



FABRICATION GUIDELINES

Working, Handling, and Packing





INTRODUCTION

Glaskeramik stands uppermost as an environmentally friendly material, one which offers wide ranging applications. It covers three market areas and competes with Natural Stone, Glass and even Ceramics. The use of this material in the construction sector is reinforced by creative freedom, its performance and functionality.

Thanks to our innovative technology, “Know-How” and wide company resources we are able to support and provide to all project phases and types of enquiries and gladly offer your team both consultancy services and technical advice to achieve your aims.

The designer chooses Glaskeramik for its unusual character, durability and its exclusiveness as a German material made under strong quality standards. We are there for you at MAGNA Glaskeramik - in every step you take from purchase to material processing and installational advice to after sales service.

Glaskeramik is a material, which has some similarities with processing marble and granite. In order to support our wholesale clients, and for them to successfully process, we intend to gladly and openly distribute our know-how. We herewith offer examples and notes forming part of our own experiences. They can serve as guidance notes but are not strict controls. Each and every one of our customers learn their own experience in working the material as well as bring us more experiences from working glass and stone which in turn assists our team learning.

Glaskeramik is made from 100 % recycled glass, but crystallized, and is itself again 100% recyclable as it can be recycled by a glass processor locally to the site.

The material protects natural resources in this way and also through the lesser use of energy in its production ▣



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01. THE PRODUCT

1.1 Product Range



POLAR WHITE



ICE NUGGET



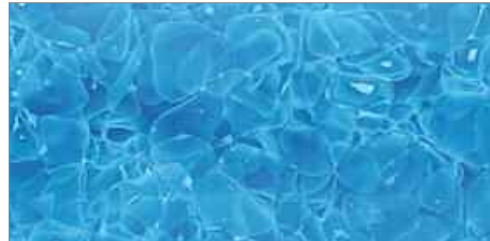
JADE GREEN



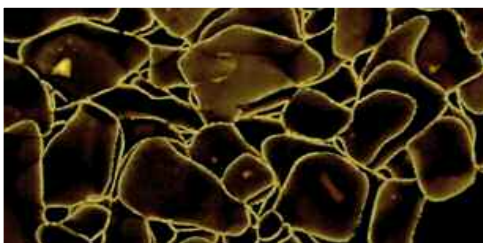
GREEN



BLUE SKY



OCEAN BLUE



CHAMPAGNE BROWN



BLACK

1.2 SURFACES



POLISHED
Polished finish gives the Glaskeramik colors a perfect reflection. The transformation from the 2D into 3D effect extensively shows off the crystalline structure.



PATINATED
Finish with texture and high relief for surfaces whilst offering low glare reflectivity and low scratchability.

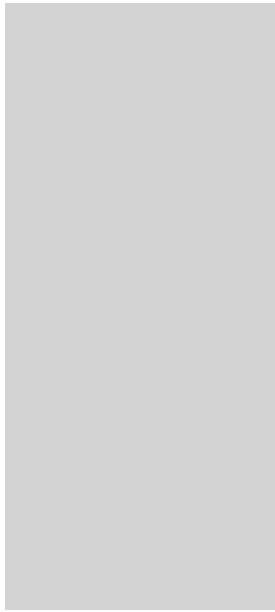


MATT
Absolute matt finish. Extremely resistant, silky smooth and perfect for business applications.

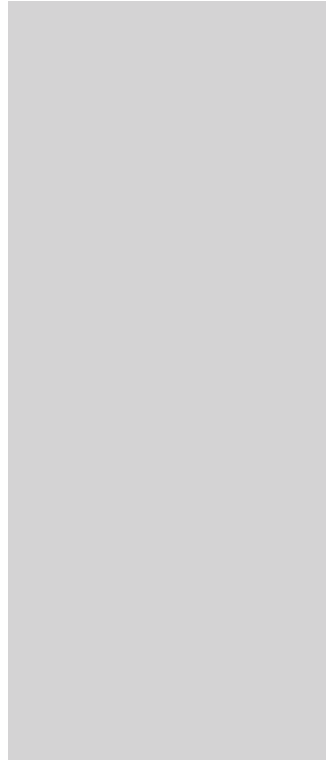


On request we can do processing on both sides.

