

FRONTIER20 WARNINGS AND RECOMMENDATIONS

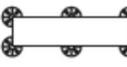
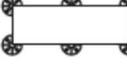
RAISED FLOORS INSTALLATION SYSTEM WARNINGS.

Landmark products are made using the best technology available, and their technical performances match or exceed requirements from both ASTM and ISO standards for porcelain products.

Nevertheless, if the application of the 20 mm slabs requires the ceramic product used in structural installations, the project engineer and/or customer must carefully assess the project requirements with regard to the technical specifications of the slabs.

To prevent the risk of damage or injury, the manufacturer recommends:

- With regard to a raised floor installation a ceramic slab may fracture on impact if a heavy object falls on it from any significant height. Therefore the manufacturer recommends to check the specific intended use before starting the installation and to follow table for raised installation provided below. In certain conditions, reinforcing must be applied on the back of the slabs (double fiberglass mesh) supplied and applied by the manufacturer.

SUPPORTS REQUIREMENTS			
	SIZE	UP TO ¾" (20 MM)	ABOVE ¾" (20 MM)
	12"x12" (300x300 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	24"x12" (600x300 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	24"x24" (600x600 mm)	4 supports 0,32 pcs/sq ft	Please contact Landmark Ceramics
	18"x36" (450x900 mm)	6 supports 0,56 pcs/sq ft	Please contact Landmark Ceramics
	12"x48" (300x1200 mm)	6 supports 0,65 pcs/sq ft	Please contact Landmark Ceramics
	16"x48" (400x1200 mm)	6 supports 0,65 pcs/sq ft	Please contact Landmark Ceramics

- With reference to any dry installation system of flooring above the ground level, the manufacturer recommends to comply with local regulations and conditions of use with regard to wind-load, loadbearing, seismic events, etc.

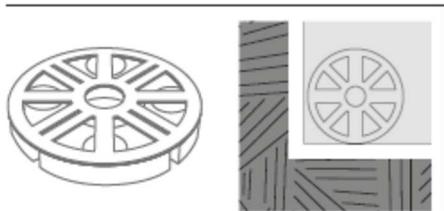


- Outdoor pavings installed unglued above the ground level are subject to the action of the wind, with the risk, in some cases, of becoming airborne. The manufacturer recommends to require the assistance of a qualified professional in order to check the suitability of the installation system above the ground adopted, in accordance with the local laws and regulations and the conditions of use.
- It is recommended to carry out raised installation onto a solid, resistant substrate with the correct inclination to guarantee water drainage. Support come equipped with four spacers that allow for the creation of grout lines between pavers. For a correct installation against walls or corners, it is necessary to keep the supports distant from the wall and remove 2 or 4 spacers as showed in the picture below. Landmark Ceramics recommends to strictly follow the instructions for the raised installation of Frontier20.

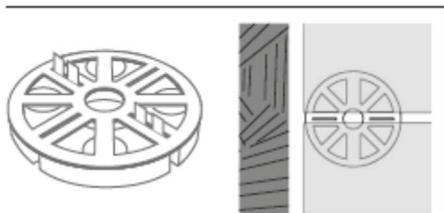
Failure to comply with these recommendations may lead to improper use of the product and could cause serious property damage or injury.

For further information and recommendations concerning the installation systems please refer to our website at <https://hardscape.landmarkceramics.com>.

