

# LAYING INSTRUCTION |

## Laying 2 cm - 3/4" in outdoor

Consequently, the size and nature of the porcelain stoneware slabs, due to the pronounced anti-slip surface (which always retains a thin layer of water), special attention should be given to the slope and inclination %, that the customer wants to give to the floor plan and direction laying of the slab stoneware. The % of slope and slope of the floor must meets the architectural choices of the project and the needs for natural runoff of rainwater. These vary according to the geographical area, orientation and exposure of the affected area, if it is completely bare, etc. etc.

By way of example, not binding, of the Swiss office UPI, recommends slopes not less than 1, 5% per linear meter.

## Cutting

To cut 2 cm - 3/4" make the measurements needed and mark the part to be removed on the piece, then cut with an electric tool or water-cooled circular construction saw.

## The Doghe (grout staves) POPA 2.0 and “TEX/TIMBER surfaces” 60x60 - 23½”x23½” (1 cm - 0.39")

Consequently the special structure (bas-relief grooves) which reproduces a wood grooves effect the exterior staves dimensions of each piece may have subtle differences from inner staves. This due to the caliber of production that can have significant dimensional variations to each production. Unfortunately this affects the outside slats only. For this reason the products concerned must have a minimum aesthetic tolerances, to improve then we may recommend the following countermeasures:

1. To use pedestals with crosses of at least 4 mm - 0.15" in order to have the same size for the joint (POPA 2.0). In the traditional installation use crosses to 4 mm - 0.15" (the aim is repeating the same internal dimensioning leakage per piece).
2. To lay down the material following always the same production (verifiable from the back of the slab).
3. Adopt the basket diagram laying.

## Thermal expansions effects on surfaces

The strong thermal excursions ( -15° + 70°) which are subjected the FLAT ROOFS, involve the need to consider the effects on building materials.

Materials that often have among their different COEFFICIENT of dilatation.

The regulations provide for the establishment of special ELASTIC expansion JOINTS in building structures, in the perimeter and in the fractionation of insoles.

Our Flooring as well as having its own THERMAL EXPANSION COEFFICIENT and their dynamic behavior, they lay down and are installed on foundations and structures that move.

They contract and dilate in measure also important depending on the size even for some cm.

The effect that you might encounter in relation to the use of dry flooring is a misalignment of joints in release of raised floor or uncoupling the plastic module. If they would be glued flooring instead, they might break and deteriorate.

It is therefore essential to avoid or limiting the occurrence of these flaws, making a large perimeter joints and avoiding, where possible, the stationing of heavy weights/structures that inhibit the correct movement of the flooring. It is necessary to split up the flooring area in the case of plastic module also at the slope change of the base.

To do this, it is advisable to use the accessories provided in the catalog and elastic joints/shackles available normally at specialty retailers.

## Temperature

The product gets hot in the sun.  
Darker color more than lighter color.  
For more information contact us.

## Recommendations for POPA2.0 on elevated installation

The Monolithic product POPA 2.0 self-carrying 2.0 is definitely suitable for external use for support and elevated installation. There is no specific legislation for outdoor products in porcelain in elevation, the closest to our product is relating to the cement slabs (concrete).

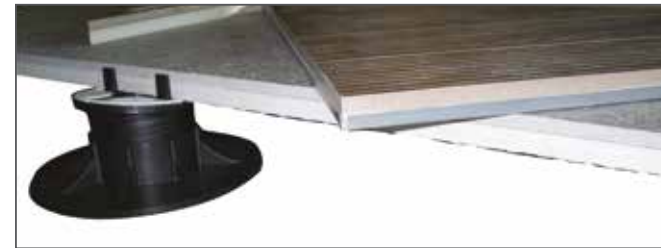
To this legislation our POPA 2.0 RESPONDS IMPROVEMENT on all comparative tests, e.g. resists more then 1400 kg per slab (test result as per EN 1339 KN 14 >).

This means, according to the adopted standard, the material is suitable for “COLLECTIVE and public use without LIMITATION of the height of the pedestals or sleepers”.

