

# OUTDOOR TECHNICAL ADVANTAGES

A durable new alternative to pavers; Florim USA's outdoor tile can be used in a variety of applications. These 2 cm thick porcelain stoneware slabs are created by atomizing high quality clays, quartzes and metal oxides pressed at 400kg/cm<sup>2</sup>, and then slowly firing them in a 2,192 °F kiln.

D-COF > 0,42 WET

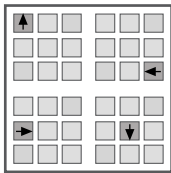
**HC**  
HEAVY  
COMMERCIAL



FROST RESISTANT



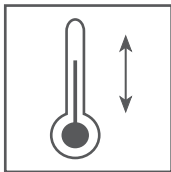
ANTI SLIP



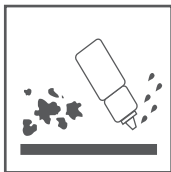
REMOVABLE



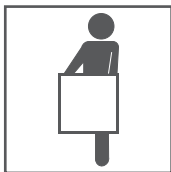
HIGH STATIC LOAD  
RESISTANCE



THERMAL SHOCK  
RESISTANT



IMPERVIOUS TO ATTACK  
BY CHEMICALS OR MOLD



EASY TO INSTALL



EASY TO CLEAN



**PROGRESS THAT TOUCHES PEOPLE AND INVESTS IN THE ENTIRE SOCIETY**

As an active member of the U.S. Green Building Council, Florim promotes awareness in the American community of a greener tomorrow by encouraging the use of building solutions inspired by environmentally friendly practices. Using Florim products in building projects will contribute to the attainment of scores and points required for LEED certification (Leadership in Energy and Environmental Design).

**A COMMITMENT TO THE DEVELOPMENT OF PRODUCTS FOR RESPONSIBLE AND SUSTAINABLE BUILDING**

Florim offers products containing recycled material. The adoption of ecologically compatible production systems emerges from Italian designs produced in the U.S.A.

**TECHNICAL DEVELOPMENT THAT RESPECTS THE NATURAL ENVIRONMENT**

Florim is committed to eco-sustainable projects, as reflected in avant-garde production processes that minimize the impact on the environment.



LEED



Environment  
PRIORITY ONE

## LAYING ON GRASS:



### LAYING ON GRASS:

(gardens, gazebos, entrance footpaths, perimeter areas of private swimming pools)

The materials can be laid easily on grass; the system can also be removed and repositioned, thereby allowing maximum flexibility in laying as it can be installed either with a minimum joint, or with a joint of 1 cm and over (Japanese joint).

### Advice for installation:

- Remove the underlying soil in the area where you want to place the slab, to a thickness of around 5-6 cm.
- Apply an evenly graded gravel bed into the area you have cleared, to a thickness of around 3-4 cm, and compact the base layer.
- Rest the ceramic slab on the gravel bed and tap with a rubber hammer to eliminate any unevenness.

### Warnings:

Check that the surface of the slab is level with the surface of the grass, in order to avoid damage when the grass is mowed mechanically. The system cannot be used in cases where motor vehicles and/or high dynamic loads transit.

### COLOCACIÓN SOBRE CÉSPED:

(jardines, quioscos, caminos de acceso, zonas periféricas de piscinas privadas)

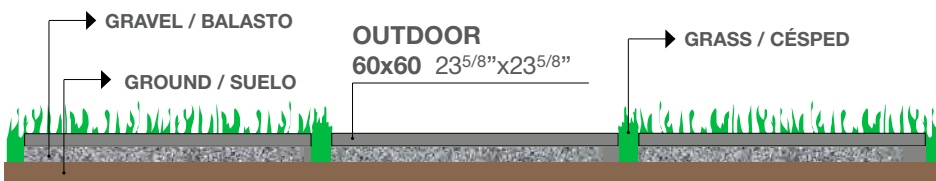
El material puede ser instalado fácilmente sobre el césped; además, el sistema puede ser retirado y colocado en otro sitio, ofreciendo así la máxima flexibilidad de aplicación y permitiendo su colocación ya sea con una junta mínima o con una junta de 1 cm o superior (paso japonés).