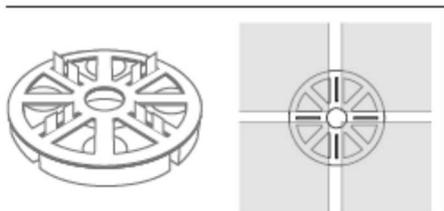
Wall corner



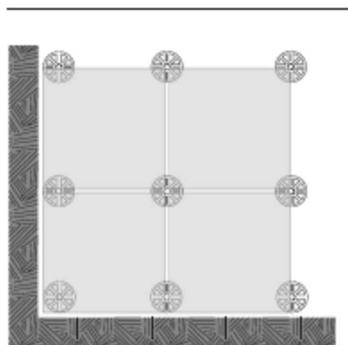
Wall border



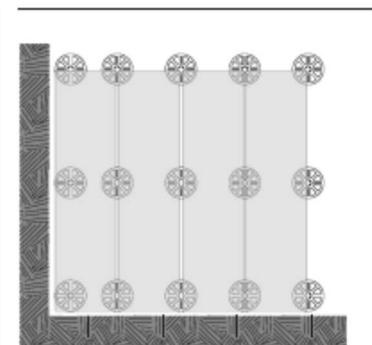
Floor center



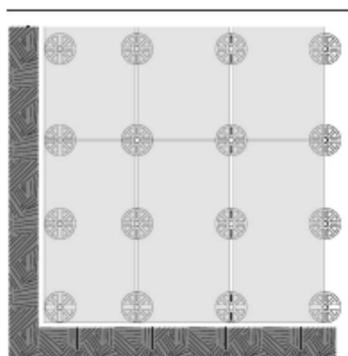
24"x24" - 12"x24" - 12"x12"



12"x48"



18"x36"



NOTE

For any detail and technical specification concerning the double fiberglass mesh, please contact Landmark Ceramics. Landmark is responsible only if it supplies the whole system (tile + double fiber mesh). Landmark cannot be held responsible for reinforcing systems that has not supplied. **In case of breakage, tile must be replaced immediately.**



Backing with Double Fiberglass Mesh

INSTALLATION INFORMATION AND RECOMMENDATIONS.

Specific details and instructions are given for each of the following installation options. Different climates and geographical locations will affect the thickness of the base. Depending on the location, contractors will install the standard base thickness to install porcelain pavers for the needs of the area.

When installing porcelain pavers, the bedding course sand must be pre-compacted and then struck off with a screed to the required thickness as shown in the drawings. Before the laying of the porcelain pavers, the sand layer underneath must be pre-compacted. The sand layer needs a 5 to 6% moisture content to insure a smooth strike off finish.

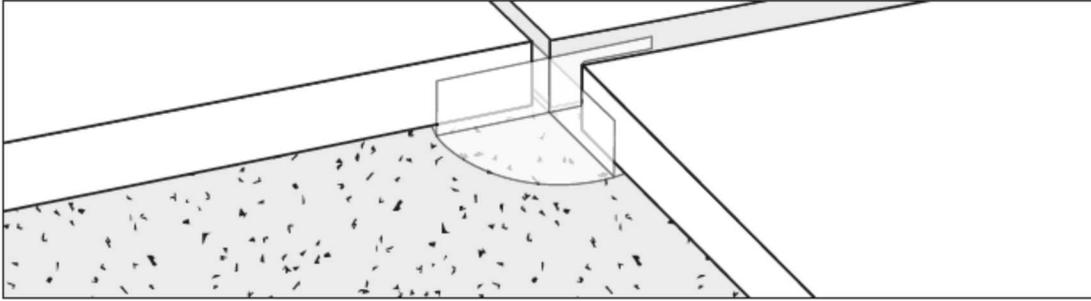
Compacting dry sand will not give the desired results.

- Only use a paver saw with a wet cut porcelain blade to wet cut porcelain pavers.
- Before installing your porcelain pavers in sand set installations, pre-compact and strike off your sand leveling course.
- Plastic 3/16" (4mm) spacers must always be used to install pavers on sand set and permeable installations.

The photo below illustrates the use of the 3/16" spacer to support and space the 4 paver corners.

- Never install pavers with porcelain to porcelain contact.
- The use of plate compactors is not recommended to be used on the porcelain pavers.





JOINT FILLING.

When installing porcelain paver on sand set base, fill the 4 mm (approx.. 3/16") paver joints with these options:

Traditional sand

Fill the open joints with traditional dry sand until completely filled. Sweep any excess sand off the pavers. Refilling of the joints with sand may be needed in the future due to wind and rain erosion.

Polymeric sand

Polymeric sand is a blend of polymers which harden when subjected to moisture. Sweep the sand into the open joints until completely filled. All excess sand and dust must be swept from the surface. Use a blower for the final dust removal to make certain all excess sand is removed. Any residual sand or dust can result in staining of the surface. Once the filling of the joints and the cleaning of the surface is complete, mist the pavement with water which activates the polymer and cures the mixture.

HANDLING AND SPECIALTY TOOLS.