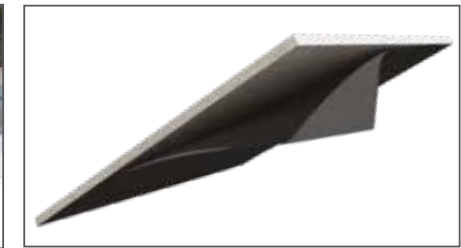
If we compare our product POPA 2.0 to the elevated indoor norms, his weakness point is the LOAD/DYNAMIC HARD body SHOCK (for example a hard object fall such as a hammer or other rigid material of less than 4.5 kg from 40 cm - 16" height) EN 12825.

In fact the particular stiffness of the gres porcelain does not help us, because the gres slab can break or shatter, we must therefore consider this risk and in face of this advise in some uses such as mechanical workshop or where floor heights are higher than the 3.93" (10 cm) using reinforcements to be applied on the back of the slabs:

metal tray



SHOCK CONTROL® protective layer



These applications do not increase the floor weight capacity, but they are just a guarantee against breakage and limit the risk of accidents.

## Wind Uplift

When Kronos Porcelain pavers single slab are installed on a pedestal system, they essentially rely on gravity, its own weight equal to 35lb, tight spacing between the pavers and tight containment around the perimeter to keep the pavers in place without movement. The open joint space between pavers allows wind to flow above, below and around the deck surface, which tends to reduce uplift forces somewhat and restricts movement of the pavers.

It should not however be inferred that uplifting of the pavers by wind will never occur as it is difficult, if not impossible, to test for every contingency or circumstance where wind uplift may be possible.

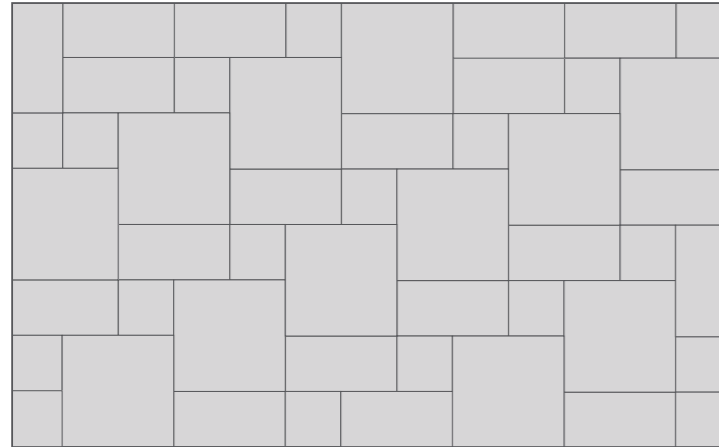
The Saffir-Simpson Hurricane Wind Scale defines wind speeds over 74 mph to be hurricane velocity, where for example it is stated that a Category 1 (74-95mph) storm means: ‘Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters.’ Furthermore, It is generally accepted that the average person standing on the open ground will be rocked around at wind speeds of 35-40mph; it’s difficult to stand up and you would stumble frequently.

The only wind uplift test for roofing products known to Kronos is the Florida Building Code 2007 TAS 108 Test Procedure for testing air permeable rigid discontinuous roof systems. Whilst this test procedure may have some relevance to pavers installed in ‘floating’ deck applications, Kronos engaged the Florida International University International Hurricane Research Center to devise a series of tests to evaluate the resistance of porcelain pavers to wind uplift using the FIU’s Wall of Wind facility. Variables incorporated in the test program included different wind angles, pedestal height and type, parapet wall height, paver layout and the use of locking devices along the parapet walls.

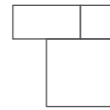
This report is intended to provide additional information about wind uplift where ¾” single slab porcelain pavers as supplied by Kronos are installed on fixed or adjustable height pedestals. It should not be construed as a guarantee or warranty of any kind, including but not limited to warranties of merchantability or fitness of porcelain pavers for a specific purpose. None of the information contained in this report is intended to substitute for the engineer’s, specifier’s, architect’s, builder’s or contractor’s own analysis, investigation, and due diligence regarding the appropriate choice, application and installation of ¾” single slab porcelain pavers on fixed or adjustable height pedestals in any particular location or application, which is not the responsibility of Kronos .