1.3 Sizes



280 x 125 cm
Patinated,
Polished*, Matt*



350 x 150 cm
Patinated,
Polished*, Matt*



* Polished or Matt finishes
can have smaller sizes, e.g.
270 x 120 cm or
340 x 140 cm.

1.4 Thickness



1.5 Technical Data

Description	Value	Norm
Thickness tolerances	patinated +/- 1,8 mm polished, matt +/- 1,5 mm	
Density	ca. 2,48 g/cm ³	DIN EN ISO 10545-3
Weight per m² with 21 mm	ca. 50,4 kg	
Bending strgth. 5% fractile Jade Bending strgth. 5% f. Pol. White	patinated 22 N/mm ² patinated 20 N/mm ²	EAD 13-33-0030-06.01 EAD 13-33-0030-06.01
Load-Bearing-Capacities	ca. 3,44 kN	EAD 13-33-0030-06.01
E-Modul	ca. 30 kN/mm ²	EAD 13-33-0030-06.01
Hardness according to Mohs	6 patinated 4 polished	DIN EN 15771 DIN EN 15771
Heat expansion 20-100°C	7,22 x 10 ⁻⁶ x K ⁻¹	DIN EN 103
Heat conductivity at 64°C	1,04 W/mK	
Specific heat capacity Cp	0,7 J/gK	
Water absorption	ca. 0,07 Ma,- %	DIN EN ISO 10545-3
Frost resistance	no trials with visible defects	DIN EN ISO 10545-12
Stain resistance	5 (stain can be removed with hot water)	DIN EN ISO 10545-14
Chemical resistance	A, GA	DIN EN ISO 10545-13
Fire class	A1	EN 13501-1
Surface wear	Class II, 300 revolutions	DIN EN 154
Slip resistance	R9 patinated	DIN 51130

1.6 Certifications

Magna Glaskeramik material is almost 100% recyclable. It plays an important role in the careful use of natural resources and improvement of the sustainability balance in building projects and design objects. This is an enormously important factor in view of the circular economy ethic.

In support of the pioneering role played by Glaskeramik for sustainably produced materials, we are currently working towards various sustainable certificates for MAGNA Glaskeramik listed here:





Raw Material Glass Fragments



Slab Champagne Brown Polished

02. CUTTING



Always pay attention to the cleanness of the base.
At all times be certain the support table is level.



2.1 Cutting with Bridge Saw

In general Glaskeramik can be processed in the same way as large size natural stone and porcelain slabs.

Please note when cutting:

- A full and straight support of the slab. Make sure that the slab is fully supported beneath.
Our recommendation: Use a hard styrofoam board.
- Must trim all edges as 3/4" relaxing cut.
- Assure that as much water as possible is used during the cutting.
- When cutting with an accurate blade you will get a clean cut, otherwise the underside will break.
- Mind the feed rate, if it is too fast the slab may break.
- Use reduced speed when cutting in and out of the slab.
- The slab should be under room temperature, similar to that of the water.

We recommend cutting blades from **Alpha** for crystallized glass.

Type	Material	Circular speed
SLW1410P	crystallized glass	2,425 RPM



It is important that the circular cutting speed corresponds to the technical data of the diamond blade manufacturer.

Use only the **ALPHA SLW1410P Blade** by **ALPHA Professional Tools**.

We recommend:

Use this blade with a feed rate of 20"/min.

2.2 Waterjet Cutting

Cutting with the waterjet is similar to the bridge saw.





Please mind!

- You have to remove any debris on the metal support table when water jet cutting.
A styrofoam board of 3/4" thickness offers scratch and vibration reduction.
- The full support of the slab without hollows is important.
- Must trim all edges 3/4" to release any slab tension.
- Important too is the role of heat building up during cutting with water jet equipment. In this way cracking as a result of tension can be reduced as the heat builds up.
- With small pieces it is enough to use a foamed padding material under the Glaskeramik. With the underlay it reduces, in both cases, any damage to the underside of the Glaskeramik afforded by the carborundum. This is essential for platters that are polished on both sides.
- The feed rate should be set for proper edge quality.
- 20"/min is possible for just cut edges. For polished or ground edges you should choose less speed i.e. 15"/min.
- The dose of cutting sand can be reduced to around 20% below that used with granite cutting.
- The slab should be at room temperature, similar to the water temperature.

