Dear Customer,

Thank you for choosing Evo_2/E™, the first porcelain stoneware to have a thickness of 20mm, produced and marketed by Mirage® as a complete project for outdoors and gardening. A complete system of floorings and special pieces for public and residential outdoor spaces that provides a wide range of sizes, colors and finishes and different modes of application.

This manual was conceived from the desire to provide our customers valuable tips for laying the material; a simple and exhaustive tool, in order to obtain the best result in terms of appearance and quality. The information contained in this guide is the result of the experience acquired from Mirage® and the daily interaction with professionals of the sector. Mirage® nevertheless invites you to comply with the local laws and regulations of each individual country to produce flooring in accordance with the best working standards. We also recommend you carefully assess the characteristics of the substructure before doing any type of machining or installing.

Note: For North America and Oceania markets please refer to the specific manual.
It is a material with high technical and visual performance. Slabs obtained by pressing, followed by a process of vitrification: i.e. the complete melting into a single material of natural raw materials (sand, quartz, feldspar, kaolin, clays, and natural dyes) that, cooked at temperatures in excess of 1230°C, arrive to constitute a product of exceptional hardness, having almost nil absorption and unequalled mechanical characteristics. Mirage® porcelain stoneware is an eco-compatible and Ecolabel-certified product.
<table>
<thead>
<tr>
<th><strong>Resistant</strong></th>
<th><strong>Easier</strong></th>
<th><strong>Respectful of the environment</strong></th>
<th><strong>Contemporary Landscape</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TO THERMAL SHOCK</strong>&lt;br&gt;Because it is 100% frost-free and its properties remain unaltered at temperatures of -50°C to +60°C (-120°F to +140°F).</td>
<td><strong>to clean</strong>&lt;br&gt;Because it requires no special or seasonal treatment and can be washed easily, even using a pressure washer.</td>
<td><strong>Ecolabel</strong>&lt;br&gt;EVO_2/E™ collections guarantee low environmental impact throughout their life cycle, in compliance with the strictest European ecological and technical parameters.</td>
<td><strong>attention to detail</strong>&lt;br&gt;Because it has a range of highly attractive solutions, with special pieces for different uses and to create innovative surfaces.</td>
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<td><strong>to loads</strong>&lt;br&gt;Because every slab can withstand loads of over 1000 kg (2200 lb).</td>
<td><strong>to lay</strong>&lt;br&gt;Because it is a squared, single work-size, which uses the same laying systems as other common outdoor materials.</td>
<td><strong>Leed Compliant</strong>&lt;br&gt;All the slabs in the Mirage® catalogue are LEED compliant and help to obtain up to 10 LEED credits, depending on colour and use.</td>
<td><strong>wide range</strong>&lt;br&gt;Because you can choose from a range of over 40 interpretations of stone, wood and concrete.</td>
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<tr>
<td><strong>to chemical aggression</strong>&lt;br&gt;Because it totally resists acids, chemical agents, salt and verdigris.</td>
<td><strong>to remove</strong>&lt;br&gt;Because it is removable, serviceable and reusable, weighing just 17 kg per 60x60 cm slabs (37 lb per 24”x24” slabs) (excluding laying on screed with glue).</td>
<td><strong>Made in Italy</strong>&lt;br&gt;All Mirage® tiles are designed and produced entirely in Italy, an element which today more than ever bears witness to the company’s desire to promote the quality and values of Italian-made goods.</td>
<td><strong>total coordination</strong>&lt;br&gt;Because you can create fully coordinated interiors and exteriors, in different colours.</td>
</tr>
<tr>
<td><strong>to stains</strong>&lt;br&gt;Because it remains unaltered over time, mould and moss and dark smudges cannot get a hold.</td>
<td><strong>for you</strong>&lt;br&gt;Because it is non-slip thanks to the structured surface.</td>
<td><strong>HY-PRO²⁴</strong>&lt;br&gt;The Mirage® treatment, available on request, with titanium dioxide, enhanced with active metal elements, makes the material photocatalytic, anti-pollutant, hygienic and anti-bacterial, 24 hours a day.</td>
<td><strong>versatility</strong>&lt;br&gt;Because you can use a range of laying systems for many specific solutions, in gardens, parks, terraces, courtyards and swimming pools.</td>
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</table>
The project **EVO_2/E™ Mirage®** brings you a set of solutions for installation suitable for all soils and outdoor surfaces, to guarantee the **maximum application versatility**.