The test report is available on request from Kronos on the strict understanding that it is provided for the exclusive use of the recipient. No reproduction or transmission by facsimile, email or other electronic means is permitted without Kronos specific permission.

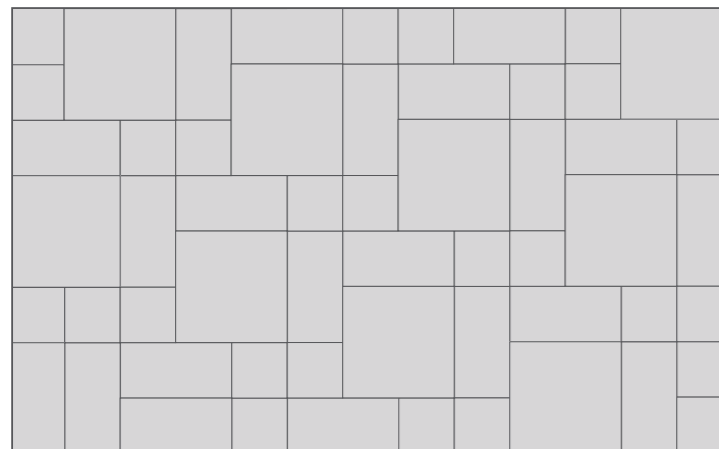
# PATTERNS |



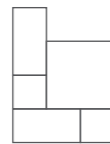
**pattern A**



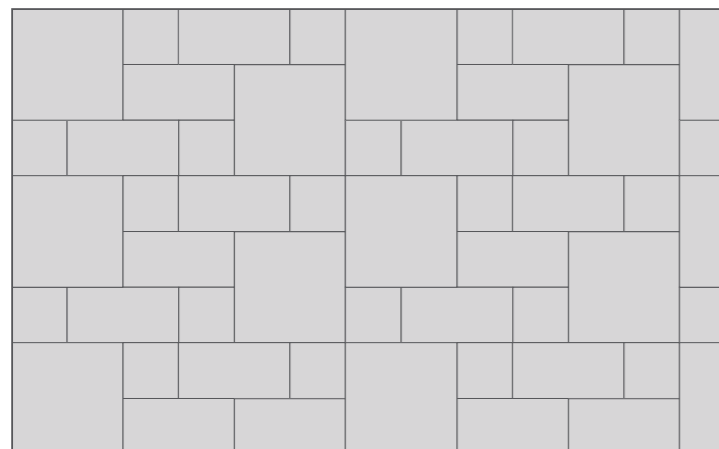
Nr. 1 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	57,2%
Nr. 1 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	28,5%
Nr. 1 pcs	11 <sup>3</sup> / <sub>4</sub> "x 11 <sup>3</sup> / <sub>4</sub> " - 30x30 cm	14,3%



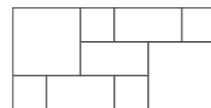
**pattern B**



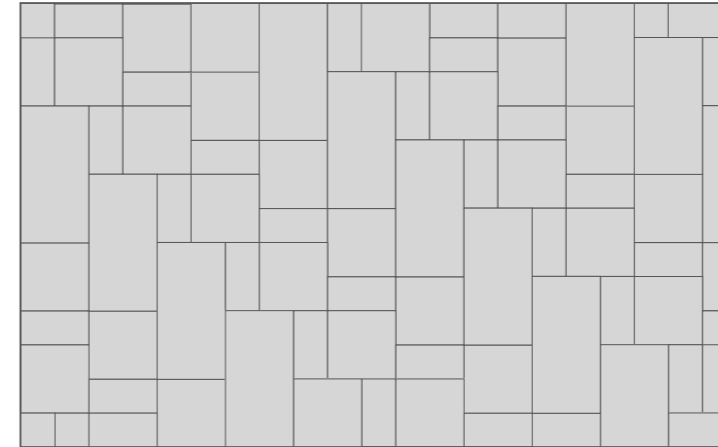
Nr. 1 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	40%
Nr. 2 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	40%
Nr. 2 pcs	11 <sup>3</sup> / <sub>4</sub> "x 11 <sup>3</sup> / <sub>4</sub> " - 30x30 cm	20%



