

TECHNICAL DATA SHEET FOR USING AREAL TERRAZZO TILING

Valid from 1 May 2014

Basic characteristics

Terrazzo tiles and other products are made of high-quality vibration-pressed concrete, which has high strength, abrasion resistance and it is also frost resistant. The concrete is made of quality natural materials such as sharply graded gravel, high-strength cements, colour-fast pigments and construction chemicals guaranteeing low porosity.

Classification of tiles

Tiles are divided according to the number of layers, dimensions, surface treatment and the type of application.

Number of layers	Name	Dimensions in mm
two layers	Mramora [®]	300 x 300 x 27
	Mramorit [®]	400 x 400 x 35
	Mramorit [®] relief	400 x 400 x 38
	Mramorit [®] XL	600 x 400 x 35
one layer	Granex [®]	400 x 400 x 20
	Granex [®] relief	400 x 400 x 22
	Granex [®] XL	600 x 400 x 27
	Granex [®] XL relief	600 x 400 x 27

Classification according to the number of layers:

Surface treatment of tiles:

Surface treatment	Final treatment	Tiles
polish grinding	smooth	Mramora [®] , Mramorit [®] polish-ground, Granex [®] polish-ground
polish grinding, bevelling, subsequent blasting and impregnation*	blasted	Mramorit [®] blasted, Mramorit [®] XL blasted, Granex [®] blasted, Granex [®] XL blasted
fine blasting and impregnation*	relief	Mramorit [®] relief, Mramorit [®] XL relief and Granex [®] relief, Granex [®] XL relief

* IMPREGNATION

The walk-on area of tiles with blasted and fine-blasted surface is always impregnated industrially. The impregnation penetrates the pores and capillaries where it creates a good protection against the ingress of liquids. Through this process the surface becomes hydrophobic (water-repellent), while the diffusion of water vapour is not limited. Natural internal moisture has a chance to escape. The prevention of moisture

entering the tiling also reduces later possibility of laitance during the drying process. The tiles treated this way are characterized by ease of maintenance and cleaning, which is appreciated especially by the user.

Application of tiles:

According to the type of application, tiles are divided into **indoor** ones and **outdoor** ones.

Polish-ground tiles, whose surface is smooth, are designed mostly for indoor applications. **Anti-slip treatment** is recommended for outdoor applications.

They are used as a final floor finish in large shops, supermarkets, administrative centres, lobbies, production facilities, storage and handling spaces, pavements and drive surfaces (driveways and parking areas), but also in houses, cellars, garages, etc.

Tiles with blasted and fine- blasted surface are designed for outdoor and indoor applications.

They can be used around family houses, in housing estates or in city centres – in gardens, on terraces, balconies, around swimming pools and on various other outdoor areas. During the reconstruction of rooftop terraces and balconies, where lower loads are required, thin and lightweight Granex® tiles, which can be laid on existing paving.

Complementary products are manufactured in various designs of tiles:

- **Terrazzo step tile** – it is a single-layer or double-layer terrazzo tile modified, for example, for lining of concrete stairs. **CAUTION** – our step tiles cannot be applied as load-bearing elements!

- **Terrazzo plinth:** with the exception of reliefs with wood structure, it is made from all the other tile designs.

Product	Dimensions (mm)
Terrazzo plinth for Mramora® tiles	300 x 70 x 10
Terrazzo plinth for Granex® and Mramorit® tiles	400 x 70 x 20
Terrazzo plinth for Granex® XL and Mramorit® XL tiles	600 x 70 x 15

- **Flowerpot:** it is manufactured in two sizes of all the tile designs of Granex®XL and Granex®XL relief, and in one size of the four Elite designs.

Product	Dimensions (L x W x H)in mm	Weight of largest piece in kg	Total weight in kg	Colour pattern
Flowerpot – size 1	400 x 395 x 600	16.3	70	colours and designs of Granex® XL tiles
Flowerpot – size 2	660 x 395 x 500	16.5	75	colours and designs of Granex® XL tiles
Flowerpot – Elite	1200 x 400 x 600	42	160	colours and designs of Elite

Technical specifications

Product name	MRAMORA®	MRAMORIT®	MRAMORIT® relief	GRANEX®	GRANEX® relief	MRAMORIT® XL	GRANEX® XL	GRANEX® XL relief
Dimensions in [mm]	300x300x27	400x400x35	400x400x38	400x400x20	400x400x22	600x400x35	600x400x27	600x400x27
Length and width tolerance according to ČSN 1339:2003	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)
Thickness tolerance according to ČSN 1339:2003	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)	±2 mm (marked R)
Weight in [kg/piece]	~ 5.4	~ 12.8	~ 13.7	~ 7.8	~ 8.2	~ 19	~ 16	~ 15.8
Bending strength according to ČSN 1339:2003 [Mpa]	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)	> 5 (marked U)
Frost resistance according to ČSN 1339:2003	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies
Abradability according to ČSN 1339:2003	complies with Class H	complies with Class H	complies with Class G	complies with Class H	complies with Class G	complies with Class H	complies with Class H	complies with Class G
Quantity on pallet in [m ²]	21.6	10.56	9.6	19.2	16.32	10.56	13.44	12.96
Weight of one pallet in [kg]	~ 1320	~ 860	~ 850	~ 960	~ 860	~ 860	~ 920	~ 880

Load-bearing capacity – Tests performed in an accredited testing laboratory have shown that the load-bearing capacity of tiles depends on the load-bearing capacity of the bedding. When installing on concrete bed, if tiles are laid properly, tiles break only while the bedding breaks.

Terrazzo tiles meet the following standards:

PN 72 3210 “**Single-layer terrazzo tiles**”

ČSN EN 1339:2003 “**Concrete tiles – Requirements and testing methods**”

TN 09-17-01a “for conformity assessment of product: Concrete, granitoid and terrazzo tiles”

ČSN 744507 “**Determination of anti-slip properties of floor surfaces**”

PN-91/B-10130 and regulation of SÚJB no. 307/2002 Coll. “**On radiation protection**” as amended by regulation no. 499/2005 Coll.

The tiles are not hazardous to human health.

Recommendations for laying tiles

It is a good practice to have your tiling laid by a specialist company with sufficient experience. A client with plenty of experience can lay their tiling as DIY.