There are many uses, for private external and public spaces:

- Garden, courtyard or patio
- Footpath
- Terrace or balcony
- Swimming Pool
- Driveway flooring
- Commercial Area

Depending on the applications, the following table gives recommendations of some installations to ensure maximum effectiveness:

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<tr>
<th></th>
<th>ON GRASS</th>
<th>DRY INSTALLATION ON SAND</th>
<th>DRY INSTALLATION ON GRAVEL</th>
<th>ON GRAVEL MIXED CEMENT</th>
<th>RAISED</th>
<th>ON SCREED</th>
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* The garden, yard, patio, footpath, terrace and swimming pool do not bear vehicular load, but only pedestrian and bicycle load.

** The driveway and the commercial area provide only light vehicular load (≤ 850 kg).

The evaluation of the quality and of the carrying capacity of the floor is not the task only of the layer and then, before entrusting the task of laying, it is fundamental for the clients/designer to ensure compliance of the characteristics of the soil and its compaction to the forecasts of the loads to which the flooring must respond.

It should be remembered that to avoid stagnation of water and a possible early deterioration of the area, under no circumstances must floorings be made with slopes of less than 1%: the minimum slope recommended is 1.5%.

The information and recommendations listed in this catalogue are for informational purposes only, for the implementation of every step we recommend the application of each rule and the respect of every law concerning the various phases of work.

**Mirage® recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of installation.**
LAYING IN SUPPORT WITH GRASS

It is the ideal laying solution for creating walkways, barbecue areas and gazebos in the garden: by laying EVO_2/E™ slabs on the ground, you can preserve the underlying lawn, allowing you to enjoy it while preventing it from being damaged by weights or heavy foot traffic.

HOW TO LAY “JAPANESE STEPPING STONES”

To create a path pattern arranging the slabs in the “Japanese stepping stone” style, you need to calculate the number of steps needed to complete the path, then space the slabs at an equal distance along the route. To ensure perfect stability, it is recommended to dig 5/8 cm, add fine gravel size 3 to 6 mm, and compact the bottom before laying the slab.

The slabs must not protrude above the lawn level, in order not to damage the lawnmower when cutting the grass.

WHAT YOU NEED

- Mirage®
- Work Gloves
- Spade
- Gravel Ø 3/6 mm
- Square tip trowel
- Trowel
- Mallet
- Mirage® Lifting Tong
- Porcelain Stoneware Mirage® Evo_2/E™

The stratigraphies, shims and the proposed measures are only indicative of the type of application: it is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.
LAYING SYSTEMS

LAYING ON SCREED WITH GLUE

The ideal laying solution for outdoor driveways, car parks, garage ramps, as the laid surface is extremely resistant to both dynamic and concentrated loads. Expansion joints are required and the joints between the tiles must be filled with cement-based grout.

USES

- Driveway flooring
- Swimming Pool
- Outdoor stairs
- Terraces
- Residential Areas
- Commercial Areas

WHAT YOU NEED

- EVO_2/E™
- Glue for slabs
- Notched spatula
- Trowel
- Drill mixer
- Pail
- Wash tub
- Sponge float
- Cement grout
- Buffered acid detergents

The stratigraphies, shims and the proposed measures are only indicative of the type of application; it is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.

LAYING IN PLACE

1. After having made the screed according to the best working standards, it needs a good surface cleaning before proceeding with the laying.
2. Spread the glue evenly to ensure a perfectly plane surface.
3. When laying, it is recommended to check that the slab has adhered correctly to the glue layer.
4. EVO_2/E™ is squared and single work-size and can therefore be laid with a 3 mm plus spacer (plus spacer 3 mm = joint 3/4 mm).
5. After laying, grout the floor.
6. Wash the first layer of grout residue carefully after grouting.
7. A final buffered acid wash must be done to remove any invisible grout residues.
Raised outdoor floors exploit the conventional system of floating or raised floors. With this laying system, all the pipes and wiring systems laid beneath the tiled surface can be inspected at any time. It offers instant accessibility, by allowing the lifting and removal of the slabs.

A slope \( \geq 1.5\% \) and a maximum laying height of 10 cm is recommended.