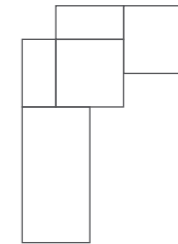
**pattern C**



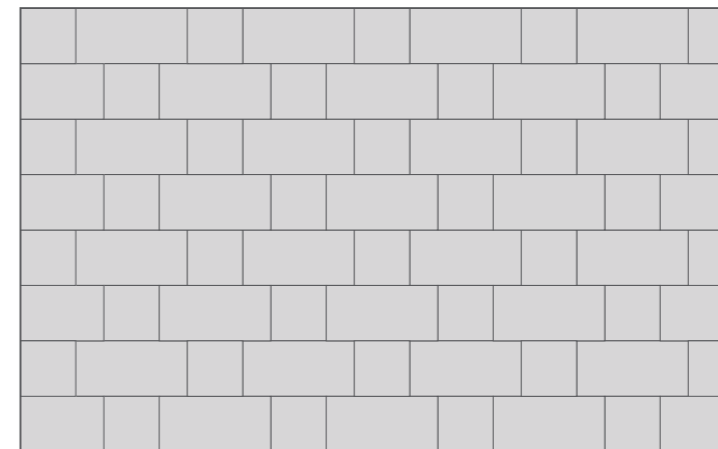
Nr. 2 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	44,5%
Nr. 3 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	33,3%
Nr. 4 pcs	11 <sup>3</sup> / <sub>4</sub> "x 11 <sup>3</sup> / <sub>4</sub> " - 30x30 cm	22,2%



**pattern D**



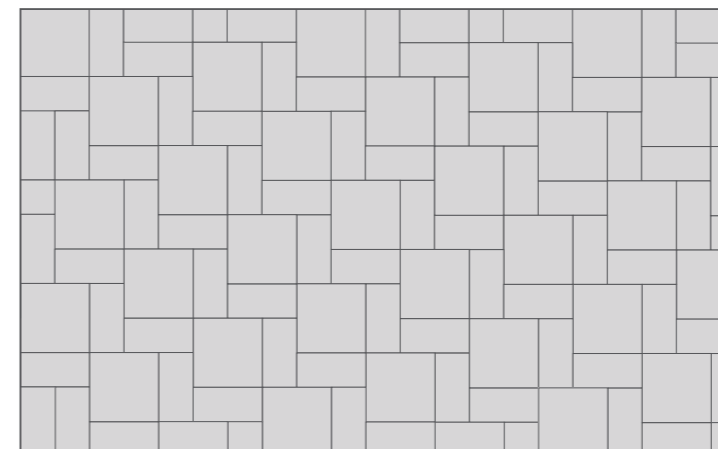
Nr. 1 pcs	23 <sup>1</sup> / <sub>3</sub> "x 47 <sup>1</sup> / <sub>8</sub> " - 60x120 cm	40%
Nr. 2 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	40%
Nr. 2 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	20%



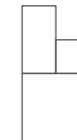
**pattern E**



Nr. 1 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	66,7%
Nr. 1 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	33,3%



