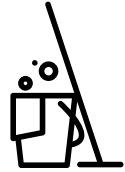
 	Diamond Drill - Wet Cutting - RUBI	
	Sizes	
	BROCAS EASY GRÉS	De Ø6 até Ø120
 	Diamond Drill - Dry Cutting - RUBI	
	Sizes	
	BROCAS DIAMANTE DRYGRES	De Ø6 até Ø75
 	Drill Bits DRYGRES 4DRILL (Dry)	
	De Ø6 até Ø20	
	Para trabalhar com berbequim	
 	Min. 1500 rpm	

## 9. AFTER INSTALLING / LAYING



### PROTECTING THE INSTALLED SURFACE

After the porcelain tiles have been laid and before the whole project is completed, the entire surface must be protected from damage caused by the movement of people and/or materials belonging to the works.



### CLEAN-UP AFTER THE WORKS

Existing debris and dirt must be removed using the appropriate chemical products. Chemical products containing hydrofluoric acid must not be used. We recommend testing any cleaning chemical on a spare tile for any reaction that was not contemplated in the manufacturer's use instructions.

Using a common (acidic or alkaline) cleaning product for clean-up and removing it immediately may not be effective. After applying the cleaning product (**i.e., Fig.51**), thoroughly rinse with clean water to ensure complete removal of the product and any debris. This operation must be repeated until the floor is completely free of residue, especially any cement-based particles. Cleaning is completed when all residue and general dirt has been removed and the floor is dry.

In the case of polished tiles, after the general clean-up, the remaining layer of waterproofing applied to this type of product must be removed with an appropriate detergent (**i.e., Fig.52**) or alcohol, to restore the original shine of the material.



Fig.51 DETERDEK



Fig.52 FILA PS87

## 10. REGULAR CLEANING / MAINTENANCE



If the clean-up after works has been carried out carefully, routine cleaning/maintenance is very simple and easy to perform.

It should be noted that porcelain tiles (full-body or glazed) have a very low degree of water absorption (*i.e.*, low porosity): < 0.05 % (full-body) and < 0.5 % (glazed), so no type of cleaning product is absorbed by the tiles.

After the cleaning product is applied and acts, it must be completely removed from the tile surface by thoroughly rinsing with clean warm water.

If this simple procedure is not carried out, the tiles gradually become “tacky” and prone to allow the build-up of dirt. We recommend the use of small amounts of cleaning product and rinsing it off with clean warm water.

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