Raised outdoor flooring is used mainly on rather large regular surfaces, or overlapping the previous floor, provided the previous floor shows no signs of infiltration. The open joints between the slabs allow rainwater to flow into the cavity that is created under the panels. Thus, a planar floor is obtained, while the underlying waterproof layer will have all the slopes required to thoroughly drain off the rainwater. The load-bearing structure is made of polypropylene supports with a wide base and rounded edges to prevent damage to the insulating sheath. This solution allows for any underlying elements to be inspected and offers a practical passage for pipes and wiring.

### WHAT YOU NEED

- Porcelain Stoneware: Mirage® Evo_2/E™
- Support
- Adjusting Wrench
- Mirage® Lifting Tong
- Broom
- Dustpan
- Spirit level

### LAYING IN PLACE

1. When laying on supports, the sub-bed must be fully waterproofed.
2. Before laying, clean the sub-bed carefully.
3. It is advisable to start laying from a corner, if there is one.
4. Place the supports in relation to the dimensions of the used slab.
5. A maximum laying height of 10 cm is recommended.
6. Verify while laying, the proper levelling of the laid slabs (\( \geq 1\% \)).
7. To adjust the supports, the appropriate adjustment wrench is available.
8. When laying, check that the joint line is always constant.

The stratigraphies, shims and the proposed measures are only indicative of the type of application. It is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.
When the application of slabs in 20 mm requires the use of the ceramic product in structural terms, it is recommended that the designer and/or client make a careful assessment of the project requirements in relation to the technical characteristics of the slabs.

In particular, in order to avoid the risk of damage to persons or things, the manufacturer recommends that:

- If the application provides for raised laying, taking into account that a tile may break due to a heavy object falling on it, check in advance the specific intended use and follow the "raised installation instructions" table below where, under certain conditions, the application of a reinforcement on the back of the tile is required (rete plus or galvanized steel) supplied by the manufacturer.

- With reference to the flooring laid in altitude, with any dry-laid system, observe the specific rules and regulations and local use conditions regarding, inter alia, by way of example, the action of the wind, the structural load, seismic actions, etc.

- Failure to comply with the recommendations above may lead to an improper use of the product and possibly cause serious damage/injuries to persons or things.

### SUPPORTS

<table>
<thead>
<tr>
<th>SUPPORT</th>
<th>TYPE</th>
<th>CODE</th>
<th>HEIGHT (mm)</th>
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<tbody>
<tr>
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<tr>
<td>EH15</td>
<td>WA12</td>
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<td>WC51</td>
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<td></td>
</tr>
<tr>
<td>LH3</td>
<td>WC52</td>
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</table>

### FIXED SUPPORT

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<tr>
<td>NM1</td>
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<td>NM2</td>
<td>WA13</td>
<td>40-70</td>
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<tr>
<td>NM3</td>
<td>WC17</td>
<td>60-100</td>
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<td>NM4</td>
<td>WC31</td>
<td>90-160</td>
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<tr>
<td>NM5</td>
<td>WA86</td>
<td>150-270</td>
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<td>LGH2</td>
<td>WV37</td>
<td>2</td>
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<tr>
<td>LGH3</td>
<td>WF29</td>
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### ADJUSTABLE SUPPORT

<table>
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<tr>
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<td>WS93</td>
<td>28-38</td>
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<td>WC18</td>
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<td>SE2</td>
<td>WA14</td>
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<td>SE3</td>
<td>WC19</td>
<td>75-120</td>
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<td>SE4</td>
<td>EC20</td>
<td>120-170</td>
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<td>SE5</td>
<td>EC53</td>
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<td>SE6</td>
<td>EC57</td>
<td>140-230</td>
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<td>SE7</td>
<td>EC97</td>
<td>185-275</td>
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<td>LGH3</td>
<td>WF29</td>
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### SELF-LEVELLING SUPPORT

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<th>SUPPORT</th>
<th>TYPE</th>
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<tr>
<td>SUPPORT</td>
<td>TYPE</td>
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<td>HEIGHT (mm)</td>
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| TECHNICAL CHARACTERISTICS OF THE SUPPORTS

<table>
<thead>
<tr>
<th>SUPPORTS MADE FROM 100% RECYCLABLE MATERIALS</th>
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<tr>
<td>RESISTANT TO ACIDS AND ALKALIS</td>
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<tr>
<td>RESISTANT TO ATMOSPHERIC AGENTS</td>
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<tr>
<td>RESISTANT TO TEMPERATURES FROM -30°C TO +120°C (-90°F TO +250°F)</td>
</tr>
</tbody>
</table>
To ensure drainage of the tread surface, appropriate transversal or longitudinal gradients should be included during levelling and compaction.