Method of tile laying:

- on a mortar or concrete bed (interior and exterior)
- on adhesive cement on the entire surface (interior and exterior)
- on a gravel bed (exterior: terraces, pavements and various walking surfaces)
- on dilatation discs (exterior: rooftop terraces and balconies)

General recommendations:

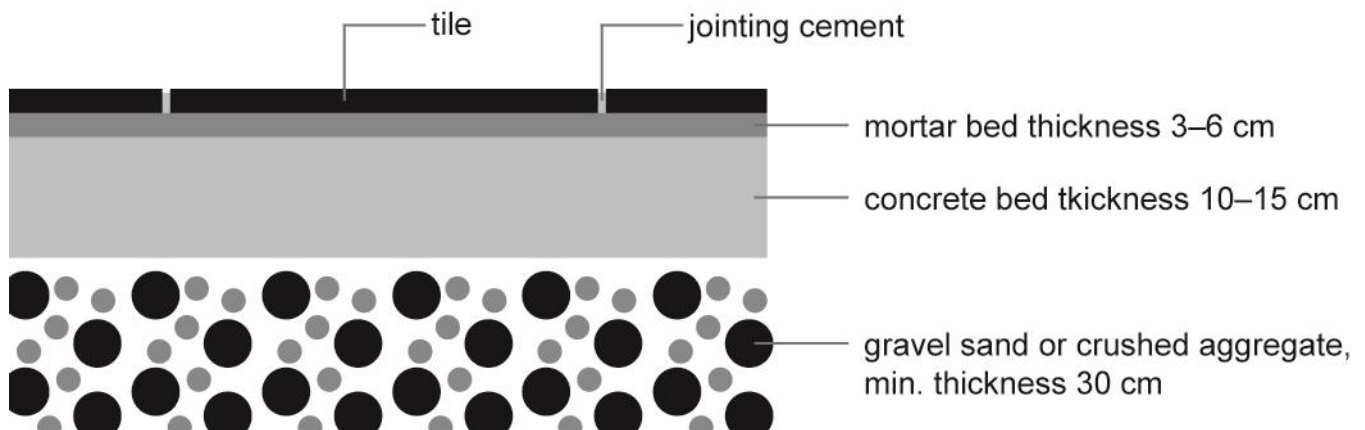
- Selecting the proper tile-laying techniques depends on the application of the tiled surfaces, on the existing or planned type of bedding as well as on the skill of the staff.
- It is not recommended to lay tiles at temperatures below 5 °C or higher than 25 °C.
- Prevent the contact of the product surface with cement or other materials that cause colouring.
- Having been laid, the tiles absorb moisture from the bedding up and wet edges may occur – they disappear when the tiles are laid correctly.

- When laying polish-ground terrazzo tiles indoors, it is recommended, for safety reasons, to treat the surface, e.g. by gluing anti-slip strips, or to apply chemical coating that increases anti-slip properties.
- **CAUTION!** The GRANEX® tiles cannot be laid on standard dilatation discs (only on special discs with greater contact surface and a centre disc).
- For all types of tile-laying, it is important to maintain **joints** measuring 3-5 mm.
- More details on the following pages of this data sheet.
- **CAUTION!** Failure to comply with recommended procedures, possible complaint may not be recognized.

Laying of all the TopTeramo tiles on a mortar or concrete bed

This is a common technique of tile-laying. It is mainly used when there is not a flat concrete base or if gradient needs to be created. The condition is to have a concrete base built already of the thickness of 10-15 cm in the required gradient of at least 2 %; it must be properly mature, coherent and free from any impurities. Prior laying, the concrete base must be moist but not wet (wetting is especially important at higher temperatures). This base is covered with a mortar layer, 3-6 cm thick, in strips of about 50-60 cm. To maintain uniform thickness, wooden squared logs can be used as a tool. After removing the wooden squared logs, the strips are filled with mortar and tile-laying can begin.

To improve the connection, it is recommended to apply mortar milk (= 1 kg of cement + 1 litre of water) on the mortar bed prior laying the tiles.

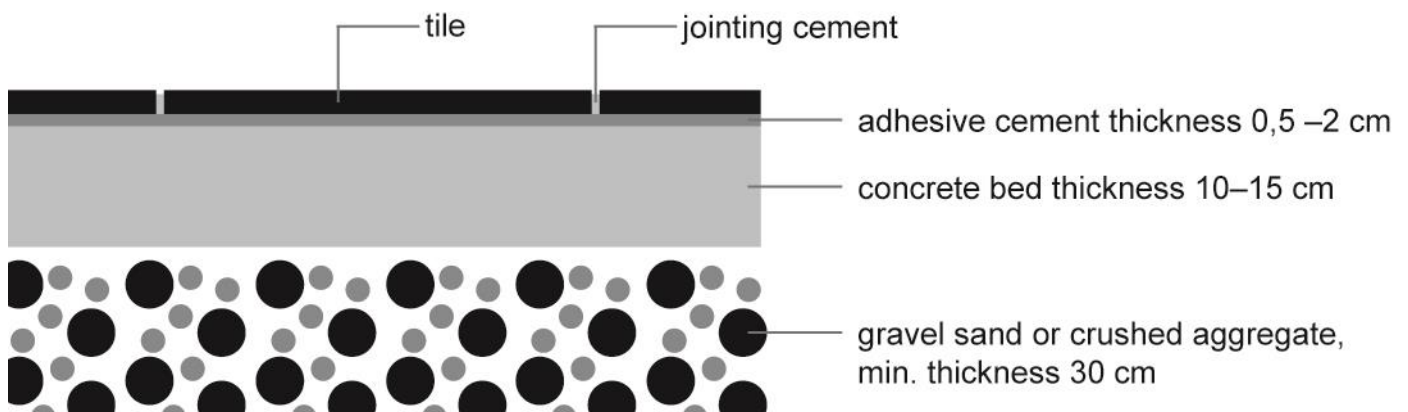


Laying all of our tiles on adhesive cement on the entire surface

The condition prior tile-laying is to have a concrete base built already of the thickness of 10-15 cm in the required gradient of at least 2 %; it must be properly mature, coherent and free from any impurities. Prior laying, the concrete base must be moist but not wet (wetting is especially important at higher temperatures). When tile-laying out of doors, it is necessary to use flexible adhesive cement.

The actual tile-laying with all-surface gluing is done as follows:

- when gluing indoors, the adhesive cement, 0.5-2 cm thick, is applied on a concrete base using a notched spatula (recommended size of the tooth is 10x10 mm) and tiles are laid afterwards – they are made flush by tapping with a rubber hammer.
- when gluing out of doors, the adhesive cement, 0.5-2 cm thick, is applied on the entire surface and tiles are laid afterwards – they are made flush by tapping with a rubber hammer.



Laying the Mramorit® and Mramorit® XL tiles on a gravel bed

Laying of areal tiling on a gravel bed or to grits is a long-time traditional technique of tile-laying. This method of tile-laying is perfectly suited for indoor terraces, pavements and various other areas used for walking.

