# Faux Translucent Stone

TECHNICAL DATASHEET

| | |
|---|---|
| Linear coefficient of thermal expansion | 0.4 mm/mtr/10$^0$C |
| Maximum temperature for continuous use | 80$^0$C |
| Density | 1.8 kg per m$^2$/mm (type 1001 = 2.25 kg) |
| Izod shock resistance acc. to ASTM D256 | 78$^0$F 16 J/mtr |
| Force needed to break acc. to ASTM D790 | 43 MPa |
| Tensile modulus (e-module) acc. to ASTM D790 | 4550 MPa |
| Light transmission | >20% |
| Thickness tolerance | +/- 10% of nominal thickness |
| Maximum span | 600mm (10mm thickness normal use) |
| Flammability | BS1D0 acc. to EN13501 |

*Values above are avereges. Type 1001 woith real stone inside is significantly different.*

## Fire behavior

Bs1d0 according to (N)EN 13501,tested by Peutz Laboratory for Firesafety April 2016. Material can be used safe everywhere.

## Food safety

samples have been tested by Merieux NutriSciences June 2016. Material approved according to directive 10/2011: EC 1935/2004 and EC 023/2006.

Disclaimer: as usual with this kind of documents: the text above is made in all honesty and we really try to help you getting good results when using our material. But: it is your own responsabilty, fully, in all aspects and dimensions, and in relation to all regulations and laws. Convince yourself that what you do, how you do it and the tools and equipment you use are save and fit for the intended purpose.

## Storage

- Faux Translucent Stone should be stored at room temperature in a dry environment, not exposed to direct sunlight or heat.
- The panels should be stored horizontally on a 100% flat surface or pallet. Faux Translucent Stone will otherwise warp!
- Protective masking should be removed within 30 days of receipt to prevent adhesive from the foil sticking to the panel.
- Allow material to acclimatise fully (temperature / humidity) before fabricating. Parts to be joined have to be in the same environment for at least 48 hours.

## Larger constructions

We highly recommend larger translucent constructions of FTS to be fabricated by companies having experience in this field.

However, we can mention a few aspects might you prefer to develop your own professionality in this.

Thickness of the FTS, vertical applications, support free, should be 6 mm 500 mm height / 8 mm by 750 mm / 10 mm by 1000 mm. (Depending also on the weight applied on top of the sheet or other application-dependent variables… test!)



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Above this the sheet should be supported on the back side each 1200 mm by a vertical beam of translucent acrylic (not transparant! Use a 80% transmission type) ca. 15 x 50 mm minimum, glued with an acrylic glue - either 2 component or 1 component - on the back of the FTS. Take care: parts should be at least 48 hours in the same room in order to be balanced before glueing them together.

For horizontal applications we recommend full surface glueing (or taping) of the FTS to transparant acrylic of minimum the same thickness as the translucent stone. For 6 mm FTS the max recommended span without support is 400 mm, for 8 mm this is 500 mm and for 10 mm this is 650 mm. Of course, the way the material is used (loaded) is the crucial factor determining the choice of the max. span. See also the span measurements.
The glueing procedure is quite complex and involves safety precautions. We use Acryfix 190 2 component glue and glue the stone horizontally on a 100 mm oversized acrylic sheet. (50 mm each side) This is full-surface glueing. The result is very good.

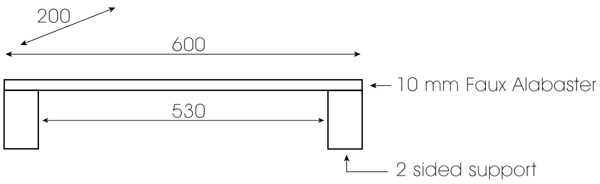
Non-translucent constructions are easier. Do not forget the well known expansion / contraction, the use of a kit that is not visible thru the stone, the use of a substrate that does not influence the color of the stone, take care with inside corners, work clean, use tape, put enough pressure on the sheet etc. In fact, you could use any instruction for solid-surface material like Corian of LG also for the faux translucent stone.

## Span measurements

We start with flat sheets.