Bear in mind, however, that, in the light of the distinctive advantages of porcelain stoneware, EVO.2/E™ has practically nil water absorption, a characteristic that makes it frost-proof. This may lead to localised water pooling, mainly on the edges of the tiles, regardless of the high standard laying. It is also recommended to lay with a minimum joint of 3 mm.

For further information and technical specifications concerning a height of over 30 cm, please contact the Mirage® Engineering Division.

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**Note:** For any detail and technical specification concerning the fiber mesh plus or the galvanized steel sheet, please contact Mirage®. Mirage® is responsible only if it supplies the whole system (tile + fiber mesh plus or galvanized sheet). Mirage® cannot be held responsible for reinforcing systems that has not supplied. In case of breakage, tile must be replaced immediately.

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**FIBER-MESH PLUS**

**GALVANIZED STEEL SHEET**
RAISED LAYING

VERTICAL EDGE CLIP

The sure innovation to ‘finish off in style’
Designed to solve the common problem of many outdoor flooring systems, i.e. how to close off the edge when there is no perimeter wall. The vertical edge clip is an innovative system for closing off the outer edge of raised floors with an easy and elegant solution. The solution consists of two special stainless steel clips that are placed on top and underneath the base, creating a space with edges that grip onto the portion of flooring cut to size for the area to fill, and preventing any horizontal slippage of the slabs at the same time because of the block at the edge of the floor clip.

SLAB EDGE CLIP

The ideal combination of looks and functions
Designed to prevent any contact between the slab and the perimeter wall when fitting raised outdoor flooring, the slab edge clip is made entirely in stainless steel and has a system to absorb longitudinal and transversal dilation as well as providing a reliable grip, enabling an elegant, straight perimeter gap while giving the floor extra stability.
Dry laying on sand is recommended for applications such as gardens, patios, courtyards, walkways, and terraces. It is a versatile and rapid laying method that allows easy removal of the flooring as a function of the type of joint chosen to use.

**USES**
- Residential Areas
- Garden, courtyard or patio
- Footpath
- Terraces

**WHAT YOU NEED**
- Porcelain Stoneware Mirage® Evo_2/E™
- Excavator
- Rake
- Vibro compactor plate
- Wheelbarrow
- Gravel Ø 40/80 mm (20/30 cm)
- Sand Ø 0/2 mm
- Mallet
- Mirage® Space_G plus spacers
- Geotextile
- Spirit level
- Vibrating plate
- Soil

**LAYING IN PLACE**

Once you have drawn up the area you need to dig out, you can mark the perimeter of the excavated area using wooden or steel marker posts connected by a string. Allow a lateral strip of land in excess of the marked edge that can be removed during the excavation.

Remove the soil inside the marked area using a shovel or excavator. The depth of excavation should be decided during the planning stage and depends on various factors that the flooring fitter should assess with due care, including:
- the load on the flooring; a larger service load corresponds to a greater thickness of the layers
- the existing conditions of the soil; the undisturbed ground has a greater bearing capacity than the backfill
- drainage capacity of the soil; a greater ability to drain water corresponds to a greater bearing capacity of the ground

**NOTE:** It is recommended to consult a technician to precisely calculate the thickness of the layers according to the intended use and stressing load.

The stratigraphies, shims, and the proposed measures are only indicative of the type of application; it is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.
Once the excavation is completed, use a rake or shovel to level the excavated area making sure there is at least 2% slope (to facilitate water drainage). Before proceeding with the implementation of the upper layers, compact the soil with a vibro compaction machine.

It is advisable to lay a sheet of geotextile on top of the compacted soil: this is a layer of synthetic material whose main purpose is to prevent the soil from mixing with the gravel and increasing the lifetime of the flooring.

Arrange a layer of gravel with a grain size 40/80 mm, a thickness of between 20 cm and 30 cm, depending on the planned type of load. The main purpose of this layer is to withstand the load on the flooring and serves as the load-bearing element.