This technique of tile-laying has several indisputable advantages that certainly include its favourable price, the possibility to replace easily a damaged piece and the absence of problems with dilatation movements. Therefore, under the condition that the tiles will be laid with joints between each other. It is not recommended to lay tiles without any joints (it is called *edge-to-edge*) because the tile edges may be chipped off. Moreover, tiling laid edge-to-edge retains moisture and this can lead to the formation of lime laitance. Therefore, maintain a uniform joint width ranging from 3-5 mm.

The foundation stone of the proper function is the proper treatment of all the base layers starting from the base course through the load-bearing layer to the tile-laying layer. Most of later problems with tiling stem from incorrect or inadequate treatment of the bedding.

The first step is to prepare the base course that must be dug away to the height needed to store all the subsequent bedding layers. To avoid problems with draining water, ensure sufficient appropriately directed gradient of the base course. As a rule, the minimum value of the gradient should be at least 2 %. Compaction of the base course using a vibrating plate is crucial. The strength of the base course should be at least 45 MPa. Recommendation: The stability of a tiled surface against side shifts is ensured by delimiting the tiled surface with kerbs.

When the base course is prepared, the load-bearing layer can be applied. The thickness of the load-bearing layer should be within the range of 30 to 40 cm. The application and compaction should be done in layers with a maximum thickness of 20 cm. The strength of the load-bearing layer should be 60 MPa. It is recommended to use high-quality crushed aggregate, the fraction of 8-16 mm or 16-32 mm with the minimal amount of fine particles, so that nothing can prevent water drainage.

After laying the load-bearing layer, the tile-laying layer can be created. Its thickness should be 2 cm. It is recommended to use crushed aggregate, the fraction of 2-5 mm. Do not use aggregate with high content of dust particles or siftings. The tile-laying layer is not compacted but it needs to be levelled well.

The actual tiling is laid on the levelled tile-laying layer. Always proceed against the gradient of the tiled surface. Lay the subsequent rows from the already tiled surfaces.

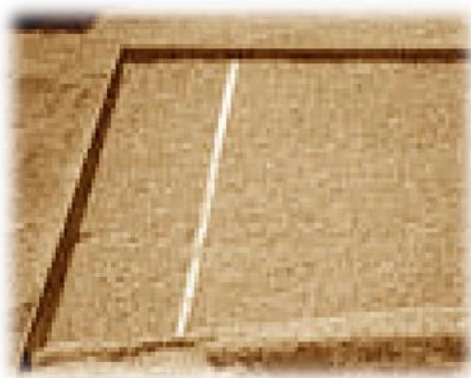
Potential minor colour differences between various production lots can be prevented by taking the tiles alternately from multiple pallets.

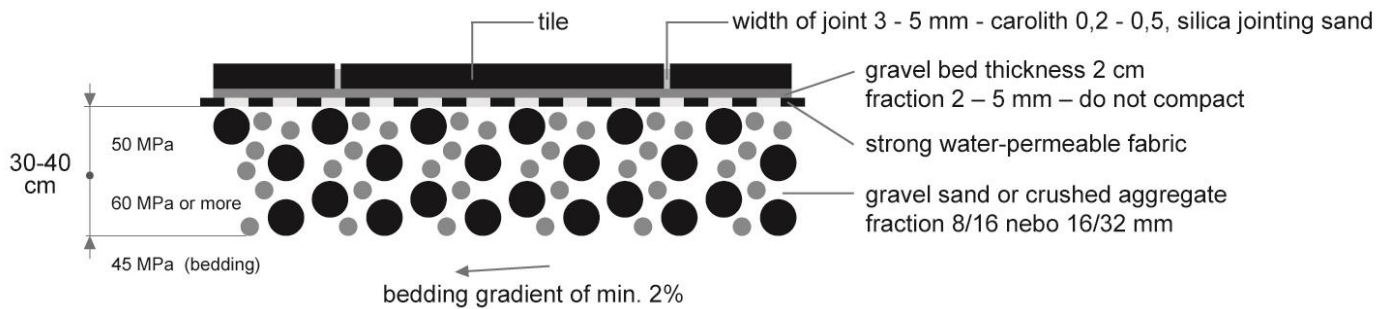
To obtain a better fit and to achieve the final position, tap the tiles with a rubber hammer. It must be emphasized again that the tiles need to be always laid with uniform joint width of 3-5 mm.

Align non-standard sizes by cutting the required number of tiles.

After laying the tiles, fill the joints by sweeping in marble rubble CAROLITH, the fraction of 0.2 to 0.5 millimetres or silica sand.

Never compact the tiling using a standard metal vibrating plate.

