TILE INSTALLATION KEY POINTS IN FAÇADES, PAVEMENTS OF HEAVY TRAFFIC, EXTERIOR PAVEMENTS AND POOLS

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SUMMARY

In the installation of ceramic cladding and pavements, there are three aspects to consider: the type of pieces, the nature and the condition of the body, and the installation system (type of adhesive, thin or thick layer setting, etc.).

The manufacturers of bonding materials should therefore, give solutions adapted to the different bodies and the different type of pieces. Due to this variety, there is no universal bonding material, suitable for all types of applications, but an appropriate material for each particular situation.

In this communication, we intend to analyze the key points to obtain a good thin layer installation (with bonding mortars), in four situations, façades, floors with heavy traffic, exterior pavements, and pools.

In each case, the aspects which can influence in the result of the setting will be analyzed from a practical standpoint:

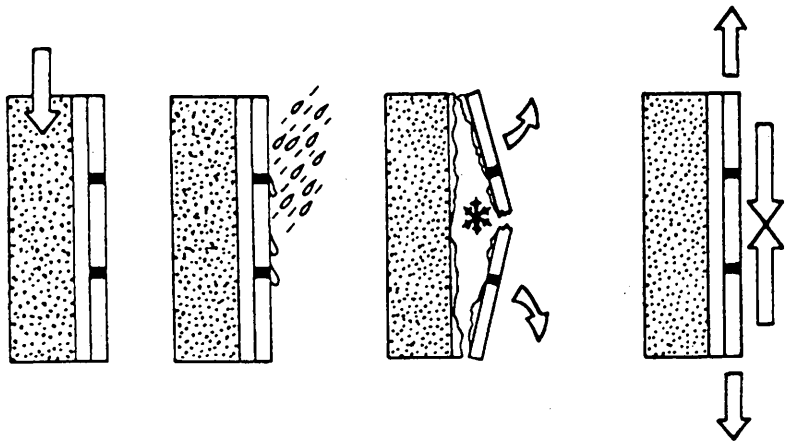
- General *physical* factors.
- Concept and realization of the body.
- Type and condition of the bodies.
- Selection of the ceramic.
- Environmental conditions during application.
- Form of bonding.
- Tools.
- Treatment of joints.
- Singular points.

Each aspect in itself is important, therefore, to disregard any of them may be an origin of pathology.

To conclude, for the analysis of these points, the experience as manufacturer, the information obtained during the visits to work sites, and tests performed by our laboratory, as well as the recommendations established by the administration, have been considered.

TILE INSTALLATION IN FAÇADES: THE KEY-POINTS FOR A GOOD INSTALLATION

1.- General aspects to be considered (previous planning)



Body Movements Rain Ice Thermic Impacts

To resist these conditions, it is necessary:

A bonding material:	A rejoint material
- Resistant to water and ice - Flexible, capable of supporting mechanical deformations and thermic expansions. - Very adhesive	- Yielding - Resistant to water and ice (hidrofugous)
TAILING BINDERS MORTAR	SPECIAL YIELDING MORTAR

2.- Bodies in good conditions:

- Clean, plain, cohesive and resistant rough-coats.
  Fill in cavities 48 hours before installation.
  Wait 2 to 3 weeks before installation.
- Concrete should be flat and clean, hard in the surface and without remains of adhered materials or strip-off liquids.
  Wait 1 month before installation.
- If necessary, clean and scrape the body using mechanical means, or wash the surface with high pressure water (120 bars).

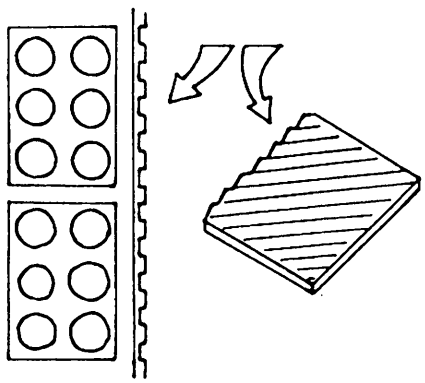
3.-Respect Weather Conditions:

- Do not apply at temperatures below +5°C (freezing risk), or above +30°C (bodies with direct light).
- In hot weather, previously moist the body.
- Do not apply under the rain.
- Pay attention to the wind, shorten the time lapse of the bonding material.