**pattern F**



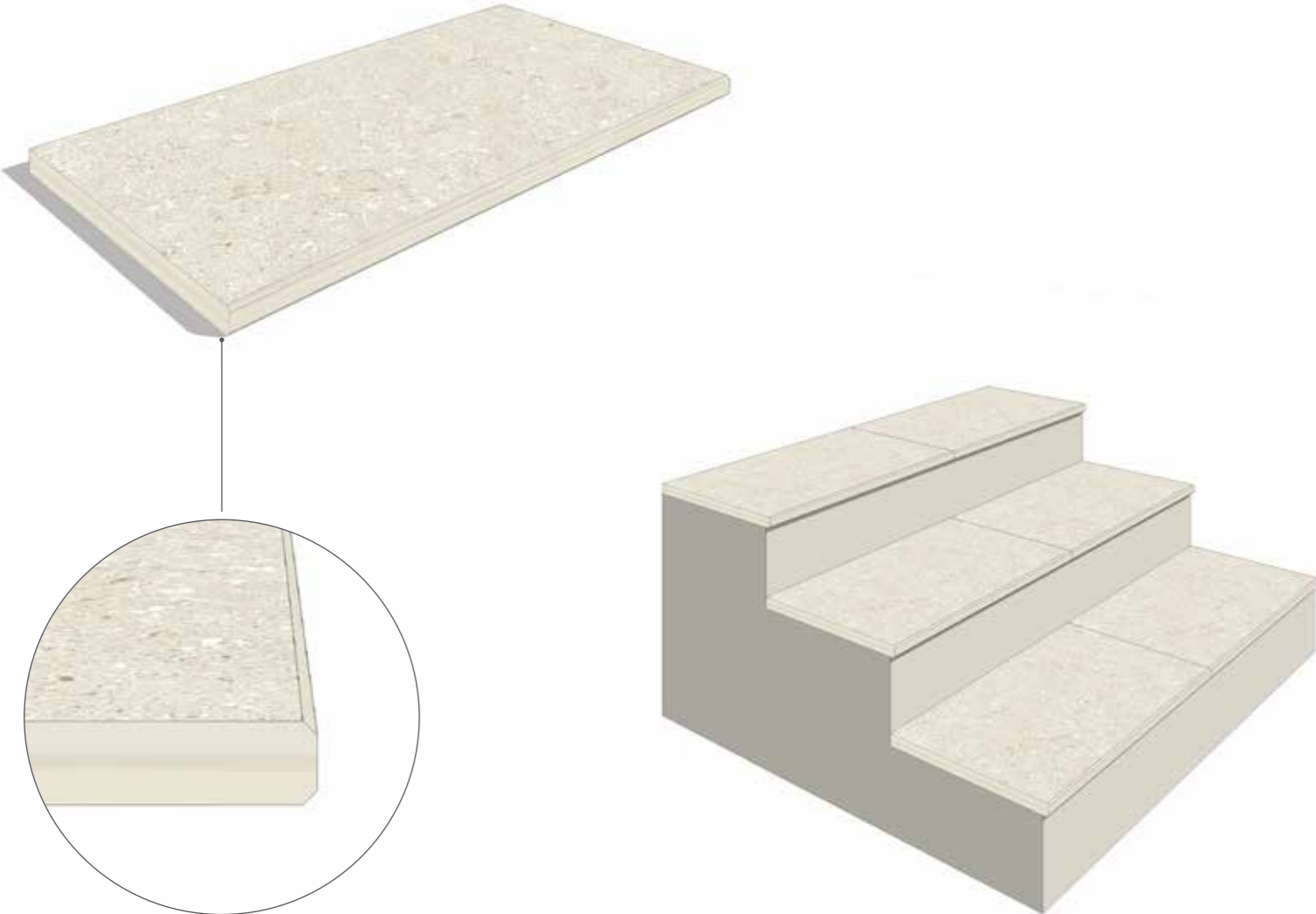
Nr. 1 pcs	23 <sup>1</sup> / <sub>3</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 60x60 cm	50%
Nr. 2 pcs	11 <sup>3</sup> / <sub>4</sub> "x 23 <sup>1</sup> / <sub>3</sub> " - 30x60 cm	50%

# SPECIAL PIECES |

## DOUBLE BEVEL COPING

30x60 - 1 1/4"x 2 3/2"