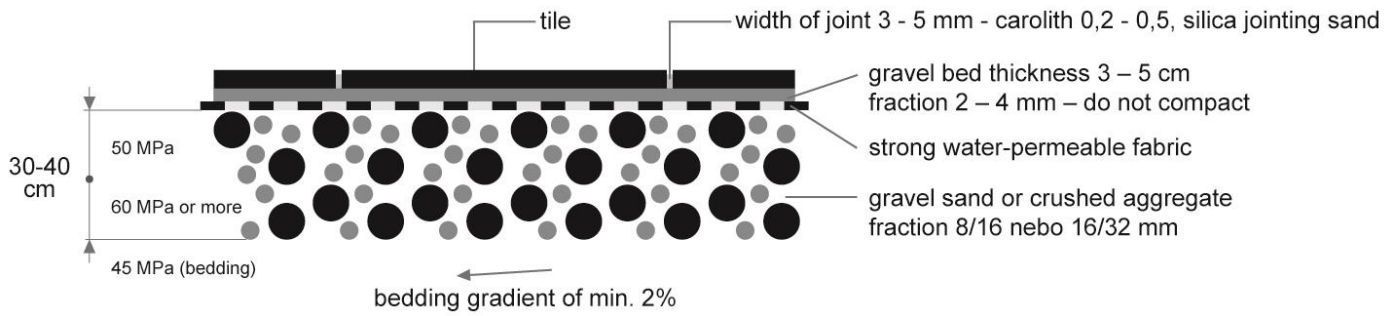




Laying the Granex[®] and Granex[®] XL tiles on a gravel bed

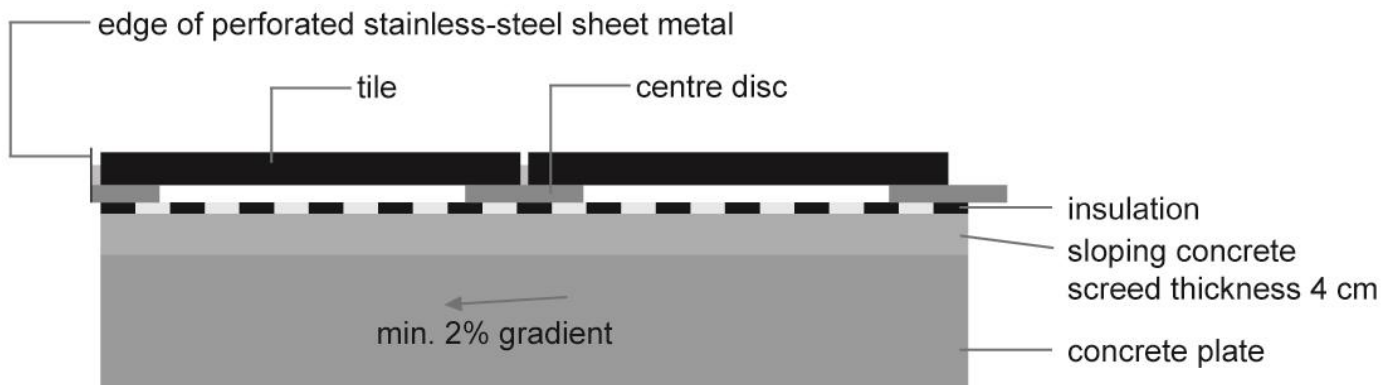
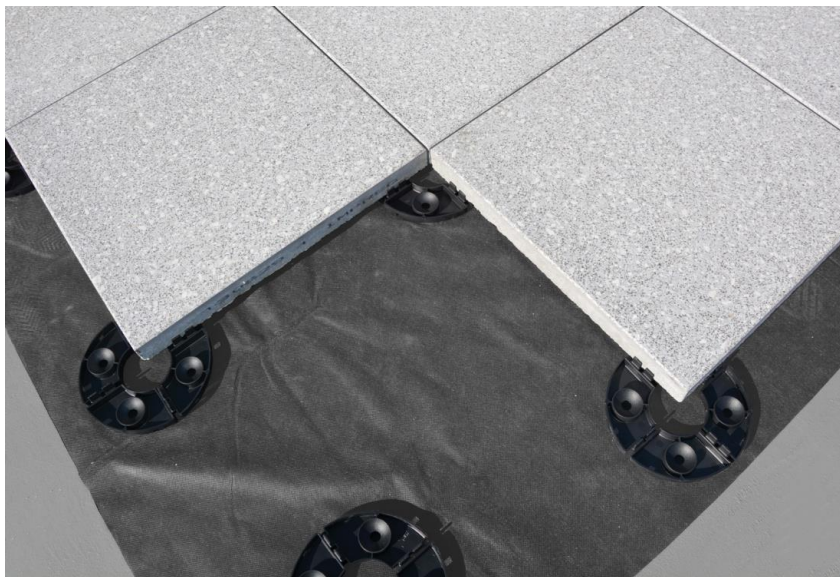
The procedure for laying lightweight single-layer tiling Granex[®] and Granex[®] XL on a gravel bed differs from laying the Mramorit[®] and Mramorit[®] XL tiles in that the tile-laying layer thickness should be **3-5 cm** and the used crushed aggregate for this layer should have a fraction of 2-4 mm. Other tile-laying requirements are the same.





Laying the Mramorit® and Mramorit® XL tiles on dilatation discs

This tile-laying method is used on precise base concrete surface with a minimum gradient of 2 %. Tiles are placed directly on plastic dilatation discs. Any unevenness can be compensated by using shims. The advantage of this method is an easy access to the isolation for repairs. When laying tiles directly on waterproofing, to prevent ripping it, it is recommended to use a protective foil. Drainage of water through the foundation or sideways must also be ensured because the tiles could be damaged by permanent moisture (reaction of the cement, etc.). It is recommended to secure the edges of the laid tiling against lateral shifts by attaching profiles of perforated stainless-steel sheet metal.



Laying the Granex[®] and Granex[®] XL tiles on dilatation discs

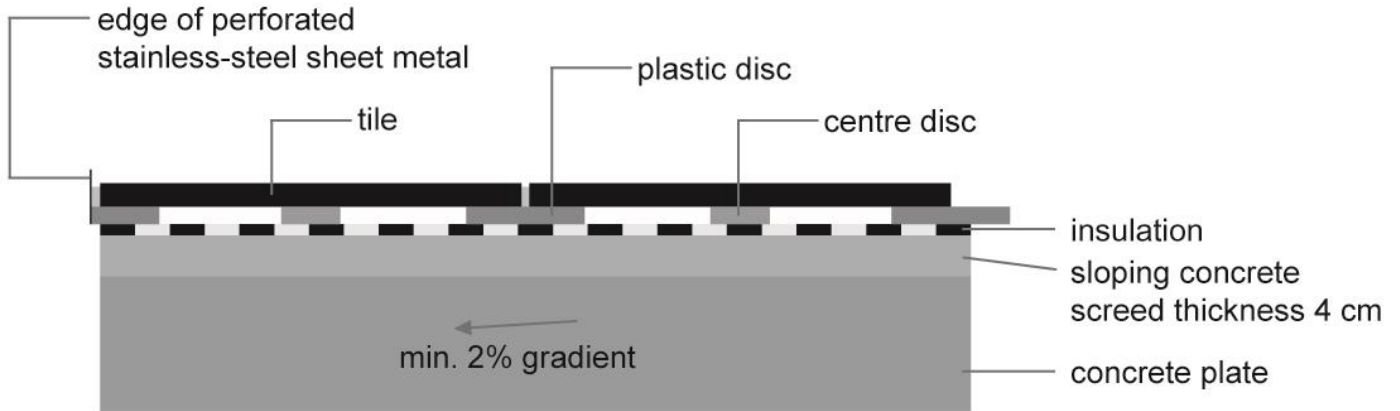
This method is suited for laying the Granex[®] and Granex[®] XL tiles in which there is a risk of damaging the tiles under load. This tile-laying method is used on precise base concrete surface with a minimum gradient of 2 %.

Tiles are placed directly on special plastic dilatation discs. These discs allow to compensate for any unevenness using four threaded screws in the corners. Furthermore, these discs, as compared to standard discs, support the tiles in the corners through a greater surface area, which helps to reduce the risk of damaging the tiles under load. However, a tile could be damaged (broken) under a higher point load at the centre of the tile. To eliminate the risk of damaging the tiles, it is necessary to use another disc, which is placed in the centre of each tile. This disc is different from the discs located in the tile corners; its height is corrected by the tile weight (it acts as a spring), which is needed for proper fitting a tile so that it is supported at 5 points. Adjusting the height of this disc is performed using cement (e.g. MAMUT GLUE) whose surplus is squeezed out after the tile placement. When the cement hardens, the tile will be supported ideally, which minimizes the risk of damaging the tile under load.

Instead of cement, it is possible to apply appropriate glue (flexible glue for tiling and paving) to the centre of the disc. Using this glue, it is also possible to fix a tile to the discs in the corners (not necessary) but in the event disassembly of the tiles the discs may be damaged.