4.-Make a good bonding:

- Place the pieces using a double bonding (applying bonding material over the body and on the back of the pieces).

- Temper the product until its complete homogenizing, preferably using mechanical means.
- Press and move the pieces up and down, until a total flatness of the bonding grooves are obtained (perfect bulk, with a complete transfer of the bonding material between the piece and the body).
- During the summer and in hot weather it is recommendable to work in groups of two persons, one of them doing the extending and placement, while the other tempers the product and prepares the pieces for double bonding.



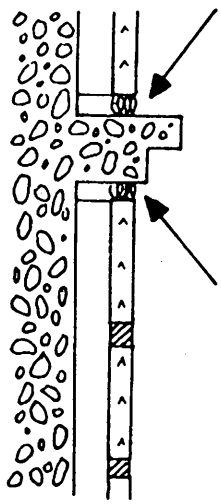
Formnt of the pieces	Dentated trowel	Consumption
Small Pieces 225 cm	6mm.	4 kg./m2.
Large Pieces 225 cm	9mm.	6 kg./m2.

5.-Place the necessary joints:

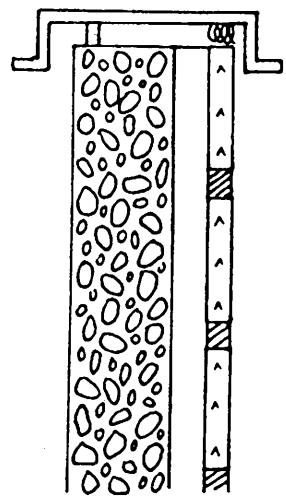
- Rejoint 24 hours (minimum) after installation.
- Respect the structural joints in the cladding.
- Make expansion joints every 30 m^2 (large formats), or every 60 m^2 (small formats).
- Make corner joints (around the entrance or exit angles, between the ceramic-coated layers.
- Place perimetric joints around the hard areas of the façade (cornice, panelled walls...) to avoid pressures caused by the expansion between different materials (example: ceramic and concrete).

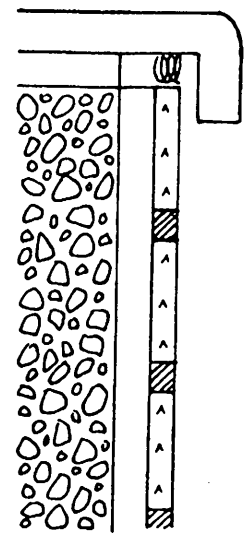
6.-Avoid water infiltrations:

- Metallic protections, cap flashings, etc. in the upper surfaces of the cladding, windows, etc.



Perimetric Joints

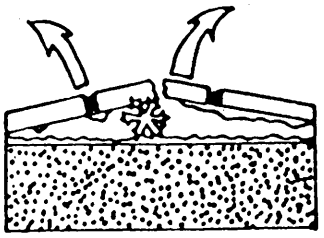




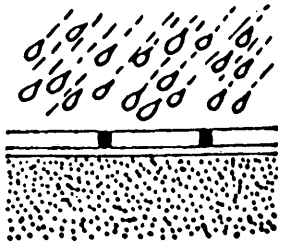
Top Protections

TILE INSTALLATION IN EXTERIOR PAVEMENTS, GALLERIES AND TERRACES. THE KEY-POINTS FOR A GOOD INSTALLATION.

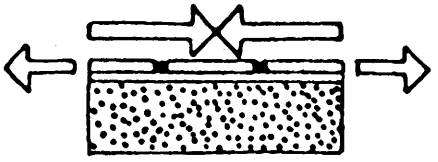
1 - General aspects to consider (previous planning)