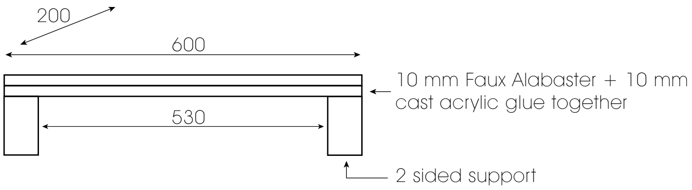
**Setup 1:**
10 mm Faux Alabaster, 200 x 600 mm, both short ends supported. Free over 530 mm.
Result with no load after 1 week at 21°C: 1 mm deflection. Long term expectation 2 mm.

1



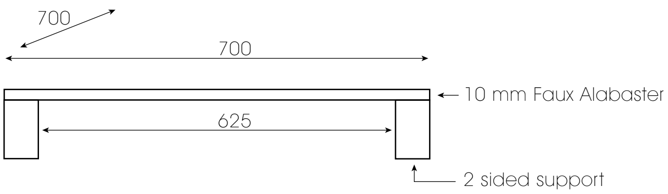

**Setup 2:**
10 mm Faux Alabaster + 10 mm cast acrylic, 200 x 600 mm, "glued" using 7 strips 10 mm wide 0.5 mm thick 3M clear VHB tape, both short end supported. Free over 530 mm.
Result with no load after 1 week at 21°C: 0.3 mm deflection. Long term expectation 0.6 mm.

2



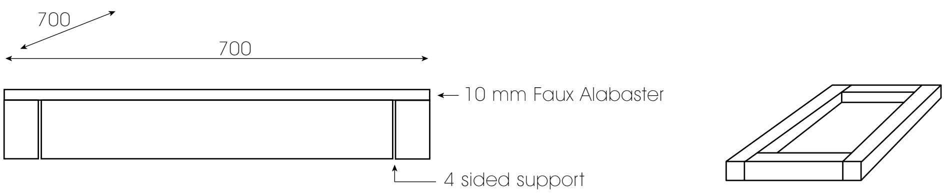

**Setup 3:**
10 mm Faux Alabast, 700 x 700 mm, 2 sides supported. Free over 625 mm.
Result with no load after 1 week at 21°C: 1 mm deflection, long term 2 mm.
Result with 8 kg load in middle of sheet: after 2 days 1.5 mm extra deflection. Long term 3 mm extra deflection, giving a total of 5 mm.

3




**Setup 4:**
same as 3 mm, but 4 sides supported.
No deflection. Long term maybe 1 mm.

4



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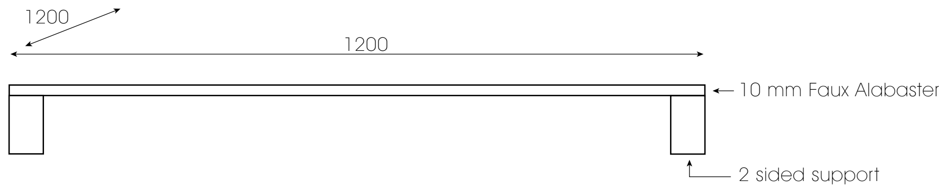
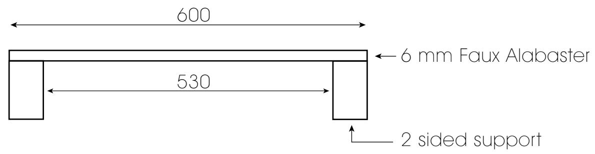
**Setup 5:**
10 mm Faux Alabaster, 1200 x 1200 mm, both sides supported, free over 1130 mm.
Result with no load 6 mm deflection. Long term expectation is double!
Result with 11 kg load in middle: after 2 days extra 5 mm. Long term extra 10 mm!