03. CUTOUTS AND MILLING



3.1 General Notes

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We recommend water jet work in making cutouts, it is there that we and our wholesale customer base have had their best experience.

Special caution should go to the distances of cut to size for interior cuts. Any interior cut must be a minimum of 2 3/4" from the exterior edge of the slab. The smaller the distance to the exterior side the more risk of cracking exists.

Cutouts:

- We recommend to do release cuts on all four edges before cutting.
- For cutouts, first drill 3/8" holes in the corners prior to starting the cuts. If necessary, the final radius can be reduced to a smaller size radius.
- It is necessary to support the entire slab fully, even the cut-out.

We recommend:

- Any interior cut must be at least 2 3/4" in from the exterior edge.
- If the width is less than 2 3/4" then we recommend to cut out the small piece and glue it in after the cut. If done properly it looks good and this procedure reduces tension.



Larger cutouts into smaller sections for ease of removal.

3.2 Surface Sink Cutouts and Interior Edge Polishing

Due to the material characteristics during this process air bubbles inside of the material can be opened. They can be closed using the technology see 0.5 PORE FILLING.

3.3 Drilling



Generally we use two different methods of drilling holes. The first one is to drill through using waterjet, whereby you can vary the diameter.

The second one is the diamond drill bit.

Important:

- Use a thin-walled hollow drill bit, that is made for glass and ceramics.
- It is necessary to support the entire slab fully, if the area under the drilling is hollow, then this will develop cutouts underneath.
- Optimal result is with double side drilling but a one plunge drilling is also possible.



04. SURFACE AND EDGE PROCESSING



4.1 Automated Edge Working

MAGNA Glaskeramik as a material is well suited to grinding and polishing finishing. In general every machine that is used for marble and granite can be used for MAGNA Glaskeramik too.

We recommend:

- Use plenty of water.
- Exert little pressure.
- Without oscillation, otherwise a lot of material will get removed.
- Pay attention that the pressure roller doesn't make scratches
- If possible use plastic-bound diamond pads e.g. from Nozar or Weha.
- Use the same type of tools for the arrissing units.

4.3 Manual Edge Processing

For manual working of the edge we recommend the use of **ALPHA CERAMICA EX POLISHING PADS** and the **ALPHA AIR-680 POLISHER**.



Please note:

These progressively increase the grit sizes from 200 during grinding, to 3000 for a polished edge. Watch out that the head turning speed is at approx. 2000 rpm.

Also an even and slow movement is imperative. Do not hold the grinding head too long in one position, because the friction creates heat. The grinding results can get affected and the ease of working is helped through heat removal.

We recommend:

- The edge is processed like natural stone, use up to 3000 for a polished finish.
- The applications for the pads are the same as for marble and granite.
- Mind the heat, the local heating should not be too high.
- The quality depends on the processor.



Torn Edge caused by unclean Processing



Choice

You can choose between the wet and the dry edge processing. We recommend the wet procedure because the result is better.

Magna Glaskeramik does not just allow straight edges and arrisses. These must be achieved however through manual working.

Bullnose edge details can be produced with the right milling and polishing tools either by machine or by hand work. Also keep in mind that pores inside of the material will appear and have to be closed.



This setup covers working on the edges and working on the underside of the material.

0.5 PORE FILLING

In making Glaskeramik slabs, with our current techniques, there are always some air bubbles found present in the slab. When the slabs are cut there may be bubble holes exposed. This is normal and these holes can easily be filled, or not, it is the client's preference.



If the natural edge is not desired please follow the instructions below:

At first the pores should be cleaned out of any residues with acetone and compressed air.

We recommend two possibilities to close the holes.

Firstly with an adhesive type **AKEMI AKEPOX**.

We differentiate the **AKEMI AKEPOX 5010** (2 part adhesive, colourfast and polishable, minimal shrinkage, ability to take a dye, mixing relationship of 4:1 and with a 12 hour curing time) and **AKEMI AKEPOX 1005** (less viscous, 2-part adhesive, polishable, minimal shrinkage, solvent free, ability to take a dye, a mixing relationship of 2:1 and curing time of 24 hours).



Then following this choice is **LOCTITE AA3491**. This is a transparent and thin flowing fill material which requires UV light hardening afterwards. This one offers the advantage of a short hardening time.

After the adhesive fully cures, clean away excess material with a razor blade, then polish the area to match the factory finish. This process can also be used for filling random surface bubble holes.