Ice



Thermic impacts

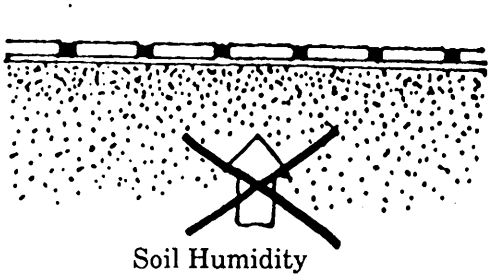


Rain

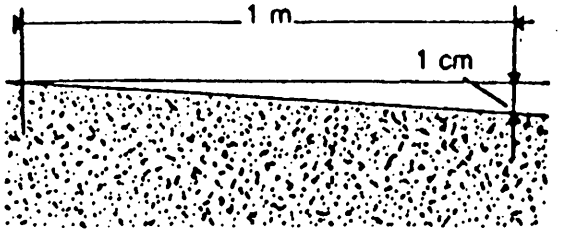
To resist these conditions, it is necessary:

A bonding material:	A rejoint material:
- Resistance to water and ice. - Very adhesive, to the body and the pieces.	- Resistant to water and ice - Hidrofugous and yieldable
HIGH QUALITY BONDING MORTAR	SPECIAL MORTAR

2. Correct concept and body preparation:



Soil Humidity



-Good proportion of mortar layer, 1:5 (1 part of concrete to 5 of washed sand).
-Without humid capillary risings.
-The placement should not be done directly over the earth fill.

- Minimum slopes of 1 mm./m, to avoid the acumulation of rain water.
- Very clean and rough body.

3.-Selection of an adequate ceramic:

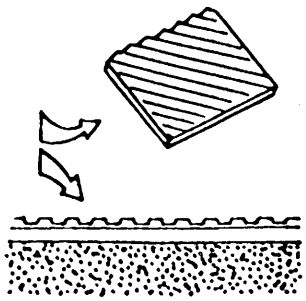
- Water resistant pieces and insensitive to ice.
- The maximum recommendable formats are 30 x 30 cm. (900 cm^2).

4.- **Respect weather conditions:**

- Temperatures for placement: between +5°C and +30°C.
  Do not installe when there is a risk of frost, with direct sun-light, or in maximum hot weather temperatures (moisten the body).
- Do not apply when it rains.
- The wind decreases the time lapse of the bonding material.

5.-**Make a good bonding:**

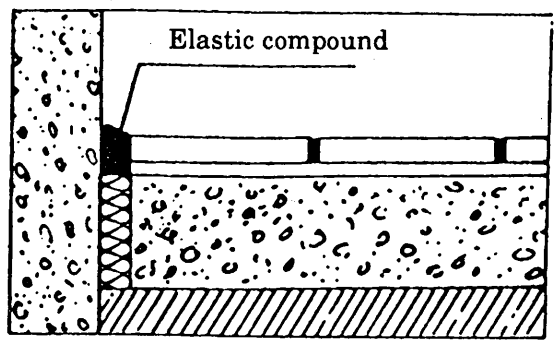
- Prepare a double bonding.
- Press and move the pieces until a perfect bulk is obtained.



Formato de las piezas	Llana dentada	Consumo
-450 cm2	9mm.	6 kg./m2.
+450 cm2	20 mm. 8 mm.	8 kg./m2.

6.-**Make the necessary joints:**

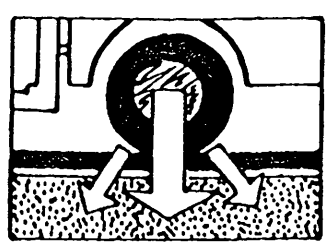
- Rejoint the pieces 24 hours after installation (mínimum).
- Respect the structural joints in the pavement.
- Make expansion joints (between 20 and 40 m).
- Make perimetric joints to the pavement and around the hard areas (pillars, etc.)



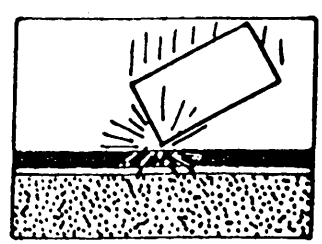
Perimetric Joint

TILE INSTALLATION IN PAVEMENTS OF HEAVY TRAFFIC
THE KEY-POINTS TO A GOOD INSTALLATION.