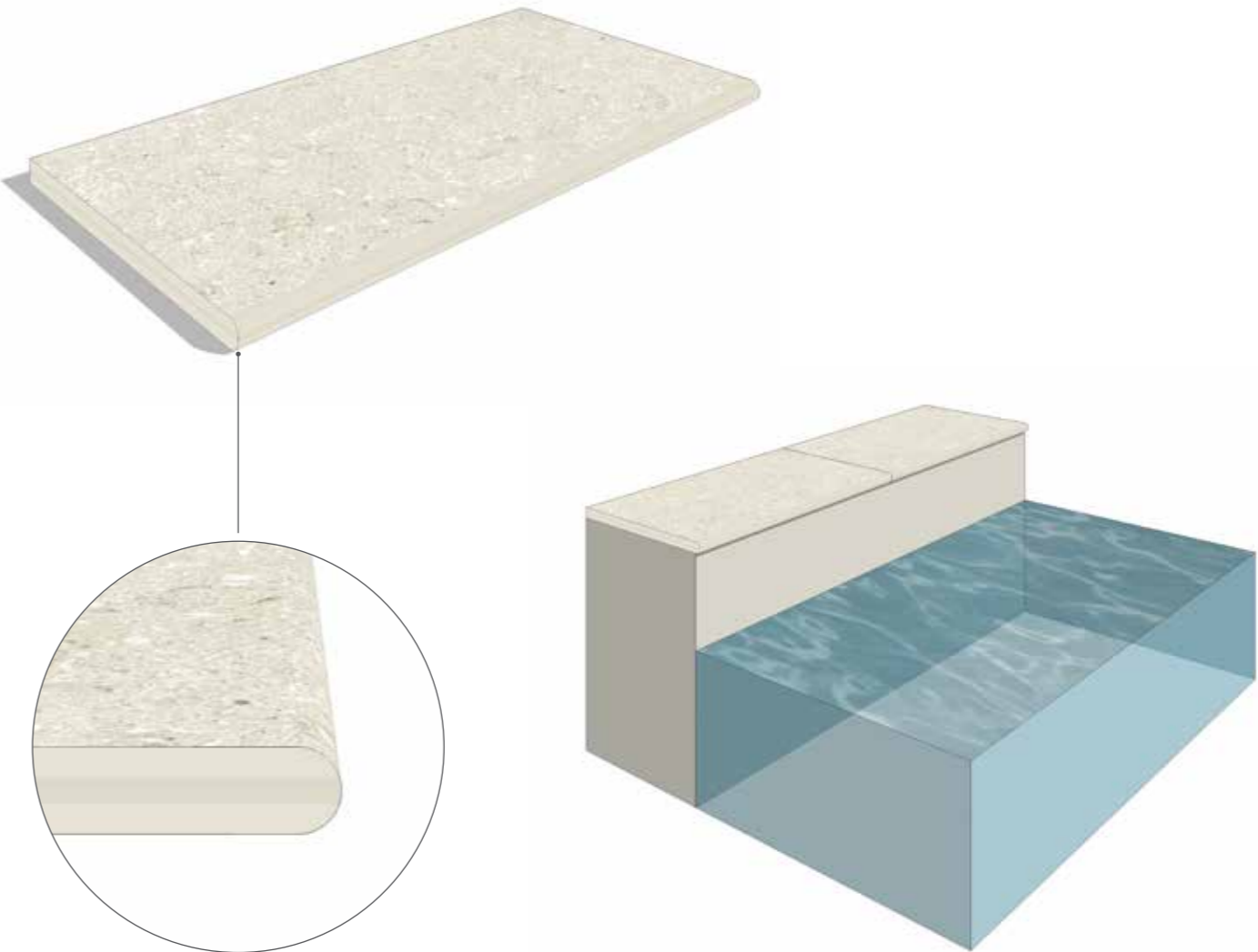
Available in all colours.



## FULL BULLNOSE COPING

30x60 - 1 1/4"x 2 3/2"

Available in all colours.