### Consejos para la instalación:

- Quite aproximadamente 5-6 cm de tierra debajo de la zona en la que se prevé apoyar la losa.
- Aplique en la zona excavada un lecho de balasto de granulometría constante, con un espesor de aproximadamente 3 o 4 cm, y compacte el fondo.
- Apoye la losa cerámica sobre el lecho de balasto y golpee con un martillo de goma para eliminar eventuales desniveles.

### Advertencias:

Verifique que el nivel de la losa coincida con el del césped, para evitar daños durante el corte de este último. Este sistema no se puede utilizar en caso de paso de vehículos o de cargas dinámicas elevadas.



## LAYING ON GRAVEL AND SAND:



### LAYING ON GRAVEL AND SAND:

(courtyards, terraces, floor slabs, patios, pedestrian walkways, perimeter areas of private swimming pools)

The materials can be laid easily on sand or gravel; the system is also easy to remove and reposition, thereby allowing maximum creativity in laying the materials;

the system can also be applied either with minimum joint or with the slabs arranged with a joint of at least 1 cm between the slabs

- Level and compact the surface of the supporting layer (sand or gravel)
- Lay the ceramic slab on the gravel or sand bed
- Tap with rubber hammer to eliminate any unevenness.
- Fill the joints between the slabs with gravel or sand to give the surface greater stability

### Warnings:

Check that the surface of the slab is level with the surface of the gravel layer in order to avoid movements of the slab or damage through impact from the side.

The system cannot be used in cases where motor vehicles and/or high dynamic loads transit.

### COLOCACIÓN SOBRE BALASTO Y ARENA:

(patios, terrazas, buhardillas, pasos peatonales, zonas perimétricas de piscina privadas)

El material puede ser instalado fácilmente sobre arena o balasto;

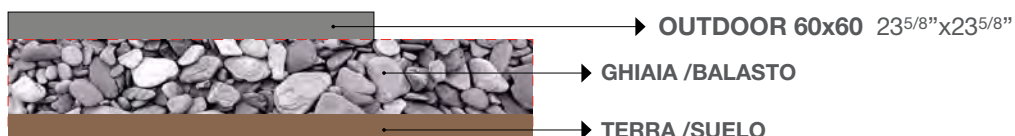
además, el sistema puede ser retirado y colocado en otro sitio, permitiendo así máxima creatividad en la utilización del material; la colocación se puede realizar con una junta mínima o disponiendo las losas con una junta de al menos 1 cm.

- Uniformice y compacte el nivel de la superficie de apoyo (arena o balasto).
- Apoye la losa cerámica sobre el lecho de balasto o arena.
- Golpee con un martillo de goma para eliminar eventuales desniveles.
- Rellene las juntas entre las losas con balasto o arena para dar mayor estabilidad a la superficie.