Using the same method as for the foundation layer, lay gravel with a size of 0/20 mm, a thickness between 10 and 20 cm, according to the expected load. This layer also has to be compacted and levelled with a gradient of approximately 2%.

The edging stones or curb stones have the basic purpose to prevent any horizontal movements of the flooring by eliminating any instability of the paved plane. A curb must be fitted along the entire perimeter of the flooring, unless it is in direct contact with a footpath, wall or an existing edge that is sufficiently rigid. It is recommended to install the containing edges in the stage prior to laying the sand bed on which to lay the flooring.

The containing edge must be fixed to the ground with a casting of concrete at the base or by mechanical anchors according to manufacturer-specific indications and according to the material of which they are made. If possible, at least half the height of the curb should be covered with soil on the external side of the flooring.

The sandy material recommended for the laying of EVO_2/E™ is the sand with particle size 0-2 mm dry. Make sure the thickness of the layer of sand is between 2 and 5 cm and perform compaction with a vibro compactor plate.

When the layer of sand is sufficiently dense, level the surface by sliding a wooden or steel board appropriately placed on two runners. Finally, use a spirit level to check the gradient of the surface: the optimum gradient is around 2%.

When the containing edge is fitted, start laying EVO_2/E™ using Mirage® Space_G type plus spaces (joint 4 mm). Use a rubber mallet to stabilise the flooring tiles on the bed of sand by delicately tapping their surface.
LAYING ON GRAVEL

The dry laying on gravel is recommended for applications such as a garden, patio, courtyard, walkways and terraces. This allows the ground drainage unaltered through the joints between the slabs, and allows drainage of the water in the stratum. This laying solution is also ideal for projects where permanent floor laying is not possible.

WHAT YOU NEED

- Porcelain Stoneware Mirage® Evo_2/E™
- Spade
- Spirit level
- Vibe compactor plate
- Cement
- Concrete mixer
- Waterproof sheath
- Honeycomb mat
- Gravel Ø 3/6 mm
- Bar grader
- Mirage® Space_G plus spacers
- Mallet

NOTE: It is recommended to consult a technician to precisely calculate the thickness of the layers according to the intended use and stressing load.

The stratigraphies, shims and the proposed measures are only indicative of the type of application. It is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.

LAYING IN PLACE

Once you have drawn up the area you need to dig out, you can mark the perimeter of the excavated area using wooden or steel marker posts connected by a string. Allow a lateral strip of land in excess of the marked edge that can be removed during the excavation.

Remove the soil inside the marked area using a shovel or excavator. The depth of excavation should be decided during the planning stage and depends on various factors that the flooring fitter should assess with due care, including:

- the load on the flooring; a larger service load corresponds to a greater thickness of the layers
- the existing conditions of the soil; the undisturbed ground has a greater bearing capacity than the backfill
- drainage capacity of the soil; a greater ability to drain water corresponds a greater bearing capacity of the ground

The dry laying on gravel is recommended for applications such as a garden, patio, courtyard, walkways and terraces. This allows the ground drainage unaltered through the joints between the slabs, and allows drainage of the water in the stratum. This laying solution is also ideal for projects where permanent floor laying is not possible.
Once the excavation is completed, use a rake or shovel to level the excavated area making sure there is at least 2% slope (to facilitate water drainage). Before proceeding with the implementation of the upper layers, compact the soil with a vibro compaction machine.

The screed, thickness 10-20 cm, must ensure a suitable support for the flooring according to the class of use. As well as having a structural purpose, the slab must also allow water to drain away at the sides; therefore the surface of the slab should have a gradient of 2-5%.

Preparation: The mixture of the screed involves the use of aggregates (gravel and sand), binder (cement), water and additives.

In order to avoid the absorption of water by the screed, install a waterproof sheath, making sure to cover the entire area.

Then put the honeycomb mat into position, trimming away any excess at the sides using a cutter. The honeycomb mat serves to channel the water, improve the lateral drainage and protect the waterproofing.

NOTE: It is recommended not to use any type of vibro-compactor plate on the EVO_2/E™ slabs, as they may become damaged.

Using the same method as for the foundation layer, lay gravel with a size of 0/20 mm, a thickness between 10 and 20 cm, according to the expected load. This layer also has to be compacted and levelled with a gradient of approximately 2%.