Porcelain pavers pallets are shipped with a very strong plastic covering and the individual units are packaged in protective cardboard boxes.

The protective cardboard boxes guard them from the possibility of chipping.

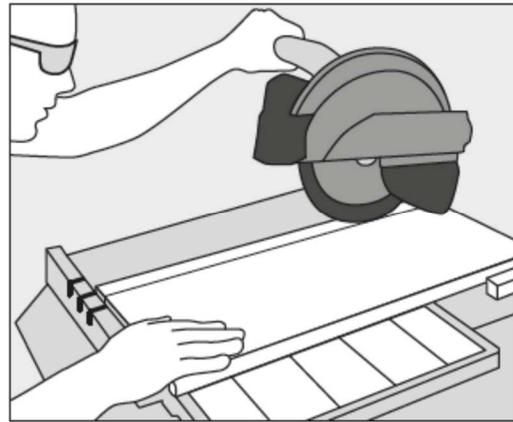
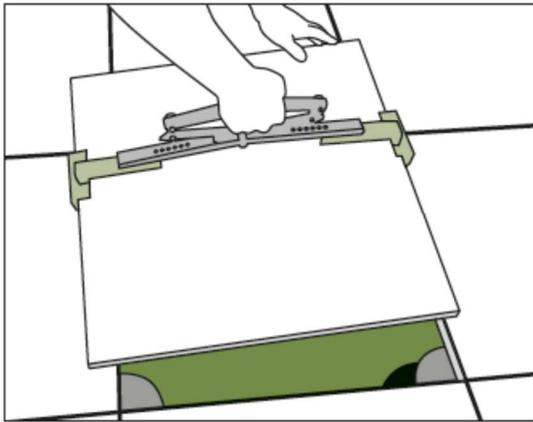
The handling of multiple loose stones can result in damaging or chipping of the pavers. Protect any un-used boxed pavers from the elements once the plastic shipping cover is removed.

This insures the integrity of the protective cardboard boxes.

Wet cut paver saw is used to cut paver accurately and cleanly to fit around edges and corners. The saw must be equipped with a diamond blade manufactured for wet cutting porcelain and designed to safely cut a 24" (60 cm) length porcelain paver.



A paver clamp to easily handle the installation and removal of pavers. Gloves are highly recommended while handling and installing porcelain slabs to protect the hands from injury. Notched trowels and grout float tools for cementitious adhesive and grout installation. Follow the adhesive and grout manufacturer's recommendations to select the appropriate tools needed for application.



ORDINARY CLEANING AND MAINTENANCE

Landmark Ceramics recommends carrying out the procedures for the ordinary cleaning of Frontier20 floor surfaces using water and commercially available neutral detergents.

More in details, ordinary maintenance must be carried out using specialized detergents to remove stains but these detergents must not leave a wax, film or membrane residue. Rinsing well with plenty of clean water is a fundamental part of the cleaning procedure, therefore we advise against the use of products which state that they "do not need rinsing".

The inclination of the surface and the space between adjacent slabs for dry-system installation favor the natural flow of water. However, it is important to take into consideration that any type of floor surface is subject to the surface tension effect of liquids: it is the same property of water that gives the tendency to transform into spherical droplets and which cause the curved top surface of a glass full of water. The surface tension can obstacle the complete drainage of water and cause a temporary stagnation of liquid on the slab edges. In order to avoid this problem, Landmark Ceramics recommends ensuring adequate inclination of the surface during installation so as to encourage the flow of water between adjacent slabs. Please remember in any case that, in view of the distinctive advantages of porcelain stoneware, Frontier20 absorbs practically no water, which makes it highly frost-proof. This may lead to localized water pooling, mainly on the edges of the tiles, independently of the manner and quality of the laying. Laying is also recommended with a minimum gap of 3 mm (1/8"). Should liquid deposit on the surface, it is recommended to push it towards grout lines using a brush or remove it with a wet and dry vacuum cleaner.



FIRST FLOOR DEEP CLEANING AFTER INSTALLATION OVER CONCRETE

After Grouting the Joints (pic. 1) It is important to remove the excess grout with a sponge and clear water (pic. 2). After 12/48 hours, the grout in the joints will have “set up” / hardened significantly. There will be a noticeable residual “haze”. Typically, a diluted acid cleaner specifically for removing “Grout Haze”, combined with a soft scrubbing pad will remove the majority if not all the “Haze”. Change your acid/water solution frequently for best results. It is also recommended to keep a bucket of clean water to remove the acid/water solution. It is recommended to keep and use clean dry towels to help remove as much residual water and keep the floor as dry as possible.