The advantage of this laying method is an easy access to the isolation for repairs. When laying tiles directly on waterproofing, to prevent ripping it, it is recommended to use a protective foil. Drainage of water through the foundation or sideways must also be ensured because the tiles could be damaged by permanent moisture (reaction of the cement, etc.). It is recommended to secure the edges of the laid tiling against lateral shifts by attaching profiles of perforated stainless-steel sheet metal.



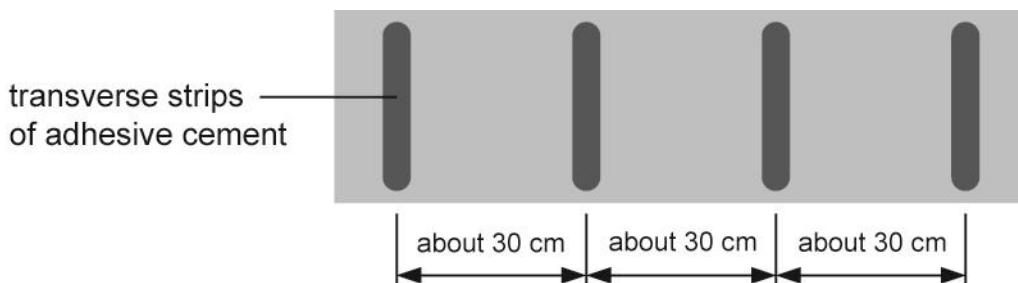


Laying of Elite staircase components

When laying Elite staircase components on a concrete staircase core, there is a risk of internal tension, as is in similar products, and it is necessary to comply with certain principles in the actual application.

The internal tension occurs due to heterogeneous stratification of temperature in the plate itself as well as in the bedding to which the plate is bonded. Improper application may lead to the formation of microscopical transverse cracks on the plate surface.

For this reason, the manufacturer does not recommend to apply adhesive cement on the entire surface of the plate but to bond the staircase plates to the bedding in strips – see the figures. Laying on “strips” means that a staircase plate is placed on multiple adhesive bedding that is shaped as transverse strips.



Flowerpot assembly

The pots are made, based on an order, from the Granex® XL tiling. The bottom plate has a hole for draining excess water. After the assembly, it is necessary to seal the inner walls of the flowerpot using frost-resistant and water-resistant silicone sealant to prevent water flowing through and dirtying the pot and tiling. Similarly, it is recommended to place under the flowerpot an appropriate dish (tray) to capture the water from the bottom hole.

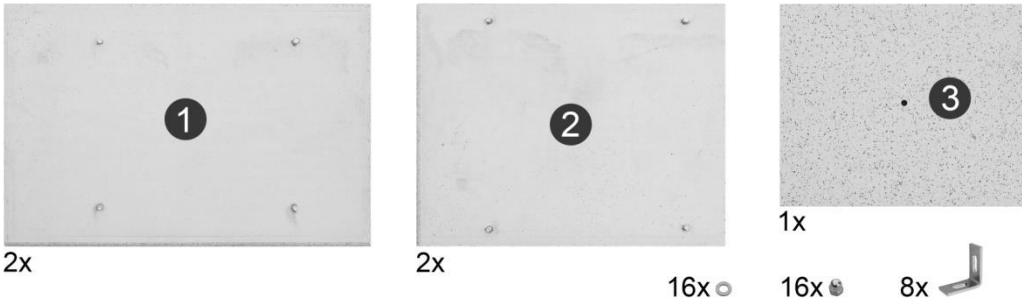
Flowerpots of size 1 and 2 are available, in addition to EURO pallets, on single-use pallets.

Flowerpot – size 1





At least two people are required to assemble the pot. Prior the actual assembly, spread all the parts and check whether the package is complete and whether the individual components are not damaged. The following are needed for the assembly: a 13-mm wrench and frost-resistant and water-resistant silicone sealant (not supplied).

Package contents:

1. Supporting **outer side wall (part 1)** with four screws on the inside and with three rounded edges – 2 pieces
2. **Inner side wall (part 2)** with four screws on the inside and with one rounded edge
3. **Bottom** with a hole (**part 3**) – 1 piece
4. **Connecting profile** – 8 pieces
5. **Nuts** – 16 pieces
6. **Washers** – 16 pieces



Actual assembly procedure:

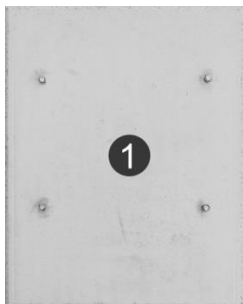
1	2	3	4
			
<p>Place part 1 (outer side wall) on a flat surface, the screws up.</p> <p>Take the 4 pieces of the corner connecting profiles one after one and attach them, using the nuts and washers, to the laid part 1 (tighten slightly).</p> <p>Take part 2 (inner side wall), lay it so that its rounded edge faces the rounded upper edge of part 1 and the protruding screws fit into two adjacent profiles. Fasten to part 1 with nuts and washers and tighten slightly. Pay attention that the upper rounded edges are flush.</p>	<p>Attach the other piece of part 2 to part 1 using the same procedure</p> <p>Attach the remaining 4 connecting profiles to the two connected parts 2.</p>	<p>Take part 3 (bottom) and slide it between the 3 already assembled walls and fit them slightly to the bottom connecting profiles, on which the bottom will rest after completing. These are the profiles closer to the straight edge of part 1. Place the bottom so that its impregnated side is inside the flowerpot.</p>	<p>Take the other piece of part 1 and place it with the screws into the free positions of the profiles attached to parts 2; fit the remaining washers and screw in the nuts.</p> <p>Tighten all the screws (tighten with care); after that, the flowerpot can be put to its final position.</p> <p>Check the alignment of the components and placement of the bottom, or loosen the nuts, align the components as necessary and re-tighten the nuts carefully.</p> <p>When the assembly is complete, seal the inner joints of the flowerpot with frost-resistant and water-resistant silicone sealant (not supplied).</p>

Flowerpot – size 2

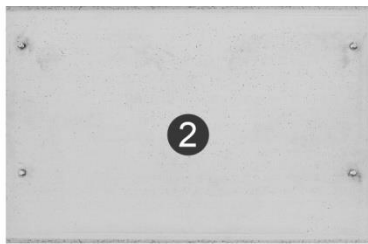
The assembly itself is not complicated. At least two people are required to assemble the pot. Prior the actual assembly, spread all the parts and check whether the package is complete and whether the individual components are not damaged. The following are needed for the assembly: a 13-mm wrench and frost-resistant and water-resistant silicone sealant (not supplied).

