

## INSTALLATION ADVICE

SILICASTONE™ is a patented new material created from recycled glass and ceramic. It contains no resins, cements or chemical bonding agents. It is 100% UV stable and 100% frost resistant and can be used in most applications where traditional ceramic wall tiles and surfaces are used. For advice relating to specific finishes please contact Panaz Ltd.

### **Shade Variation**

Whilst we make every effort to ensure that colours are as accurate as possible, shade variation is an inherent feature of our material and part of its appeal. We recommend comparing panels together or that tiles are loosely laid and blended prior to fixing to ensure that any variation is evenly distributed to create the most pleasing appearance. No liability for shading issues will be accepted after installation.

### **Bonding**

Most SILICASTONE™ products are, by their nature very heavy. Weights will vary depending on product, but they can weigh up to 45kg per m<sup>2</sup>, so we only recommend installing on an appropriate substrate which has been suitably prepared. We recommend using Mapei Keraflex Maxi as an adhesive to bond SILICASTONE™ products. We have extensively tested this for both interior and exterior application. It is also possible to use construction adhesives and mechanical fixings, but consideration should be given to the type of substrate and the position.

SILICASTONE™ should not be installed at heights above 2.7m.

The recommendation for an adhesive is provided for standard wall constructions internally and externally. For non standard construction applications please refer to Mapei Technical Department for further information. All installations must be carried out to the relevant section of BS 5385 code of practice for the installation of tiles. All aspects of the installation should be carried out to British Standards and current MAPEI (UK) LTD guidelines.

The reverse side of tiles are prone to variance which will not affect the fixing.

Ensure that both the support surface on which you are installing SILICASTONE™ and the piece of SILICASTONE™ are free of all foreign matter and they are clean, dry and dust free. Remove the damaged parts and other substances or products unrelated to the supporting surface before attempting to bond SILICASTONE™.

It is important to use a notched trowel to apply the tile adhesive on to the wall as would normally be the case for laying tiles. When fixing tiles, it is necessary to start at the bottom row on a level line to maintain a consistent level as you work up the wall. It is also important that they rest on a secure base such as a concrete floor or footing to help carry the weight and ensure the level stays consistent until the adhesive has cured. When installing SILICASTONE™ products use a generous amount of the recommended adhesive, ensuring each tile has sufficient adhesive, slightly rotating each tile as it is applied. Remember to keep the joints tight between each tile to provide a neat appearance.

**Sand & Cement Render or blockwork** - SILICASTONE™ products may be applied over properly prepared masonry / cementitious surface such as fibrous cement board, concrete block, brick, cement, precast concrete slabs. For interior applications wooden board and stud work can be used. We only recommend applying SILICASTONE™ in a bonded system up to a maximum height of 2.74mtrs. If you require installation at greater heights, please contact Panaz Ltd to discuss pre-fabricated systems and your individual requirements.

**Waterproof Backerboard** - There are various construction boards/tile backer boards available. Generally, they are cementitious, glass-fibre reinforced or extruded polystyrene, and are either water resistant or waterproof. They are available in various thicknesses, which will all have a varying weight bearing capabilities. When suitably screw fixed to walls they should provide an approximate load bearing facility of 40 - 50kgs/m<sup>2</sup>, which is generally adequate load bearing substrate for all our products. Individual manufacturers should always be contacted for the relevant information on load-bearing capabilities.

**Plywood** - 18mm exterior grade WBP plywood and other timber such as MDF, chipboard etc, may be used but only in dry areas. Seal all sides/faces and edges with Priming Agent before being suitably batten fixed with vertical and horizontal wooden supports at 300mm centers and screwed firmly at 150mm centers at all joints and edges. This is generally capable of taking up to 30kg/m<sup>2</sup>. Please refer to the manufacturer's guidelines and suitability for tiling.

**Painted Surfaces** -must be sandblasted, or otherwise stripped of paint before installing and if a new wall needs to be built, or layer added to an existing wall, the most suitable product for these purposes is fibrous cement sheeting such as Hardie backer board.

**Dry wall, Sheet Rock, Gypsum Board or Plaster board are not suitable substrates.** SILICASTONE™ tiles are heavy, therefore it is critical that they are adhered to appropriate substrates. The substrate and wall should be structurally sound, secure and capable of supporting the weight of the SILICASTONE™ veneer product.