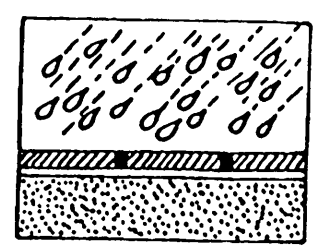
1.-**General aspects to consider (previous planning).**



Charges (static and dynamic)



Impacts, abrasion



Washings

To resist these conditions, it is necessary:

A bonding material:	A rejoint material
-Compression resistance to deformations and to punctual charges.	- Slump resistance - Resitant to water and detergents - Abrasion resistance
TAILING MORTAR OF MIXED BINDERS	SPECIAL YIELDING MORTAR

2.-Bodies in good conditions:

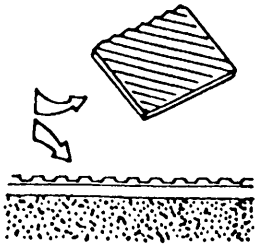
- Reinforced concrete plate. Wait 1 month before installation.
- Regulating, cohesive and compact mortar layer (recommendable dosification: 1:5)
- They should be clean, hard and resistant.

3.-Select án adequate ceramic:

- Preferably a biscuit tile. In any case, follow the recommendations of the manufacturer of the pieces.
- For large surface soils it is convenient to use formats smaller than 900 cm , since the large formats are fragile with respect to deformations.

4.-Installation using double bonding:

- Make a double bonding, applying material over the body and on the back of the pieces.
- Temper the product well until its total homogenizing, preferably using mechanical means.
- Press and move the pieces, until a perfect bulk is obtained, with total flatness of the bonding grooves.



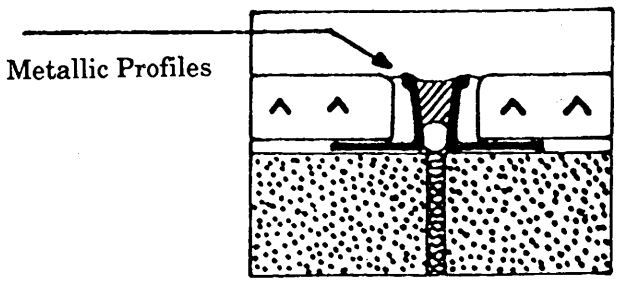
Formato de las piezas	Llana dentada	Consumo
-450 cm2	9mm.	6 kg./m2.
+450 cm2	20 mm. 8 mm.	8 kg./m2.

5.-Make joints piece-to-piece:

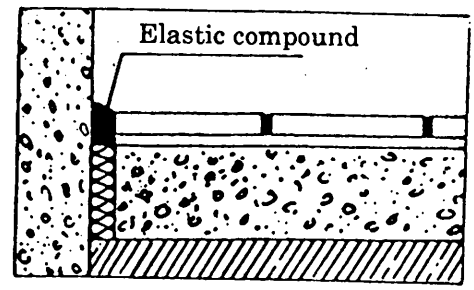
- Piece-to-piece joints of 5 mm. minimum. Rejoint after 24 hours from the time the pieces are installed.
- Avoid sinking the joints during cleaning, as this would cause flaking of the edges of the pieces with the heavy circulation.

6.-**Respect the structural joints, expansion and perimetric:**

- The structural joints should cut the ceramic floor file.
- Make expansion joints every 50 m^2 (formats smaller than 900 cm^2, or each 30 m^2(formats larger than 900 cm^2) or rather, each 10 linear m.
- Place metallic protection profiles.
- Make perimetric joints to avoid the accumulation of pressure (around the pillars and in the limits of the pavement surface).



Expansion Joints



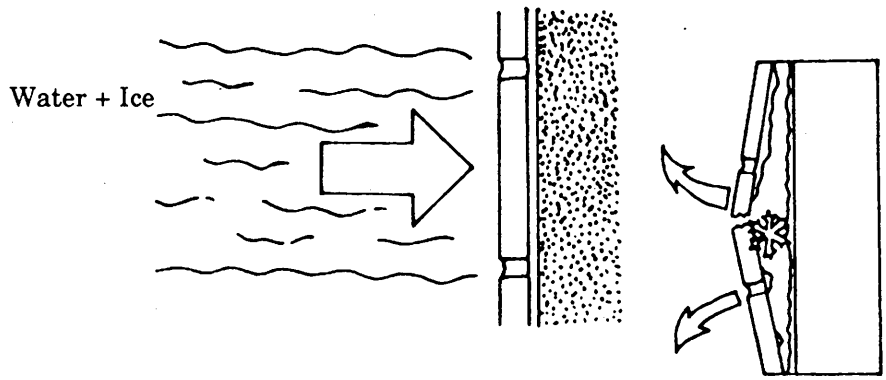
Perimetric Joints

7.-**Wait until hardened:**

-Wait 2 to 4 days, minimum, before the initial use of the pavement.