# PACKAGING

2.0 MONOLITHIC RECTIFIED CERAMIC TILE	Thickness	Unit / Box	SqFt / Box	Boxes / Pallet	SqFt / Pallet	Weight / Box	Weight / M <sup>2</sup>	Weight / SqFt	Weight / Pallet (included)	Pallet Size
23 1/2"x47 1/8"	3/4" - 20mm	2	15,5	16	248	153 lb	100 lb	9,3 lb	2454 lb	24"x 48"
11 3/4"x47 1/8"	3/4" - 20mm	4	15,5	16	248	153 lb	100 lb	9,3 lb	2406 lb	24"x 48"
23 1/2"x23 1/2"	3/4" - 20mm	2	7.75	36	279	72 lb	100 lb	9,3 lb	2670 lb	42"x 42"
11 3/4"x23 1/2"	3/4" - 20mm	4	7,75	40	310	72 lb	100 lb	9,3 lb	2955 lb	42"x42"
11 3/4"x11 3/4"	3/4" - 20mm	5	4,85	45	218	45 lb	100 lb	9,3 lb	2095 lb	42"x42"

# TECHNICAL CHARACTERISTICS

STANDARS	CHARACTERISTICS OR PROPERTIES	COMPLIANCE WITH STANDARDS UNI EN 14411 G wASTM	DECLARED VALUE
ISO - 10545-3 ASTM - C 373-88	Water absorption	E <= 0.5 %	< 0.1 %
ISO - 10545-9 ASTM - C 484	Thermal shock resistance	Requested	Complies with standard
ISO - 10545-12 ASTM - C 1026	Frost resistance	Requested	Complies with standard
ISO - 10545-6 ASTM C - 1243-93	Abrasive wear	<175 mm <sup>2</sup>	139 mm <sup>2</sup>
ISO - 10545-2	Straightness / ASTM - C 485	+/- 0.75 % (+/- 1.8 mm)	Complies with standard
	Straightness / ISO - 10545-2	+/- 0.5 % (+/- 1.5 mm)	Complies with standard
	Thickness / ASTM - C 499	+/- 1.02 mm	Complies with standard
	Thickness / ISO - 10545-2	+/- 0.5 % (+/- 0.5 mm)	Complies with standard
	Length and width / ASTM - C 499	+/- 0.5 % (+/- 2.0 mm)	Complies with standard
	Length and width / ISO - 10545-2	+/- 0.6 % (+/- 2.0 mm)	Complies with standard
ISO - 10545-4 Bending strength in N (thickness > = 7.5 mm)	ASTM - C 648	> = 250 LBF Average	> = 225 LBF Individual
	ISO - 10545-4	> = 1300 Newton	> 13000
ASTM - C 650	Chemical resistance	As reported	Resistant
ISO 10545-14	Resistance to stain	-	5
ISO 10545-13	Chemical resistance	UB min.	UA ULA UHA
ISO 10545-8	Coefficient of linear thermal-expansion	-	$\alpha=6.3 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
ISO 10545-5	Impact resistance	-	0.88
EN 12825	Static load	-	Centre 9.6 Kn Centre point of sides 6.5 Kn Diagonal 8.19 Kn (CLASSE 3)
	Dymanic laod capacity - hand object impact test	-	Test not passed
	Dymanic laod capacity - soft object impact test	-	Test passed
EN 1339	Bendind strength - breaking force in N	Kn 14.38	classe 14
ENV 12633	Slip resistance	> / = CL1	CL 2
DIN 51130	Slip resistance	-	R11
DIN 51097	Slip resistance	-	A + B + C min.
DM 236/89 B.C.R.A.	Slip resistance	-	> 0.40
Static coefficient of friction ASTM 1028-07 BOT 3000 Dynamic coefficient of friction (sectio n 9.6 ANSIA 137.1 2012)	Slip resistance	-	> 0.60 WET > 0.60 DRY
			> = 0.42
EN 13501-1	Fire resistance	-	A1 - A1 FL
* TAS 108 FLORIDA BUILDING CODE WIND UP LIFT TEST	3/4" thick 24"x24" porcelain installed on fixed height pedestals and 45° wind angle was blow of at	-	130 mph with no parapet 150 mpt with 12" high parapet