Please refer to the cleaning chemical company’s suggested methods and dilution rates. (pic. 3). For areas with excess grout or grout that becomes adhered to the face of the tile, further cleaning with an Acid/ Water Solution may be necessary. Please refer to the Cleaning Chemical Company’s instructions as not all acids or chemicals are the same.

The excess grout residue (pic. 4-5) must be removed so that it does not dry and stick on the surface. It is necessary to change the cleaning water frequently and rinse well. Care must be taken on inlayed, polished and especially Anti Slip products similar to Frontier20. The use of a floor-washing machine combined with the use of a diluted acid detergent helps reach the spaces between adjacent tiles and clean them properly. If such a cleaning procedure is not carried out, or if such cleaning is carried out too late, the grout residue creates an absorbent film, which holds dirt, making the surface difficult to clean: in this case, Landmark Ceramics will not be liable for any damage caused to the surface.



PIC 1. Fill joint with grout.



PIC 2. Remove excess grout with clean water.



PIC 3. Add specific acid cleaning agent for porcelain tile to clean water.



PIC 4. First floor deep cleaning after 12/48 h from installation.



PIC 5. Removal of excess grout residues with hard brush.



CLEANING AGENTS



TYPE OF STAIN	SOLUTION	DETERGENTS	MANUFACTURER
INORGANIC STAINS			
Cement Carbon Calcium Efflorescence Chalk Metallic residues Rust Cement-based grout Colored grout Wall paint	Acid	DETERGENT WITH AN ACID BASIS *	
		DETERDEK or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		KERANET (liquid) or similar	MAPEI Americas Headquarters 1144 E. Newport Center Drive Deerfield Beach, Florida 33442
ORGANIC STAINS			
Coca Cola Ice Cream Coffee Wine Beer Animal fats Vegetable fats Mustard Mayonnaise Ketchup Jam Linseed oil Lipstick Wax	Alkaline and neutral	LIMITED FOAM TYPE PRODUCT **	
		PS87 or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		FILACLEANER or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		Ammonium	Universal
RESIDUAL RINGS of organic nature	Saline solution	Sodium hypochloride (bleach for white laundry)	Universal
Silicone oils Machine Oil Resins and glazes Coal and natural rubber Encres et feutres		FILASOLV or similar	UNITED STATES > Fila Chemicals USA, Corp. 10800 N.W. 21st Street #170 Miami, FL 33172 USA Tel. +1-305-513-0708 email filausa@filasolutions.com
		Aceton	Universal
		NITRO - THINNER	Universal
		TURPENTINE	Universal
		TRICHLORETHYLENE	Universal
		CIF AMMONIACAL	Universal
Tire		HAND CLEANSER	Universal
Silicone and chewin-gum		Ice+scraper	

N.B. When using the above products, the instructions on the package should be followed.

* **Detergent with an acid base:** a detergent with an acid basis, specifically recommended after bath floor or wall installation, for the decalcification cleaning and the regular maintenance.

** **Limited foam type product:** a limited foam type product degreasing and general cleaning, suitable for all types of stains but especially for remove of vegetable and animals fats.

OTHER RECOMMENDATIONS

- Bright colored products, in particular white and extra-white tiles, are very delicate and, although for all intent and purpose are hygienically clean, However, they can get dirty more easily than darker tiles. It is therefore necessary to remember that these particular products require careful regular maintenance.





- Sealers are unnecessary, especially in the case of our Frontier20 Product line. Sealing will change the D.C.O.F. (Dynamic Co-efficient of Friction) resulting in a surface that will become more slippery. Also because Porcelain has such a low absorption the sealer will unlikely stick and most likely the sealer will flake off over time.
- For further information and recommendations concerning the installation systems please refer to <https://hardscape.landmarkceramics.com> website
- All the information provided in this document can be subject to change. Please refer to <https://hardscape.landmarkceramics.com> for the latest, most accurate and up-to-date information.