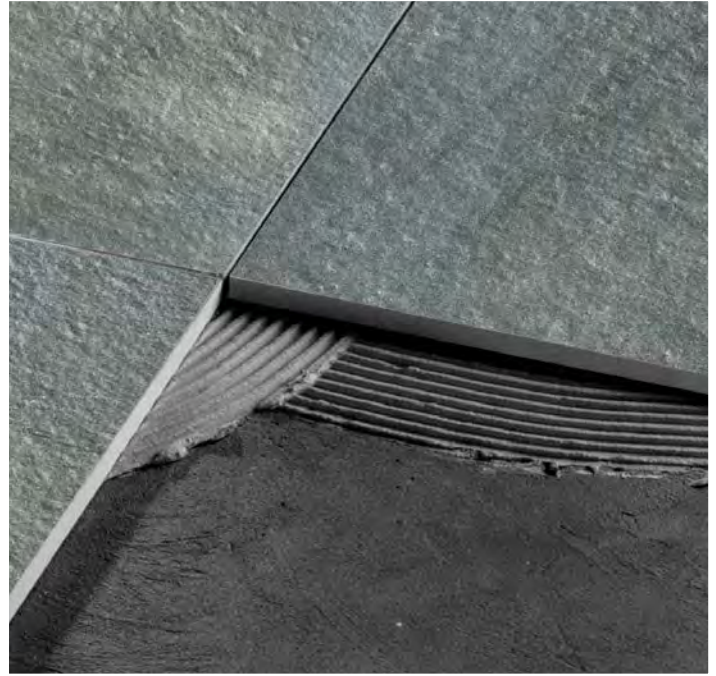
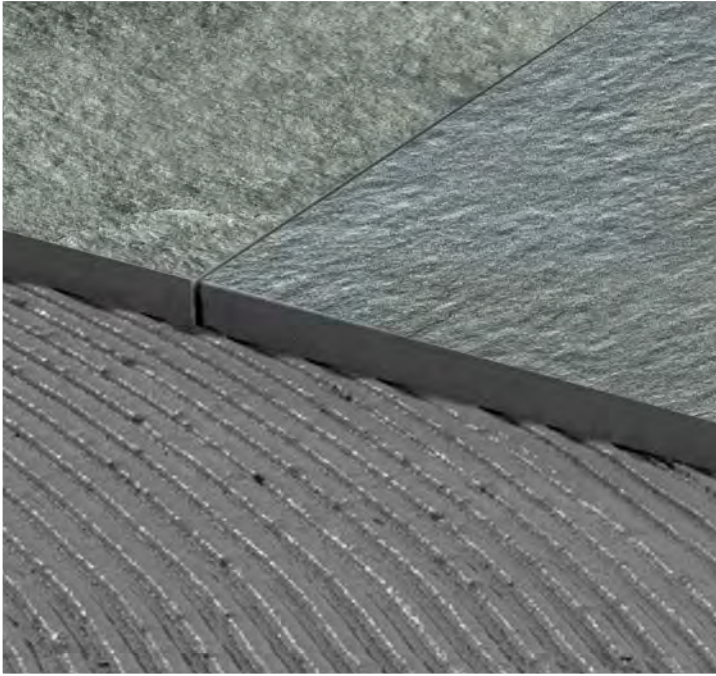
### Advertencias:

Verifique que el nivel de la losa coincida con el de la capa de balasto, para evitar los desplazamientos de la losa y los daños provocados por los golpes laterales.

Este sistema no se puede utilizar en caso de paso de vehículos o de cargas dinámicas elevadas.



## GLUEING WITH ADHESIVE:



### GLUEING WITH ADHESIVE:

(environments subject to high static loads, pavements, courtyards, urban furnishing, vehicle access roads, garages, external anti-slip flooring, pools, wellness areas, industrial areas)

There are no special instructions other than those for lower-thickness ceramic materials; we would remind you that it is always worthwhile checking the consistency and flatness of the bed before carrying out glueing of the slab.

For laying in environments that are subject to strong static or dynamic loads we recommend glueing with Class C2 improved adhesives and double coating (on the bed and on the back of the slab);

If several sizes of tile are being laid in combination, remember that Florim provides for modularity of its products with 3 mm joints.

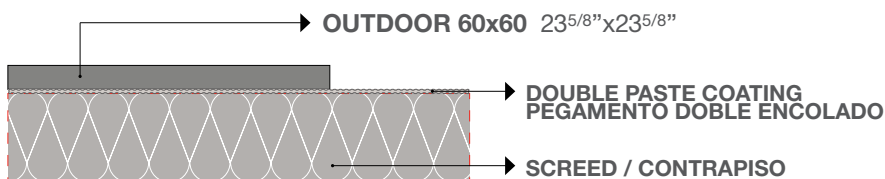
### APLICACIÓN CON ADHESIVO:

(ambientes sometidos a elevadas cargas estáticas, aceras, patios, mobiliario urbano, caminos de acceso para vehículos, garajes, pavimentos exteriores antideslizantes, piscinas, áreas de bienestar o industriales)

No se requieren técnicas particulares con respecto a los materiales cerámicos de menor espesor; se recuerda que, antes de proceder el encolado de la losa, siempre es conveniente realizar una verificación de la consistencia y planitud del contrapiso.