5



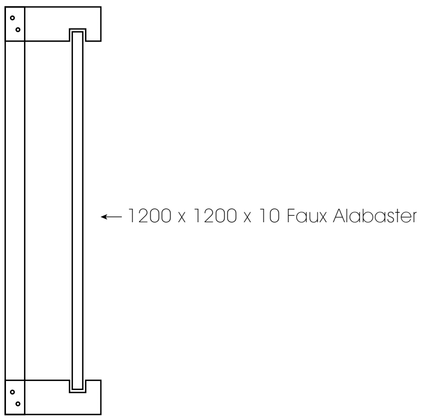

**Setup 6:**
6 mm Faux Alabast, 600 x 600 mm, both sides supported, free over 530 mm.
Result with no load after 1 week at 21°C 1 mm deflection. Long term 2 a 3 mm.

6




**Setup 7**
is a vertical sheet 10 mm Faux Alabaster 1200 x 1200, supported bottom and top.
After 1 week still fully flat, no load.

7




Conclusion: 2 sided support, 650 mm wide seems to be a practical limit for a horizontal surface without constant load for a 10 mm thick sheet. Long term expectation 3 mm.

Additional testing has been done with a 10 kg block of lead in the centre of setups 5 and 6. After 14 days both setups fails completely, material breaks. Faux translucent stone is NOT suitable, will certainly fail, when used with heavy concentrated loads. Do never use it as a bartop or counter with something heavy on it without proper additional support!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## Deflection using Finite Element Analysis

The amount of deflection is largely controlled by load, size, thickness and support structure.
Three options are fully framed support, simple support and point support.

We investigated flat horizontal panels thickness 10 mm. Vertical panels will not experience deflection if supported properly with no loads. Best way for using vertical panels is to have them fully fixed at the top and fixed at other points (halve-way) and at the bottom with some possibility for movement in the vertical direction (temperature-differences). A vertical panel not supported by the top of the panel may sag.

## Fully framed support condition in 4 sided frame 25 mm

In a fully framed application (figure 1 and 2) FTS panels 10 mm thickness are fixed around the entire perimeter of the panel. The edge is fixed with a frame or adhesive bonding a shown in figure 2.
Deflection of the panel is entirely dependent on the shortest side of the FTS. So, a panel of 500 x 1000 mm will exhibit the same deflection as a panel 500 x 500 mm. The amount of edge capturing is of course also of influence.

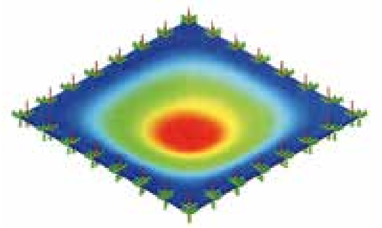
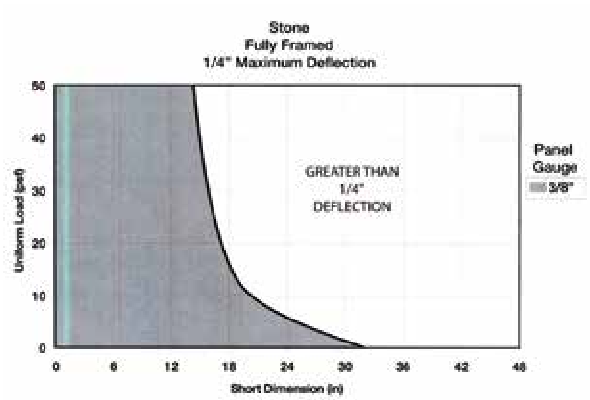
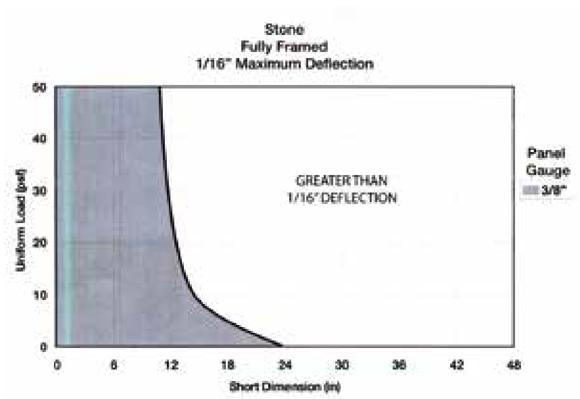


Figure 2. Fully framed deflection cross-section

Clear from the first chart is that a sheet with smallest dimension 500 mm (free over 450 mm) will deflect 6 mm with a load of 50 kg/m2 (or 25 kg/$m^2$ evenly distributed over a length of 1000 mm with this sheet 500 mm wide). With a 100 kg/$m^2$ load a 450 wide sheet will deflect 6 mm.