TILE INSTALLATION OF CERAMICS IN POOLS
THE KEY-POINTS TO A GOOD INSTALLATION.

1.-**General aspects to consider (previous planning).**



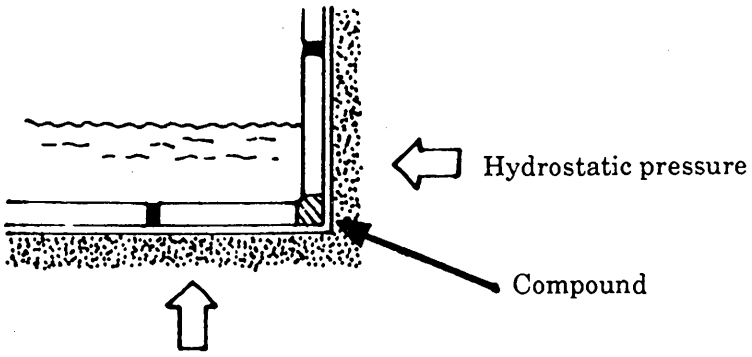
Hydrostatic pressure

To resist these conditions, it is necessary:

A bonding material:	A rejoint material
-Insensitive to water and ice. -Very adhesive.	- Stanch. - Resistant to water treatment products
HIGH QUALITY TAILING MORTAR	EPOXY MORTAR

2.-**Good concept and preparation of the water tank:**

- Considering the hydrostatic pressure over the walls.



3.-**Bodies in good conditions:**

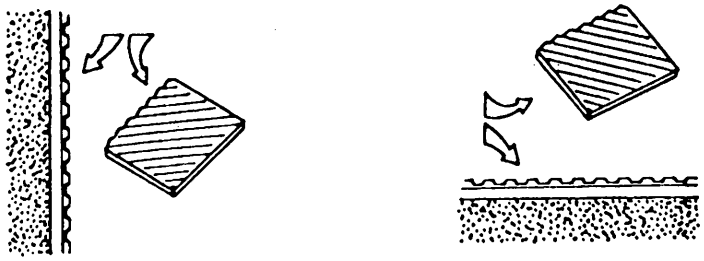
- Clean, sound and unloosened.
- Scrape mechanically, or wash with high pressure water, the very even and non-porous superficial bodies.

4.-**Select an adequate ceramic:**

- Water resistant and insensitive to ice.
- Maximum formats of 300 cm^2 (20 x 15 cm.)
- For glass matrix mosaic (unitary format less than 25 cm^2) use an epoxy adhesive as a bonding material.

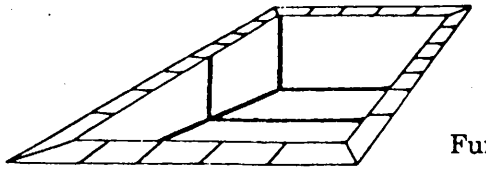
5.-**Placement with double bonding:**

- Apply bonding material on the body and on the back of the pieces.
- Press and move the pieces until a total solid pack is obtained.



6.-**Make the necessary joints (expansion, edges and piece-to-piece):**

- Expansion joints every 5-6 linear m. Fill-in in with fungus preventive compounds. Minimum width of 5 mm.
- Make piece-to-piece joints of 5 mm. minimum (except on the glass matrix mosaic).



Fungus preventive compound

7.-**Respect weather conditions:**

- Temperature: Do not apply below +5°C (freezing risk), or above +30°C. Do not apply with direct sunlight or in periods of high heat (moisten the body).
- The wind decreases the time lapse of the bonding material.

8.-**Wait until hardened:**

- Wait 1 month, minimum, to obtain the perfect hardening of the bonding material, before filling the pool.