Package contents:

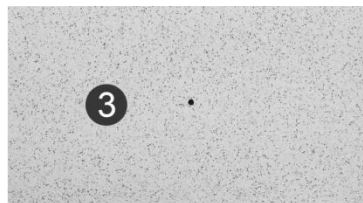
1. Supporting **outer side wall (part 1)** with four screws on the inside and with three rounded edges – 2 pieces
2. **Inner side wall (part 2)** with four screws on the inside and with one rounded edge – 2 pieces
3. **Bottom** with a hole (**part 3**) – 1 piece
4. **Connecting profile** – 8 pieces
5. **Nuts** – 16 pieces
6. **Washers** – 16 pieces



2x



2x







1x

16x 

16x 

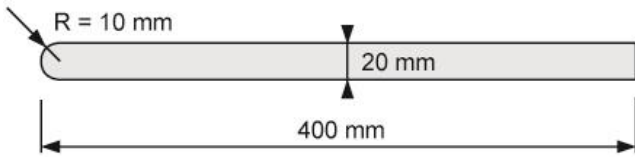
8x 

Actual assembly procedure:

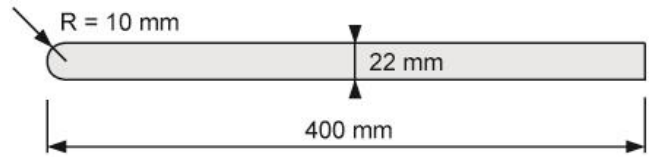
1	2	3	4
			
<p>Place part 1 (outer side wall) on a flat surface, the screws up.</p> <p>Take the 4 pieces of the corner connecting profiles one after one and attach them, using the nuts and washers, to the laid part 1 (tighten slightly).</p> <p>Take part 2 (inner side wall), lay it so that its rounded edge faces the rounded upper edge of part 1 and the protruding screws fit into two adjacent profiles. Fasten to part 1 with nuts and washers and tighten slightly. Pay attention that the upper rounded edges are flush.</p>	<p>Attach the other piece 2 of part 1 to part 1 using the same procedure</p> <p>Attach the remaining 4 connecting profiles to the two connected parts 2.</p>	<p>Take part 3 (bottom) and slide it between the 3 already assembled walls and fit them slightly to the bottom connecting profiles, on which the bottom will rest after completing. These are the profiles closer to the straight edge of part 1. Place the bottom so that its impregnated side is inside the flowerpot.</p>	<p>Take the other piece of part 1 and place it with the screws into the free positions of the profiles attached to parts 2; fit the remaining washers and screw in the nuts.</p> <p>Tighten all the screws (tighten with care); after that, the flowerpot can be put to its final position.</p> <p>Check the alignment of the components and placement of the bottom, or loosen the nuts, align the components as necessary and re-tighten the nuts carefully.</p> <p>When the assembly is complete, seal the inner joints of the flowerpot with frost-resistant and water-resistant silicone sealant (not supplied).</p>

Complementary products

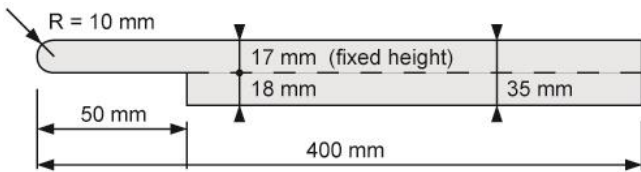
**Diagram of staircase plate Granex®
400 x 400 x 20 mm**



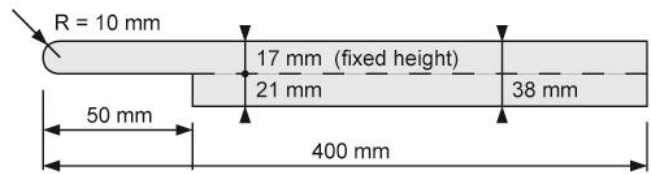
**Diagram of staircase plate Granex® relief
400 x 400 x 22 mm**



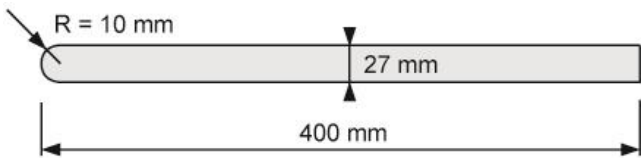
**Diagram of staircase plate Mramorit®
400 x 400 x 35 and Mramorit® XL
400 x 600 x 35 mm**



**Diagram of staircase plate Mramorit® relief
400 x 400 x 38 mm**



**Diagram of staircase plate Granex® XL
400 x 600 x 27 mm**



**Diagram of staircase plate Mramora®
300 x 300 x 27 mm**

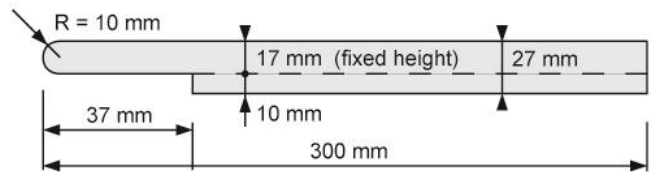


Diagram of tile-laying

**Diagram of laying staircase plates Mramorit®
and Mramora®**

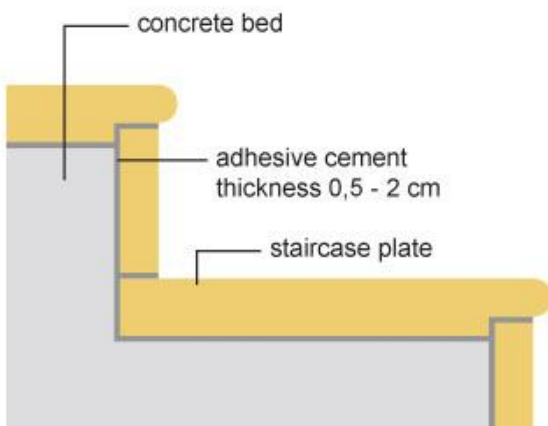
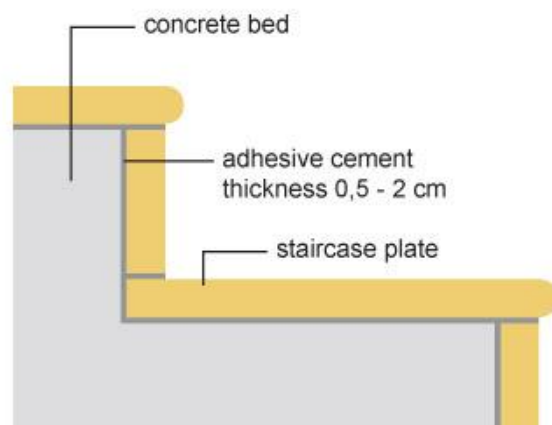


Diagram of laying staircase plates Granex®



Dilatation joints:

- when tiling larger areas, it is necessary to perform dilatation in squares of about 6x6 m with suitable dilatation strips.
- if there is already a dilatation joint in the base concrete, it must be kept when laying tiles.
- it is sometimes necessary to create a dilatation joint according to the geometric contour of a building (e.g. one ending in the corner of the building). The wall of the house and its foundation will always move, as compared to the terrace foundation, in a different way. Therefore, the end joint must be filled with elastic material.