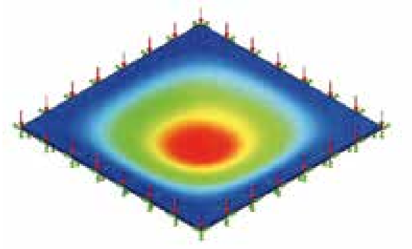


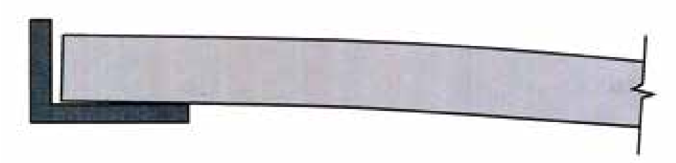




If we want to limit the deflection to 1.5 mm the sheet will be 350 mm wide with 50 kg/$m^2$ and even 300 mm wide with 100 kg/$m^2$. The load is to be assumed uniform over the full surface of the sheet.

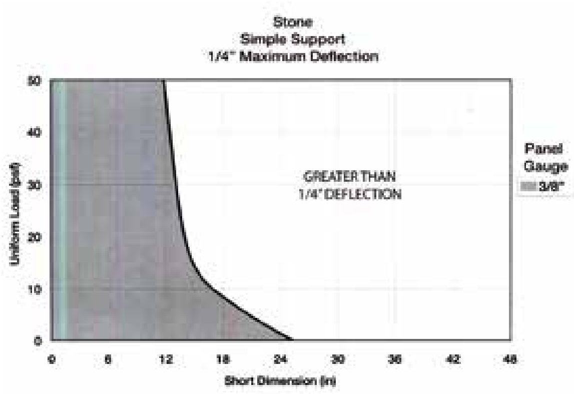
## Simple support condition on 4 sided frame 25 mm

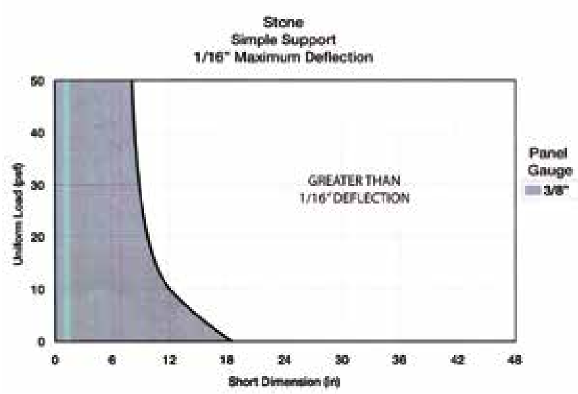
FTS panels in this situation are supported but not fixed around the perimeter of the sheet.
This type of support is commonly used for ceiling panels that are installed into support grids. The edge of the panel is ot fixed as shown in figure 4. Deflection of also simple supported panels is enterely dependent on the shortest side of the FTS.





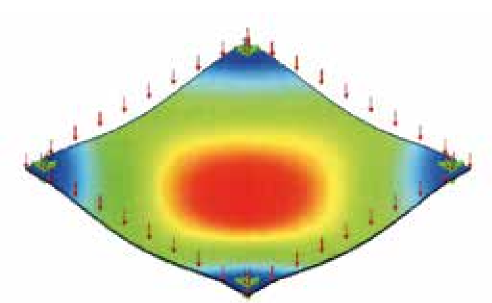
We see that a sheet 10 mm thickness with smallest dimension 400 mm (free over 350 mm) will deflect 6 mm under a load of 50 kg/m$^2$.
Limiting the acceptable deflecion to 1.5 mm a sheet 300 mm wide (250 mm free) will deflect 1.5 mm with a load of 50 kg/m$^2$. Double the load and the max sheetwidth will be less then 250 mm.

