Processing and design
Solid Textile Board

Really.

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Introduction

These guidelines can be used as inspiration and a reference tool for fabricators working with Solid Textile Board by Really.

The recommendations in these guidelines are based on current knowledge on how to work with Solid Textile Board, but other tools and machine settings may work just as well.

Protective foil

Solid Textile Boards are delivered with a protective foil on both sides. Please note that there may be small air bubbles in the foil. It is recommended to leave the protective foil on as long as possible.

Colour

Solid Textile Board is made from natural materials without the use of additional dyes. Therefore, slight colour differences may occur. This also applies to the white cotton core, which may vary from pure white to white with a slight blue tint.

If colour matching is critical to the design and assembly, please follow the steps below to ensure the best possible colour match:

- Use boards from the same pallet or at least the same production batch
- A light sanding can lighten the colour of the board and mat any glossy areas on the surface
- Make sure that all surfaces of the design are treated equally to retain the colour match

Handling

A pallet with 40 Solid Textile Boards weighs approximately 1200 kg. If a forklift is not available, the boards should be unloaded individually. One full size board weighs approximately 30 kg and must be handled by two persons. It is always advisable to use gloves when handling the boards, as the edges can be sharp.

Storage

Solid Textile Boards should always be stored on a perfectly level plane to avoid any warp. Alternatively, the boards can be stored on the long edge, at an angle as close to vertical as possible, but still fully supported to avoid any warping.

Tools and equipment

In general, Solid Textile Board can be processed with the most common wood working tools. The best result will be achieved by using good quality tools and always ensuring that the tools are sharp.

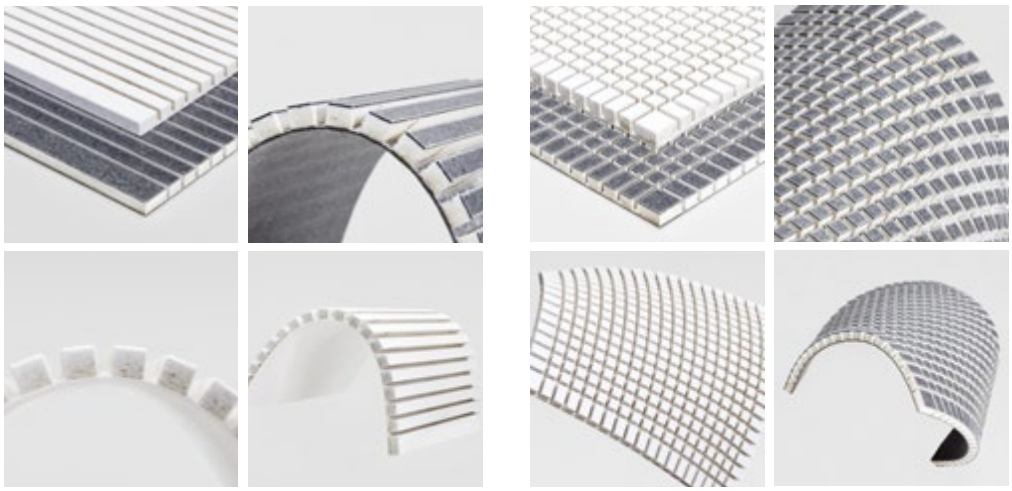
Most common processes for working with Solid Textile Board are cutting, milling, drilling, sanding, routing and kerfing.