The edging stones or curb stones have the basic purpose to prevent any horizontal movements of the flooring by eliminating any instability of the paved plane. A curb must be fitted along the entire perimeter of the flooring, unless it is in direct contact with a footpath, wall or an existing edge that is sufficiently rigid.

It is recommended to install the containing edges during the stage prior to laying the gravel bed on which the flooring is placed.

Start laying EVO_2/E™ using Mirage® Space_G type plus spaces (joint 4 mm). Use a rubber mallet to stabilise the slab on the bed of sand by delicately tapping the surface.

The containing edge must be fixed to the ground with a casting of concrete at the base or by mechanical anchors according to manufacturer-specific indications and according to the material of which they are made. If possible, at least half the height of the curb should be covered with soil on the external side of the flooring.

Lay a 10-30 cm thick layer of gravel, depending on the intended use, on top of the honeycomb mat. Using 3/6 mm diameter gravel will give the slab greater stability.

Level the surface with two guides and a board. To confer greater stability to the layer of gravel, you can use a cement mixer to mix the gravel with 5% cement and a minimal amount of water.

NOTE: It is recommended not to use any type of vibro-compactor plate on the EVO_2/E™ slabs, as they may become damaged.
Dry laying on gravel mixed with cement is recommended for applications such as a garden, patio, courtyard, walkways and terraces. Overall, this is more stable than a dry installation but also more difficult to remove.

**WHAT YOU NEED**

- Porcelain Stoneware Mirage® Evo_2/E™
- Spade
- Spirit level
- Vibe compactor plate
- Sand or fine gravel
- Rake
- Concrete mixer
- Gravel Ø3/6 mm
- Cement
- Glue for outdoor slabs
- Notched spatula
- Mirage® Space_G plus spacers

**USES**

- Residential Areas
- Garden, courtyard or patio
- Footpath
- Terraces
- Swimming pool

**Laying Systems**

EVO_2/E™

- Sand or fine gravel (20/30 cm)
- Gravel mixed with cement Ø 3/6 mm (5/10 cm)
- Soil

**Laying in Place**

Once you have drawn up the area you need to dig out, you can mark the perimeter of the excavated area using wooden or steel marker posts connected by a string. Allow a lateral strip of land in excess of the marked edge that can be removed during the excavation.

Remove the soil inside the marked area using a shovel or excavator. The depth of excavation should be decided during the planning stage and depends on various factors that the flooring fitter should assess with due care, including:

- the load on the flooring; a larger service load corresponds to a greater thickness of the layers
- the existing conditions of the soil; the undisturbed ground has a greater bearing capacity than the backfill
- drainage capacity of the soil; a greater ability to drain water corresponds a greater bearing capacity of the ground

**NOTE:** It is recommended to consult a technician to precisely calculate the thickness of the layers according to the intended use and stressing load.

The stratigraphies, shims and the proposed measures are only indicative of the type of application. It is recommended to refer to the specific rules of each individual country or indications of the Layers’ Associations, to achieve a flooring job according to the best working standards. Mirage® also recommends carrying out a careful assessment of the sub-bed characteristics before doing any type of machining or laying.
With the use of a mixer (a cement mixer is preferable), mix gravel having a 3/6 mm diameter with 5% cement and, if necessary, a minimal amount of water. When the mixture is ready, use a trowel to spread out the layer and then level it to lay the slab. If the joints between the flooring tiles is not permeable, the flooring must have a 2% gradient.

For optimum adhesion of the slab to the layer underneath and a longer working life of the finished flooring, it is recommended to use a special glue for outdoor slabs. Spread the glue on the back of the slab using a notched spatula. Make sure there is no excess adhesive at the sides of the slabs. Lay the EVO_2/E™ element on the layer of gravel and cement mix.

It is important to paste the slab when the compound gravel mixed cement is still wet so as to exploit the capacity of the cohesive cement. NOTE: It is recommended not to use any type of vibro-compactor plate on the EVO_2/E™ slabs, as they may become damaged.
LAYING SYSTEMS

JOINTS

Joints recommended for EVO_2/E™ flooring are 4 mm; in addition to improving the aesthetics, the joint has the function of absorbing any movement of the slab, preventing breakage of the same. To create a joint of suitable width, use the spacers having a thickness of 4 mm, which are positioned respectively at the intersections between the slabs. Special spacers for the laying on gravel and sand are the Space_G type spacers supplied by Mirage®.