Para la colocación en ambientes sometidos a elevadas cargas estáticas o dinámicas, se recomienda el encolado con adhesivos optimizados clase C2 y doble capa de adhesivo (en el contrapiso y en la parte posterior de la losa).

En caso de colocación de varios formatos combinados, se recuerda que Florim prevé la modularidad de sus productos con una junta de 3 mm.



## LAYING AS A FLOATING FLOOR:



### LAYING AS A FLOATING FLOOR:

(terraces, floor slabs, balconies, outdoor environments subject to pedestrian traffic)

There are currently no regulations governing requirements for ceramic material used as **SELF-SUPPORTING RAISED FLOORING** in outdoor environments.

With the desire to give technical instructions for use in this way, Florim has subjected its ceramic slabs to the harmonised tests required by EN 1339 standard (technical regulation on CONCRETE FLOORING SLABS). From the results of tests carried out, the OUTDOOR material exceeds the requirements laid down by EN 1339 standard for use as outdoor flooring.

**For greater safety and protection of the user, Florim requires a maximum overlay height of 10 cm.**

### Laying instructions:

Check that the underlayer is flat, compact, rigid and suitable for supporting the weight of the floor without becoming distorted. Choose the supports that are suitable for use.

Provide for suitable sloping of the ground surface to obtain the correct drainage of rain water. The system cannot be used in cases where high dynamic loads transit.

### COLOCACIÓN FLOTANTE:

(terraces, buhardillas, balcones, ambientes exteriores sometidos a tránsito peatonal)

Actualmente no existen normas que establezcan requisitos para el material cerámico utilizado como **PAVIMENTO ELEVADO AUTOPORTANTE** en ambientes exteriores.

Con el objetivo de dar indicaciones técnicas para esta aplicación, Florim ha sometido sus losas cerámicas a las pruebas armonizadas previstas por la norma EN 1339 (normativa técnica sobre las LOSAS DE HORMIGÓN PARA PAVIMENTOS).

Las pruebas realizadas revelan que el material OUTDOOR supera los requisitos previstos por la norma EN 1339 para su utilización en pavimentos exteriores.

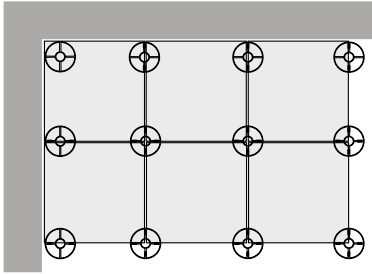
**Para garantizar una mayor seguridad y tutela del usuario, Florim sugiere establecer una altura máxima de 10 cm.**

### Indicaciones de colocación:

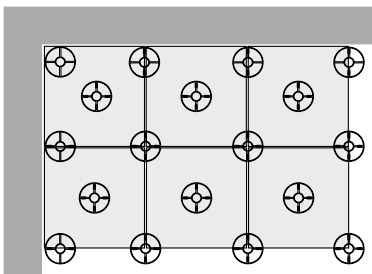
Verifique que la base sea plana, compacta, rígida y adecuada para soportar el peso del pavimento, sin deformarse. Elija soportes adecuados para el uso. Establezca una adecuada pendiente de la superficie transitable para garantizar el correcto drenaje del agua pluvial. Este sistema no puede ser utilizado en caso de elevadas cargas dinámicas.