### **Grouting Glaze Tiles**

Some SILICASTONE™ Glaze surfaces display a surface crackle, which can be enhanced or reduced through the application of sealants before grouting. Prior to sealing the adhesive bed should be dry and the grout joints clean, dry and free from adhesive residues, dirt, dust and other loose debris. Grouts may lodge in the crackled surface of the tiles which will highlight the crackle effect - ideal if an 'antique look' is required. If not, the tiles should be sealed on the face and edges especially those which have been cut with 1- 2 applications of LTP Crackle Glaze Protector. This is in addition to any applied before cutting. Using a soft cloth wipe any surplus LTP Crackle Glaze Protector off the tiles before it dries. Leave to fully cure for a minimum of 48 hours prior to grouting. Be led by your professional installer.

It is important to have a grout joint between tiles to allow for movement in the structure.

Please note wherever one plane of tiling meets another or another material, or where a waterproof sealer is required, silicone sealer must be used as opposed to grout.

Glazed ceramic tiles may craze with time, and no guarantee can be given against this occurrence as it is a feature of the process. Crackle tiles are deliberately cracked. We cannot guarantee that glaze will cover the side edges of the profiles.

### **Preparation for Grouting**

Prior to grouting the adhesive bed should be dry and the grout joints clean, dry and free from adhesive residues, dirt, dust and other loose debris. Various factors including adhesive type, substrate, tile type, temperature etc will affect the drying time of the adhesive. Grouts can contain strong colour pigments and this should be taken into consideration when selecting the colour for your chosen tile. Lighter coloured tiles can be affected by dark coloured grouts bleeding into the tiles, resulting in dark patches around the tile edge or possibly over the face if slurry grouted which may permanently stain the tile.

**Always test a small area of tiles prior to grouting the entire area.**

### **Application**

Using a soft rubber squeegee or float apply with diagonal sweeping movements to the grout joints taking care to fully compress the grout into the full depth of the grout joints so that no air pockets exist, and the joints are fully filled. A timber dowel of an appropriate diameter can be used to compact the grout within the joints. Work in manageable areas and clean off any residues when the grout has begun to firm up in the joints, but before it sets on the tile face. Cleaning with a damp but not overly wet fine textured foam sponge will provide the best results. Do not over wash the grout as this may cause a white bloom (efflorescence) and discolour the grout. Ensure your grouting is completed in one continuous sequence to avoid colour variation. Changing the cleaning water regularly will also aid cleaning. When the grout has set, any remaining grout dust can be removed from the surface with a clean, damp cloth. Finish by polishing with a soft, clean, dry cloth.

Should efflorescence form, these salts can be removed once the grout has fully dried and cured by frequent washing with clean water or suitable efflorescence cleaner. The surface of some tiles can be easily scratched so the application and cleaning of the grout must be carried out carefully.

Ensure that any tools used for grouting are completely clean and free of any hardened grout etc.

All perimeter joints must be finished with a good quality silicone sealer and not with grout. This will allow for expansion and contraction in the tiles during normal heating and cooling cycles.

### **Further Sealing of Crackle Glazed Tiles**

Once grouting is complete and fully cured, apply a further application of LTP Crackle Glaze Protector to the front face of the tiles and the grout, in the same way as before. Using a soft cloth wipe any surplus LTP Crackle Glaze Protector off the tiles before it dries.

### **Thermal Expansion**

SILICASTONE™ is made of a combination of glass and ceramics and in common with all materials is subject to thermal expansion and contraction. If no grout is being used between tiles and the design is a stacked stone appearance we recommend leaving small expansion gaps between each tile of less than 1mm. In practice these gaps will naturally form and should not be noticeable in the design. Thermal expansion has been measured according to BSEN 10545:8 and Coefficient of thermal Expansion was recorded between 22-106C as Direction X 8.1 e6C-1 and for Direction Y 7.4 e6C-1.

To ensure safety, strength and permanent fixing, all work should only be performed by a qualified and licensed contractor or builder.