Filling surface bubbles

Open pinholes and little bubbles can occur due to the natural recycled characteristic of the material with the polished and honed surface.

All holes are normally filled by the factory in Germany. However, filling the holes is a very easy 4 step process using a UV filling technique.

Step 1: Cleaning

Clean the open holes with acetone then blow them out with pressured air.

Step 2: Filling the Holes

Fill the holes using a cartridge press with the recommended filler, Loctite AA 3494. When applying, be certain the fill material is bubble free and a little bit above the surface edge of the hole being filled.

- Loctite Filler AA \$30.00/Pack and will fill 20-30 Slabs
- Loctite UV Lamp 97053/250 Watt - \$1,900.00

UV Curing with the recommended 97053 Lamp takes 1-2 minutes and may vary with other lamps.



ATTENTION: For holes larger and deeper than 1/8" fill and cure only half of the depth, then repeat to complete the top half, again leaving the fill material a bit above the slab's surface plane.

Step 3:

Remove/plane away surface excess until flush with surface using box cutter type razor blade.

Step 4: Final Finish

Finish with a polishing sponge and Akemi polishing paste. Use light pressure for approximately ten seconds, then clean with acetone.

0.6 EDGE AND MATERIAL BONDING

Before you put material together towards bonding you first need to prepare the surfaces to bond using a diamond grinder to achieve a raw surface.

Always mind the speed of the tools if you cut miters. Depending on the tools we suggest a miter cut speed of around 15"/min.



Clean the contact areas using Acetone before you apply the binder. This reduces the chance of small particles and dust affecting the glue and assists in the bonding.

We recommend:

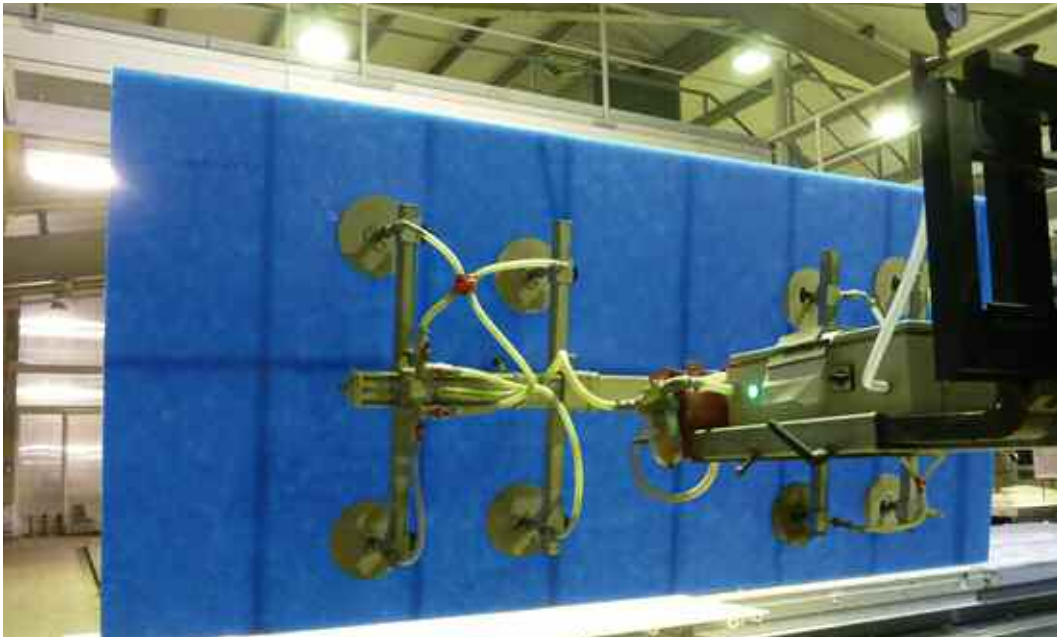
For optimal results use transparent glue i.e. Black Panther Water Clear Knife Grade for edge detail bonding and countertop seams.

Take in mind that through the increased diagonal measurement at the mitre there is less light transparency in this area. This means that it is better to increase the artificial light source at that point if the object has to be back-lit.



0.7 TRANSPORT AND HANDLING

The transporting and handling of Glaskeramik finished products is one of the most important aspects and is instrumental in the success of the product. The following guidelines and notes come from our testing and experience during handling the material.