## ESEMPIO DI APPLICAZIONE Strutture di supporto

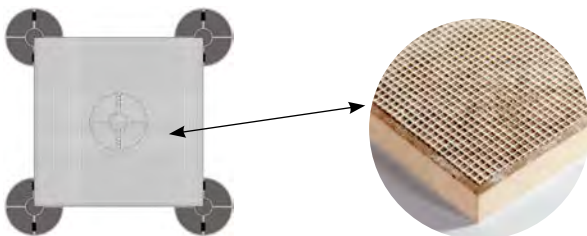
APPLICATION EXAMPLE Support structures / EJEMPLO DE APLICACIÓN Estructura de soporte












In the case of flooring for public use or where there are high loads, Florim recommends the adoption of additional supports under the slab, as in the diagram below / En caso de pavimentos de uso público o en presencia de cargas elevadas, Florim recomienda la utilización de soportes adicionales debajo de la losa, tal como se muestra en el esquema adjunto.



If a raised height of over 10 cm is required, Florim recommends glueing foil or mesh to the back for safety and adding supports under the slab, as in the diagram below. / Si se requiere una altura superior a 10 cm, Florim recomienda pegar una lámina o una red de seguridad en la parte posterior, y utilizar soportes adicionales debajo de la losa, tal como se muestra en el siguiente esquema.



# OUTDOOR TECHNICAL INFO

|   | SPEC.   | TEST METHOD      | REFERENCE VALUE                | DECLARED VALUE        |
|---|---|------------------|--------------------------------|-----------------------|
|    | Static coefficient of friction  | ASTM - C 1028    | > 0.60 dry and wet             | > 0.60 dry and wet    |
|   | Dynamic coefficient of friction (sectio n 9.6 ANSIA 137.1 2012)   | DCOF Acutest     | > 0.42 wet                     | > 0.42 wet            |
|    | Resistance to freeze  | ASTM - C 1026    | -                              | Resistant             |
|   | Frost resistance  | ISO - 10545-12   | As reported                    | Resistant             |
|    | Chemical resistance   | ASTM - C 650     | As reported                    | Not affected          |
|   | Resistance to domestic chemicals and additives for swimming pools   | ISO - 10545-13   | UB minimum                     | UA                    |
|   | Resistance to low concentrations of acids and alkali  | ISO - 10545-14   | See manufacturer's declaration | ULA                   |
|   | Resistance to high concentrations of acids and alkali   | ISO - 10545-15   | See manufacturer's declaration | UHA                   |
|   | Resistance to staining  | ASTM - C 1378    | As reported                    | Not affected          |
|   |   | ISO - 10545-14   | -                              | 4                     |
|  | Maximum straightness deviation, in %, in relation to the corresponding production dimensions                | ASTM - C 485     | ±0.75% (±1.8 mm)               | ± 0.10 %              |
|   |   | ISO - 10545-2    | ±0,5% (±1,5 mm)                | ± 0,10 %              |
|   | Admitted deviation, in %, of the average thickness of each tile from the production dimensions              | ASTM - C 499     | ±1.02 mm                       | ±0.5 %                |
|   |   | ISO - 10545-2    | ±0,5 % (±0,5 mm)               | ± 0,5 %               |
|   | Length and width: admitted deviation, in %, of the average size of each tile from the production dimensions | ASTM - C 499     | ±0.5 % (±2.0 mm)               | ± 0.15 %              |
|   |   | ISO - 10545-2    | ±0,6 % (±2 mm)                 | ± 0,15 %              |
|  | Amount of water absorbed, in percentage   | ASTM - C 373-88  | E < 0.5%                       | < 0.1%                |
|   |   | ISO - 10545-3    | E < 0.5 %                      | < 0,1 %               |
|  | Breaking strength in N (thickness > = 7,5 mm)   | ASTM - C 648     | ≥ 250 LBF Average              | ≥ 225 LBF Individual  |
|   |   | ISO - 10545-4    | ≥ 1300 Newton                  | > 13000               |
|  | Resistance to deep abrasion of unglazed tiles   | ASTM - C 1243-93 | < 175 mm 3                     | < 150                 |
|   |   | ISO - 10545-6    | < 175 mm 3                     | < 150                 |
|  | Thermal shock resistance  | ASTM - C 484     | -                              | Meets the requirement |
|   |   | ISO - 10545-9    | -                              | Resistant             |