Jointing

The recommended size of the joints between tiles is 3-5 mm (depending on tile dimensions). If tiles are placed too close to each other, without any joints, damage to the tiles may result. At the same time, this method of tile-laying prevents drying out and it increases the likelihood of cement reactions or changes to tile colouring. **Caution!** Never lay tiles edge to edge!

Jointing according to laying method

Laying method	Jointing material	
	Exterior	Interior
on a gravel bed	<ul style="list-style-type: none"> • aggregate 0.2–0.5 mm (Carolith is recommended) • fine, pure silica sand 	
on a mortar or concrete bed on adhesive cement	<ul style="list-style-type: none"> • flexible jointing cement • jointing cement + elasticizer • cement mortar • cement-sand mixture 	<ul style="list-style-type: none"> • jointing cement • cement mortar • cement-sand mixture
on dilatation discs	<ul style="list-style-type: none"> • joints are not filled 	

Recommendation:

- in the exterior, it is necessary to add elasticizer into the jointing cement (e.g. made by Knauf) or use flexible jointing cement. The jointing material is removed from the joints, e.g. with sawdust.
- when laying blasted impregnated tiling on mortar bed on concrete bed or on adhesive cement, it is recommended to do jointing with a cartridge gun with jointing cement (use flexible jointing cement outdoors). To save jointing cement, the joints may be filled to their halves with rope.
- it is not recommended to joint large surfaces at once at higher temperatures (25 °C) and in direct sunlight because the jointing material would dry rapidly and tiles contaminated by this material are difficult to clean.
- jointing can be done using, for instance, jointing cement made by Knauf or other companies.
- it is recommended to leave a dilatation joint of 1.0 cm from a building wall; the dilatation joint should never be filled with clay or otherwise contaminated.

Cleaning, protection, maintenance

The surface of terrazzo tiles contains a number of small pores and capillaries. They are located both in the individual grains of aggregate as well as in the cement stone where they were created through physical-chemical process during cement hydration. It is these pores and capillaries that are involved in the ingress of moisture and dirt to the tiling surface. For later ease of maintenance and cleaning of terrazzo floors, it is important to prevent the ingress of water and thus the transport of dirt into the surface layer of tiling.

The treatment prevents water and water-vapour penetration into the porous structure of tiling and, to some extent, also prevents the formation of lime laitance.

If the offered tiles are without final treatment, it is recommended to perform it after laying. The surface treatment of tiling is performed after hardening of the joints between tiles (approximately 14 days, preferably 28 days). After tile-laying and hardening of the joints, terrazzo tiling should be washed and cleaned well of any residual jointing material and cement scum. A good mechanical cleaning also removes any lime laitance. After such cleaning, the tiling surface should be treated – a list of a range of protective agents on offer can be found below – see waterproofing and protective agents. Contact your supplier for advice. The treatment process is always given in the “Instructions for Use” for a specific protective agent. TopTeramo s.r.o. cannot be held liable for any damages resulting from improper use of these agents.

Polish-ground tiles – after drying of the jointing cement or after laying the tiles on discs, it is recommended to wash the tiles several times with clean water. It is recommended to treat the cleaned surface with a suitable preservative agent that fills any microscopical pores and closes the tile surface. This will make floor maintenance easier and extend its life.

Blasted and fine-blasted tiles are impregnated industrially – The impregnation itself already protects the tiles partially against dirt. Dirt is removed from the surface with a hard brush or a strong stream of water. It is recommended to renew the impregnation once every 2-5 years. The interval depends on the amount of traffic on the tiles and the surrounding environment.

It is NOT recommended:

- to use for cleaning any alkaline cleaners or compositions with a high acid content (max. content of acid in a solution is 6 %) and chlorine (e.g. Savo) – such agents damage the surface of terrazzo tiles.
- to use lift trucks with metal wheels to traverse on the tiles
- to lay tiles in spaces where there is increased chemical stress, i.e. spaces where acids and salts of acids and bases are handled regularly. Acid reacts with the used aggregate and damages the tile surface.
- to use blasted tiles without any impregnation
- when working with penetration, it is necessary to avoid its contact with the visible side of tiles on which it could cause grey spots, which can be very difficult to remove.
- laying terrazzo tiles without joints “edge-to-edge” – this causes the edges to get chipped in the laid surface and the tiling may loosen (unstuck or crack) due to variations in temperature.

Cleaning agents

For regular cleaning, use common cleaning agents on a neutral basis. Cleaning agent should be based on natural soaps with lower pH or an agent with protective components based polymer layers. Agents based on

natural soaps have very good washing ability; they leave a protective layer with a velvety sheen. Natural fats deposit in tile pores, which facilitates cleaning later.

If tile surface cannot be cleaned using common agents, it is possible to use special cleaners intended for this purpose (e.g. product called *Regener*). These agents are mainly acidic, therefore it is recommended to dilute a small amount first to a lower concentration and to test to what extent the laitance (pollution) could be eliminated. Potentially, a more concentrated solution or undiluted agent can be used it at all. Acids in these agents do not affect concrete structure positively; therefore, it is necessary to let the surface to be cleaned saturate with water well prior application to prevent the agent soak into the structure of the tiles. Cleaning agents should not act on tile surface for too long, otherwise the surface can be damaged irreversibly (especially that of smooth polish-ground tiles). It is better to clean more times at shorter intervals. During the action of a cleaning agent, it is good to help it with a normal brush and to wash the surface thoroughly with water after cleaning (to neutralize it).

Regener – cleaning agent for cleaning terraces and pavements for polish-ground and blasted terrazzo tiles. Especially during its application, it is necessary to comply with the principles set out in the previous paragraph to avoid irreversible damage to the tile surface.

It removes cement coatings, laitance and similar contamination arising both during tile-laying as well as contamination causes by subsequent use (regardless of the contamination type and exposure time). *Regener* removes moss and it is suitable to use it to clean tiling prior restoring impregnation.

Supplier: TopTeramo s.r.o.

Metaflux 75-14 – it is an oil-stain remover. A special agent for removing oil and grease stains from concrete and stone floors, bricks and tiling.

Supplier: Bohemiaflux s.r.o.

Betoncleaner – it is a chloride-free agent for cleaning the surfaces of concrete products, structures and architectural concrete from laitance, lime, dust and for cleaning plastic moulds, etc.

Supplier: Stachema Kolín, s.r.o.