## Installing as a Table Surface

SILICASTONE™ is perfect for interior or exterior table surfaces. Like stone and similar materials, SILICASTONE™ could chip or break if badly handled. For a busy commercial setting we recommend the use of a support frame to protect the edges from accidental knocks and damage. Surfaces can be bonded to substrates with a suitable construction adhesive or mechanical inserts can be installed, such as Keep nuts. But only if drilled via CNC. Stainless steel threaded inserts can be factory fitted which are resin bonded. If these are used installers must ensure that the bolt used is not longer than the nut insert as it will protrude into the surface and break the resin bond.

## Care and Maintenance

SILICASTONE™ is easy to care for and can be left in its natural state in many cases. SILICASTONE™ Glaze is also easy to care for, with the glazed surface resisting most stains and not requiring long term maintenance. However, depending on your chosen application it may be necessary to periodically apply a surface sealant to the product.

**\*please note products are supplied unsealed unless requested. Sealant can be factory applied for an additional charge.**

We recommend using LTP stone products available at <http://www.ltp-online.co.uk/>. For lighter colours and interior applications we recommend using LTP Matt Stone H20, which is an impregnating sealer that will not affect the colour of SILICASTONE™. Particularly for darker colours and exterior applications, as well as wet areas, we recommend using LTP ProEco Colour Enhancer to reduce absorbency and enhance the colour. Without the use of colour enhancer, the product may appear different from samples provided.

**We recommend that you treat a small sample tile with the appropriate sealer and/or finisher prior to installation to ensure you have achieved your desired appearance.**

SILICASTONE™ should be considered closer to a natural stone than a resin or quartz manufactured stone, so some care should be taken to avoid staining materials staying on the surface for extended periods. Please note that care should be taken to avoid scratching a glazed surface with abrasive cleaner and ensure that any sponges or cleaning equipment is clean and free from grit prior to cleaning.

SILICASTONE™ is a glass and ceramic composite, it contains micro pores which can hold staining agents particularly when it meets a highly coloured, aggressive or adhesive substance for a prolonged period. Clean spillages as soon as possible. The best cleaning method is a diluted detergent mix with water. Once the tiles are firmly bonded use the detergent solution and a sponge or soft bristle brush to clean any residue.

SILICASTONE™ is classified as chemically resistant class A, so heavy-duty cleaning products can be used if required. We would recommend testing an inconspicuous area before attempting to clean an entire surface.

SILICASTONE™ is extremely resistant to cleaning products and so the approach to removing stains should be to use appropriate aggressive cleaners to remove stains as soon as they appear. Acidic cleaners, acidic products and descalers can be used. For alkaline products, basic cleaning product, ammonia. Solvents, products such as universal solvents, thinner, turpentine, acetone, alcohol. Finally, oxidant products such as hydrogen peroxide or diluted bleach can be used to remove certain stains.

**For exterior applications jet washes can be safely used to clean the surface if grime builds up.**

**Read the instructions on the packaging of Adhesives, Grouts and Sealants very carefully.**

**No complaints regarding the appearance of the product will be accepted by the company once surfaces have been installed.**

## Health and Safety

Like all ceramic tiles or natural stones SILICASTONE™ contains high amounts of silica, totally harmless in natural state, but if inhaled can cause problems and prolonged exposure can cause silicosis. We therefore recommend that care is always taken to reduce the creation of dust when cutting SILICASTONE™ products. The best option is a wet cut diamond tile saw. It is also possible to cut with a portable angle grinder fitted with an appropriate wet cut diamond disc and the use of a water spray. We would recommend that appropriate safety goggles or glasses are used, and safety instructions supplied are followed. As with all aspects of an installation the quality of the tools will have a bearing on the end result, so we do recommend new blades are used. Your professional installer will be able to advise on appropriate tools for cutting your chosen tile.

If none of these options are available it is still possible to cut SILICASTONE™ dry, but operatives must use appropriate dust protection, such as respirators and extraction to avoid harm to other workers.

## Handling

The handling of SILICASTONE™ demands special requirements. SILICASTONE™ slabs are heavy, with a bulk density of approximately 2gms per cm<sup>3</sup>. The user should be responsible for carrying out a risk assessment, in accordance with health and safety regulations. The following instructions are recommended:

- Use safe handling systems (crane, rack with safety bars, etc) ensure that loads are properly secured and avoid force.
- Slings must have good protection and be resistant to cutting.
- PPEs must be used.
- Wear a safety helmet, safety shoes, safety glasses and anti-cut gloves during handling of SILICASTONE™.