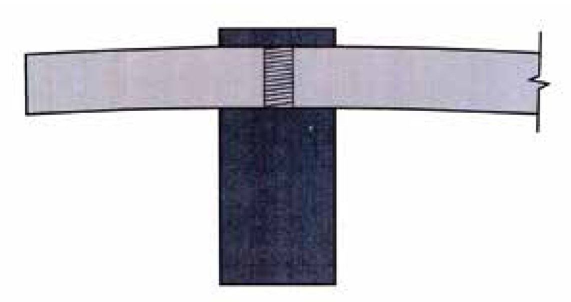


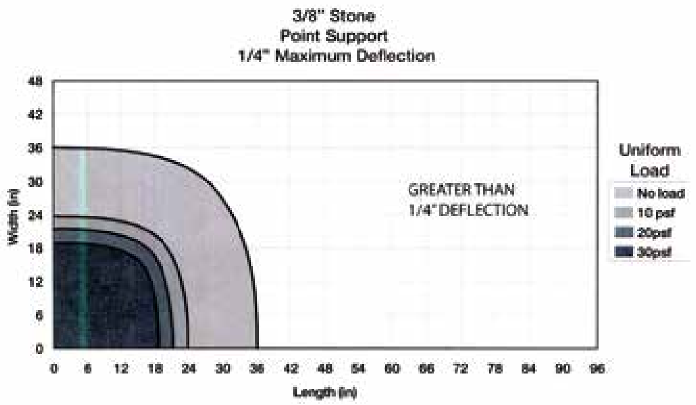

## Point support

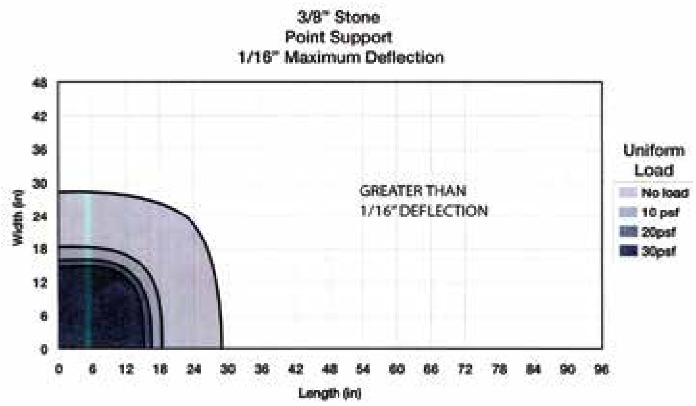
FTS panels in point-support condition are fixed at the 4 corners using a 25 mm cap and barrel. As the amount of support is minimal as compared to a 4-sided supported panel, point-supported panels are more susceptible to deflection. Unlike fully supported panels the deflection of a point-supported panel is dependent on all dimensions of the panel. A 500 x 1000 mm panel will deflect considerably more then a 500 x 500 mm panel. Of course the diameter of the support and the location influence the deflection. In our calculations the supports were located on 50 mm from each edge of the panel.





It is important to note that panels fixed with point-supports suspended from cables will exhibit more deflection then panels supported by point-supports using threaded rod. This latter is more rigid and prevent lateral movement of the panel at the support location.




From the graph is clear that a panel of 900 x 900 mm with no load will deflect 6 mm or more. With a 50 kg/m$^2$ load the largest acceptable sheetsize is 600 mm (ceiling panel!)

When 1.5 mm is choosen as maximum acceptable deflection a non-loaded sheet will measure max 700 x 700 mm. Loaded 50 lg/m$^2$ reduces the sheetsize to 450 x 450 mm.

Remark: stiffening the sheets by gluing support ribs will reduce the deflection. We did not calculate this as there a too many possibilities. Making a mock-up and measuring the deflection during 2 weeks every day and make the measu-rement visual in a graph time versus deflection. It is easy to extrapolate the long-term deflection from the shape of the curve.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