There are five different types of joints, depending on the flooring methods and performance needs of the fitter:

- Empty joint
- Joint with normal sand
- Joint with polymer sand
- Joint with cement sand
- Joint with grout

EVO_2/E™ Joint type

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<td>GAP FILLED WITH CEMENT SAND</td>
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<td>GAP FILLED WITH POLYMER GROUT</td>
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COMPACTION

It is necessary to compact backfill layers (such as soil, gravel or sand) in order to improve their mechanical properties; it is possible to increase the density of the material by reducing any air pockets between the aggregates and limit settling to increase its load bearing capacity.

For compaction you can use a vibratory plate compactor or a roller compactor. The thickness of material that is actually compacted depends on the weight of the equipment used. The number of repeat runs needed to achieve the optimum density depends on the vibration frequency as well as on the weight and the water content. The number of repeat runs varies from a minimum of two to three (assess on a case by case basis) depending on these parameters.

Use a rake to spread out the material for an even surface. You can use the back of the rake to level out the layer. Use the vibratory plate compactor to compact the layer according to the procedure described below:

- Start out by compacting around the perimeter, starting at the sides.
- Continue working in straight lines from the perimeter to the middle.
- Repeat once or twice using the same technique, but in the opposite direction.

NEVER COMPACT THE PORCELAIN STONEWARE PAVING; COMPACT ONLY THE INDICATED LAYERS. THE COMPACTON PLATE OR ROLLER COULD DAMAGE THE SURFACE OF THE SLAB, EVEN IF FITTED WITH THE APPROPRIATE RUBBER PROTECTORS.
LAYING SYSTEMS

JOINTS

EMPTY JOINT
The empty joint is such that it does not include any material in its interior between one slab and the other; for this reason it cannot absorb the relative movements between the slabs, and therefore risks movement in some cases. It is recommended to ensure a good outflow of water in winter because the formation of ice could damage the flooring. Weeds can grow in empty joints and insects and ants will be able to nest there. It is definitely a type of joint that is simple to implement, but it needs routine maintenance (cleaning weeds, etc.).

JOINT FILLED WITH STANDARD SAND
The joints are filled with dry sand having a 0-2 mm grain size. This joint has good mechanical properties, partially absorbing any relative movement between the EVO_2/E™ slabs. Joints with standard sand do not prevent the formation of grass or plants; moreover insects and ants can nest there and may damage the flooring. Water can filter into the layers below so ice may form in certain laying systems, which could damage the flooring. Moreover, if the flooring is in an area that is very windy, on slopes or subject to heavy rain, the joints could become empty due to erosion. Grouting with standard sand requires routine maintenance to fill the joints.

For the laying of gravel (3-6 mm) recommend the use of spacers Space_G of Mirage® (joint 4 mm), providing more support to the plate simplifying obtaining a planar surface. The transparency of the material makes it less visible and the ability to break makes it possible to easily create the spacer T for straight course laying.

Spread enough sand over the flooring surface and use a soft brush that will not damage the slabs; distribute the sand in the joints to fill them completely. Once the joints are full, leave excess sand on the surface. It is advisable to fill the joints again a few days after finishing the flooring. This is because the sand inside the joint will settle down when the finished flooring is subjected to surface loads that will make its volume diminish.
LAYING SYSTEMS

JOINTS

**JOINT WITH POLYMER SAND**

The polymeric sand is composed of a mixture of polymer binders and calibrated sand. Once the sand is wet, it hardens becoming very solid and locking the joints of the flooring, being equally efficient both on flat surfaces and on slopes (garage access ramps, etc.). These features make it ideal for applications in areas with excess water or steep slopes. The joints are filled with a sandy material that solidifies (draining or non-draining polymeric sand). These joints have excellent mechanical properties, absorbing the relative movements between the slabs because they are rigid at the top and flexible at the bottom. Weeds will not grow in joints filled with polymeric sand and insects and ants will not be able to make their nests there. The flooring is totally impermeable if the sand used does not allow draining and the joints remain intact, unaffected by erosion throughout time.