Hydrochloric acid up to 6 % – it is used mainly for removing lime laitance. Prior use, moisten the tiling intensely. To clean exterior tiling, it is ideal to do the cleaning after rain. The moistening of the tiling prevents the acid soaking into the tiles and thus damaging the surface. After cleaning, the tiles need to be washed with clean water. However, acid removes impregnation layer from the tile surface that must be applied again after the cleaning is complete.

Acetic acid up to 4 % – it is used mainly for removing lime laitance. Prior use, moisten the tiling intensely. To clean exterior tiling, it is ideal to do cleaning after rain. The moistening of the tiling prevents the acid soaking into the tiles and thus damaging the surface. After cleaning, the tiles need to be washed with clean water. However, acid removes impregnation layer from the tile surface that must be applied again after the cleaning is complete.

Impregnation for tiles with blasted surface

Impregnit – impregnation coating for terrazzo tiles with blasted surface.

Supplier: TopTeramo s.r.o.

REBA_{tex} BI – impregnation REBA_{tex} BI is watery, insoluble, colourless impregnation; it is solvent-free. It is used for the impregnation of concrete slabs, terrazzo, exposed aggregate concrete, paving, etc. It prevents the penetration of liquids into the tile surface. Its use achieves the protection of the bedding against common and aggressive contaminants (e.g. oil stains, contamination with food). Impregnated surfaces are weather-resistant; they repel dirt, oil and water. Surface structure remains the same; there is no colouring change and glittering effect. The impregnation is breathable; it is characterized by a high depth of penetration into the product and good resistance to alkalis.

Supplier: REMEI CZ s.r.o.

Impregnation and protection for tiles with polish-ground surface

Flor Acryl Super – universal preservative and protective agent. It creates a durable and long-lasting protective film on smooth surfaces; the film protects against mechanical and chemical damage to the surface. It reduces the risk of slipping, it is colourless, self-polishing and it repels dirt.

Supplier: Minec a.s.

IMESTA® IBS 29 – oil-phobic silicone emulsion based on silanes, siloxanes and silicone resins. It protects against grease and dirt, it is water soluble, white to yellowish colour. Unlike commonly used silicones, it acts not only in a hydrophobic way but it also has a significant oil-phobic effect that facilitates the cleaning of impregnated surfaces from oil, paints, adhesives and graffiti.

Supplier: IMESTA, spol. s r.o.

AKEMI Nr. 10- 2012 – an agent for terrazzo tiles that reduces the risk of slipping and it creates a protective film on smooth surfaces that enhances shine, it highlights colour, it is self-polishing and it repels dirt.

Supplier: Lenka Havlíková, chemie pro kámen AKEMI

LAPIDOLITH – floatation agent suitable for large terrazzo surfaces (shopping centres, halls, etc.). It is a colourless solution of chemically active metallic fluoro-silicates. It should be used for surface hardening of new and old terrazzo and concrete floors. It penetrates the structure of the cement matrix and causes hardening to the depth. It increases the resistance to most acids and alkalis, organic and inorganic chemicals, oils and lubricants, it penetrates cement substrates, it increases wear resistance of floors.

CAUTION: It is recommended that the application of this agent should be **carried out by a specialist company** that has the necessary expertise and experience.

Supplier: DANĚK Kámen-Keramika s.r.o.

The reaction of cement – laitance

Laitance – laitance may be one of the manifestations of increased or excessive moisture in tiling; it appears as a whitish coating on the tiling surface. It is the result of water-soluble salts and lime hydrate from cement carried to the surface. Moisture evaporates on the surface thereby creating a lime coating – the laitance. In some products with cement binder, laitance can occur even in the dry state as calcium-carbonate reactions.

Laitance is an aesthetic defect that occurs naturally by maturing of tiles and it has no effect on the quality and technical properties of the tiles.

Laitance will disappear during normal use after rain and snow. In the event that laitance persists, it is recommended to treat the tiles carefully with an agent for cement stains, e.g. Remover of Cement Stain Residues 06.81 made by Den Braven.

Any complaints concerning lime laitance will be assessed according to the scope and severity of the defect.

Differences in colouring

Our products are made of fine natural aggregate, bound with cement binder. Despite careful compliance with the recipes and checks of the ingredients, there may be some variations in colouring. The aggregate used is a natural material and, as such, it is variable in time. There is no natural stone that is found in large quantities of the same colouring. Absolutely uniform appearance in both colouring and structure cannot be achieved despite our utmost efforts.

For this reason, there may be slight colour variations between production lots. Slight differences in surface colouring must be considered as natural. They are of no significance for the use and they are not grounds for any complaints.

Variations in colouring are unavoidable in natural materials, so we are forced to reject any complaints concerning variations in colouring. Differences in colouring will disappear due to weather

RECOMMENDATION: to equalize colouring, it is recommended lay tiles from one supply and to lay tiles mixed from various pallets. This avoids any possible contrast of transitional small differences in colouring on a tiled surface.

CAUTION: Our displayed samples and booklets only serve for closer designation and do not constitute an assurance of certain properties.

Occupational safety

Concentrated aqueous extract of terrazzo tiles is of a strongly basic character; its pH reaches normally the values of about 12.5. Sensitive persons may suffer from skin irritation. Therefore, it is necessary to wear personal protective equipment (rubber apron, gloves).

Product liability

Recommendation:

- prior laying the products, check the requested type, quantity and quality of your goods. Subsequent claims may not be recognized.
- **if the products show any claimable visible defects, a complaint must be filed prior processing the products, i.e. prior tile-laying.** Complaints concerning such defects after tile-laying will not be recognized.

- shifting of stacked tiles on one another causes damage to the tile surface and impregnation. Therefore, we are forced to reject any claims and damages caused by this type of handling.
- complaints will also be rejected in cases where tile surface has been subsequently damaged by the action of improper chemical products, petroleum products, and the like.
- **products in long-term storage must be protected from rain and dirt.**
- **always store tiles standing on their edges height.**
- opened palettes should be covered again and protected from rain and moisture. Open the foil just prior starting tile-laying. Dark tile edges are caused by moisture and they will disappear when tiles are laid properly.

Filing a complaint:

- always file a complaint in writing (filing a complaint by telephone or orally is not sufficient)
- when filing a complaint, a dispatch label must be submitted; the label is located on each dispatched pallet. It is also necessary to communicate the delivery date of the claimed tiles
- contact the person who sold the tiles to you
- take photographs of the reclaimed tiles
- we will try to deal with your complaint without any delay.

All the goods will not be laid in accordance with the instructions and recommendations in this technical data sheet may suffer damage that is not covered by our warranty. **Caution! Defects caused by improper tile-laying will not be recognized.**

Be sure to follow the information and instructions in this technical data sheet that is available on request from your local retailer or online at: www.topteramo.cz