**Warning: the material can be very sharp, especially the broken pieces.**

- The slabs must be handled and prepared using anti-cutting gloves and safety goggles.
- Waste material should be handled with care.
- Avoid banging the waste material to reduce its size.

## Storage

No specific conditions are required for safe storage, except storage in a closed and covered space. Avoid strong impacts that may cause the material to break.

## Identification of Hazards

CLP Regulation (EC) no. 1272/2008, does not include any risk associated with the finished SILICASTONE™ material. However, machining operations can generate dust containing respirable crystalline silica. Respirable crystalline silica causes damage to the lungs, such as silicosis, after prolonged or repeated exposure by inhalation (Hazard H372). To prevent or minimise exposure, it is essential to adopt a series of preventive measures.

## Disposal

Waste tiles and or any sludge from cutting can safely be disposed of in normal landfill waste. Care should be taken with any dust. Waste Acceptance Criteria (WAC) analysis conducted on the product at National Laboratory Service (Report ID - 20046767 – 1) classifies the material as inert landfill.

## Technical Characteristics

BS Standard Description and Number	Natural	Honed/Polished
Apparent Porosity & Bulk Density BS EN 993-1: 1995	Mean Apparent Porosity (%) 25.36 Bulk Density (g/cm <sup>3</sup> ) 1.93	Mean Apparent Porosity (%) 25.67 Mean Bulk Density (g/cm <sup>3</sup> ) 1.94
Water Absorption BSENISO 10545-3: 1997	Mean 8.03%	Mean 8.03%
Thermal Expansion BS EN ISO 10545-8:2014 & BS 1902: 5.3: 1990	Thermal Expansion Coefficient 22-105 deg C for Direction X: 8.86 °C-1 Thermal Expansion Coefficient 25-102 deg C for Direction Y: 9.48 °C-1	Thermal Expansion Coefficient 22-105 deg C for Direction X: 8.86 °C-1 Thermal Expansion Coefficient 25-102 deg C for Direction Y: 9.48 °C-1
Modulus of Rupture BS EN ISO 10545-4: 2012	Average Modulus of Rupture Value: 7.6 N/mm <sup>2</sup> Average Breaking Strength Value: 1209 N	Average Modulus of Rupture Value: 6.6 N/mm <sup>2</sup> Average Breaking Strength Value: 1075 N
Impact Resistance - Coefficient of Restitution BS EN ISO 10545-5: 1998	Average Coefficient of Restitution: 0.46 There was no visible damage to the tile surface.	Average Coefficient of Restitution: 0.47 There was no visible damage to the tile surface.
Frost Resistance to BS EN ISO 10545-12: 1997 Water Impregnation by Total Immersion Method	Freeze / Thaw Result After 100 Cycles: Tiles showed NO EVIDENCE of damage	Freeze / Thaw Result After 100 Cycles: Tiles showed NO EVIDENCE of damage
Compressive Strength BS EN 771-5	62.4 N/mm <sup>2</sup>	64.5 N/mm <sup>2</sup>
Abrasion resistance BS EN ISO 10545-6: 1997	287mm	285mm
Slip Resistance BS 7976-2: 2002	Dry: 73 Wet Values: 68	Not tested
Chemical Resistance BSENISO 10545-13: 1997	UHA UA ULA	UHA UA ULA
Metal release BS EN ISO 10545-15:1997	Pb mg/l = <0.1 Cd mg/l = <0.02	
Stain Resistance	Paste = Class 4 Chemical = Class 4 Film Class = 5	Paste = Class 4 Chemical = Class 4 Film Class = 5

## Disclaimer

The specifications and technical information given in this publication are intended for guidance and although they are to the best of our knowledge correct, they are given without warranty. We cannot accept any responsibility for reliance placed upon the advice contained herein since practical expertise and site conditions are outside of our control. Neither do we accept liability for the performance of the product arising from such use. This does not affect your statutory rights.

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SILICASTONE is a brand of  
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