Spread enough sand over the flooring surface and use a soft brush that will not damage the slabs; distribute the sand in the joints to fill them completely. It is essential to remove any excess sand on the surface once the joints have been filled (using a leaf blower if possible). When the surface is perfectly clean, spray the sand with water to start the process of polymerisation. The spray of water must be like “rainfall” from a height of 1.5 metres, without applying too much water. Spray again in the same way 5-10 minutes later.

If there are other sand particles on the surface, use a leaf blower to remove them before the flooring dries out. In dry weather, the polymerisation process will be complete in a few hours and so the flooring becomes serviceable in about 24 hours.

**JOINTS FILLED WITH CEMENT SAND**

This requires a sandy material inside that becomes solid (cement sand). This type of joint has excellent mechanical properties. Since cement sand is harder wearing and more resistant than polymeric sand, it is also more difficult to remove. Weeds will not grow in joints filled with cement sand and insects and ants will not make their nests there and potentially damage the flooring. This flooring is totally impermeable; once the joints have been filled they are not affected by erosion and remain intact over time.

The method of installation is the same as that of polymeric sand. It is extremely important to remove any traces of cement sand after spraying with water as it would solidify on the surface of the flooring slabs.

One of the advantages of cement sand is its rapid solidification, so the flooring becomes serviceable in a few hours.

**JOINTS WITH CEMENT GROUT**

This joint has excellent mechanical properties, absorbing any relative movement between the flooring slabs and supporting the stresses induced by any differential movements. They also help to distribute the surface load, safeguarding maximum stability. Weeds will not grow in joints filled with cement grout and insects and ants will not make their nests there. The flooring is totally impermeable and the joints remain intact over time. We recommend products classified in accordance with standards EN13888 having a category not less than CG2W.

Once the glue is dry, prepare the cement grout for outdoor applications using an appropriate mixer according to the instructions and safety warnings on the product label. Check that the joints are free of glue residues and clean them if necessary, then apply the grout near the joints with a trowel. Spread the grout into the joints using a rubber spatula; make sure they are filled completely. Move the spatula diagonally across the joint to remove any excess product. Use a damp sponge to remove any residue on the surface immediately after filling the joints. The grout will be completely dry in about 24 hours; at this point, finish removing any tiling residue on the surface with a water and buffered acid solution. Finally, rinse with plenty of water.

**NOTE:** For laying with polymeric, cement or grout joints, the flooring is not draining; therefore it is vital to make sure the flooring has a minimum gradient of 1.5% to help water run off which will occur on the surface and not in depth.
CONTEMPORARY LANDSCAPE

In 2010 Mirage® made its mark as the first international company to develop a complete range of 20 mm (3/4") porcelain stoneware for outdoor flooring and furnishing.

A system that brings innovation to the Contemporary Landscape Design world. Today EVO_2/E™ is still the most advanced range on the market, thanks to the know-how acquired in years of research and the wide range of colours, sizes, special pieces and complements.

NOTES

WARNING:

• OUTDOOR PAVINGS INSTALLED UNGLUED ABOVE THE GROUND LEVEL ARE SUBJECT TO THE ACTION OF THE WIND, WITH THE RISK, IN SOME CASES, OF BECOMING AIRBORNE. THE MANUFACTURER RECOMMENDS TO REQUIRE THE ASSISTANCE OF A QUALIFIED PROFESSIONAL IN ORDER TO CHECK THE SUITABILITY OF THE INSTALLATION SYSTEM ABOVE THE GROUND ADOPTED, IN ACCORDANCE WITH THE LOCAL LAWS AND REGULATIONS AND THE CONDITIONS OF USE. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE.

• A CERAMIC SLAB INSTALLED ON A RAISED PEDESTAL SYSTEM MAY FRACTURE ON IMPACT IF A HEAVY OBJECT IS DROPPED ONTO IT FROM A HEIGHT, WITH A RISK OF INJURY TO ANYONE STANDING OR WALKING ON SUCH SLAB. FAILURE TO ADHERE TO THE MANUFACTURER’S INSTRUCTIONS FOR INSTALLATION OF SLABS ON RAISED PEDESTAL SYSTEMS MAY RESULT IN SERIOUS INJURY.

• FOR FURTHER INFORMATION AND RECOMMENDATIONS CONCERNING THE INSTALLATION SYSTEMS PLEASE REFER TO WWW.MIRAGE.IT OR TO THE EVO_2/E™ 20 MM CATALOGUE.