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7.1 Handling Slabs and Finished Work

Sheets are ideally transported with glass handling vacuum systems. Always watch out and avoid damaging the contact surfaces. Smaller pieces can be carefully moved by hand. When storing and transporting material we recommend steel A-frames, wood pallets, and for smaller panels even cardboard A-frames are useful.



Rubber profiles have to:

- Protect the contact points between slab and frame.
- Protect the base where the slabs are stored.
- Avoid direct contact between slabs.
- Avoid scratches and tension cracks.



Precise Handling

Be certain to stack the slabs as shown in the above photo. Use nylon straps to hold the slabs tight against the rubber protection on the vertical support bars of the A-frame.

During vehicular transportation, the same principles must be followed.

During warehouse storage, a rigid “backer slab” must be used to strap the slabs against, securing them to eliminate warping and afford added safety.

0.8 INSTALLATION | SAFETY

8.1 Interior

Install with as much support from the backside as possible.



Do not install with tension. This can cause breakage.

8.2 Exterior and Facade Systems

Glaskeramik is not only geared towards interior cladding and features, it is a perfect material for external facade and surfaces. Here it not only presents itself as a sustainable option with added optical qualities, but also offers additional technical and performance advantages.

Glaskeramik has a FR class of A1 (non combustible) and is fully frost resistant; it is also impermeable to staining. During the production process we use no epoxy resins or adhesives and so the glass-like surface stands resistant against outside influences such as acid rain and UV damage. The materials color is stable through its entire life which is imperative for facade uses.



Magna Glaskeramik:

- resistant against frost
- resistant against UV-light
- resistant against fading
- always easy to clean
- will not etch

8.3 Safety Solutions using an Applied Film or Safety Glass Lamination

For interior and exterior applications a safety film can be added on to the back of the Glaskeramik slabs. It strengthens the material and in case of breakage it keeps the broken pieces together. The optics of the film can be polished, matte, or colored.



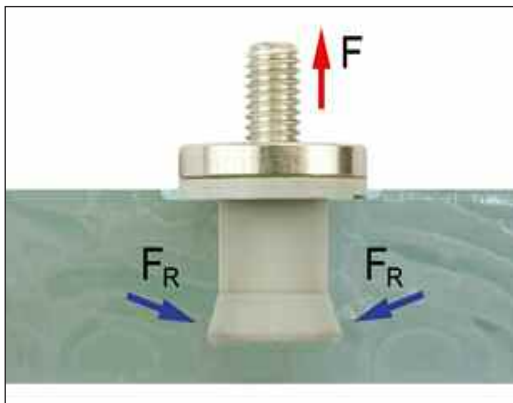
Safety Glass

There is the possibility to create a break safety film between two or more slabs of Glaskeramik. Due to that we can install a break safe solution that still has the required finish.

8.4 Facades

If Glaskeramik is used for facades we highly recommend undercut anchors from **Fischer USA** (Auburn Hills, Michigan).

Cut to size for facades with that system are made by Magna Glaskeramik during the manufacturing process. We cut to size, drill, and add anchors to create an invisible attachment with minimal joints. It is also possible to connect to standard facade systems with a horizontal profile.



Undercut Anchors

We offer an all-round project service inclusive support for structural analysis and detailed solutions like reveals and special shaped corners.



The system Magna Glaskeramik with anchor **FISCHER FZP-GZ** has an official admission from European Technical Assessment ETA 16/0302.





Glaskeramik Polar White | Talbot Gateway, Blackpool



Glaskeramik Jade | Mixed Use Building, Trondheim

0.9 COMPOSITION AND LIGHTING

9.1 Bending

Our Glaskeramik, unlike natural stone, has special characteristics that allow us to bend slabs post production, such that precise radii can be set as the material is slump heated over a support form.

Many design possibilities arise with bending like this shower panel.



If the slab was pre-polished, that surface will alter its optics when bent in this way, it is intriguing and attractive but can, if required, still be re-polished after the event by a new mechanical system we have developed.

9.2 Lighting

Glaskeramik has unique translucent and diffractive characteristics.

Our Recommendation:

Backlit facades or other projects using LED technology as a light source.

Through its special characteristics it is possible to just use a few points of accent to light up all the whole material.

In this way one can create a stunning diffuse effect which avoids dazzle.