Kerfing

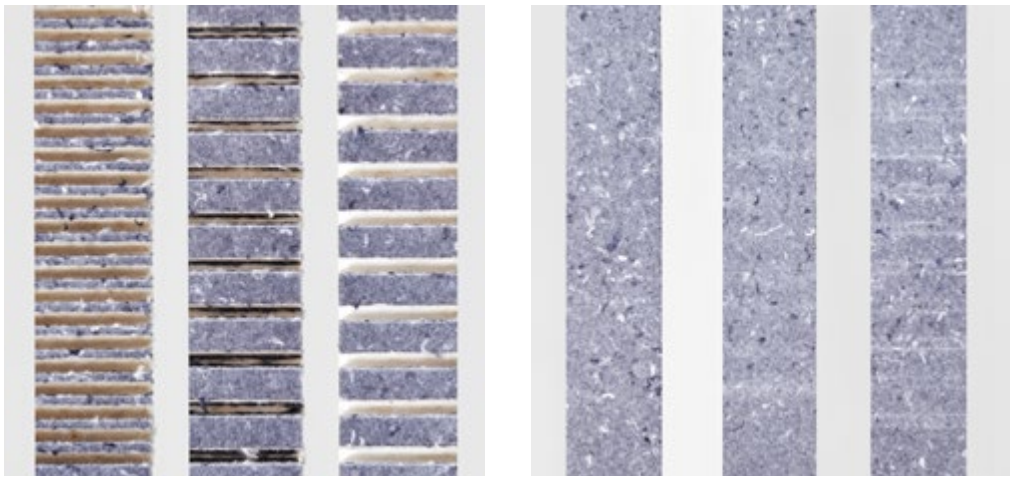
Cutting grooves to add flexibility allows for making curved shapes. The fibrous nature of the material allows the remaining surface to act as a durable yet flexible hinge. Groove depth, width and spacing will determine the level of flexibility in the board and these parameters should be exploited to match the desired curvature.

For simple curvatures, cutting groves on a table saw with a 3.2 mm wide blade is recommended. Cutting the board down to 1.5 mm thickness in each groove, combined with narrow spacing of 2.5 mm between cuts, will create a very flexible structure. For more subtle curvature, cutting down to 1 mm thickness in each groove with spacing of 7 mm between cuts is an option.

When curving Solid Textile Board, please be aware that the colour can change on the surface opposite the kerfing due to straining of surface fibres. The right balance between the dimensions of the grooves and the desired curvature is key to avoid this. Generally, less spacing between grooves and a groove depth leaving more than 1 mm of material will result in a more even surface. Customers are advised to make their own experiments to establish the best settings according to the requirements of the project.



A variation of kerf cuttings in both one and two directions

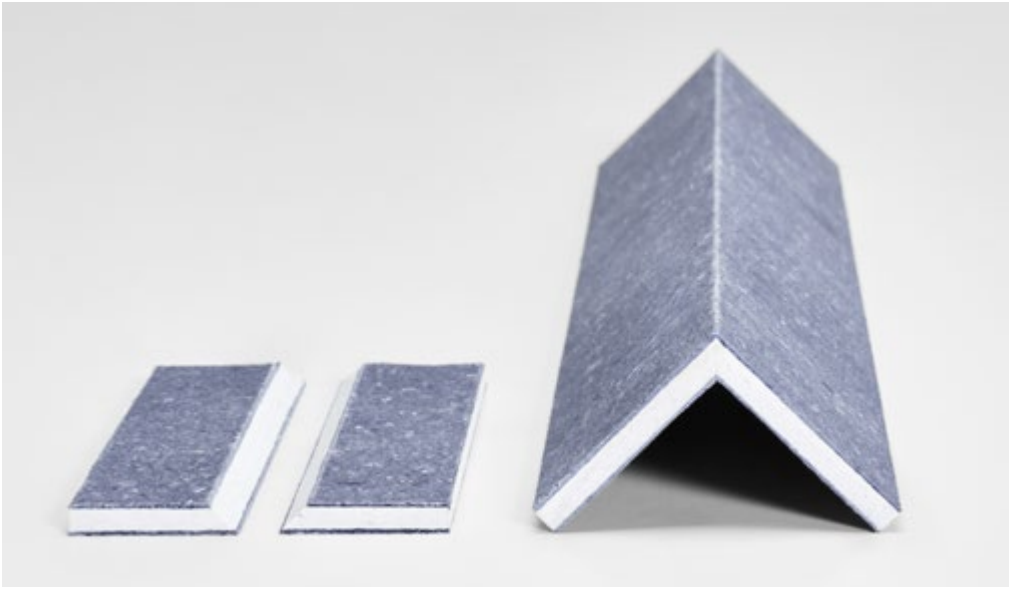


Three kerf cuttings with different cutting depths and spacing, and the resulting visual impact on the opposing side

Joints and assemblies

The slim profile of Solid Textile Board means that some methods for joining will be more suitable than others.

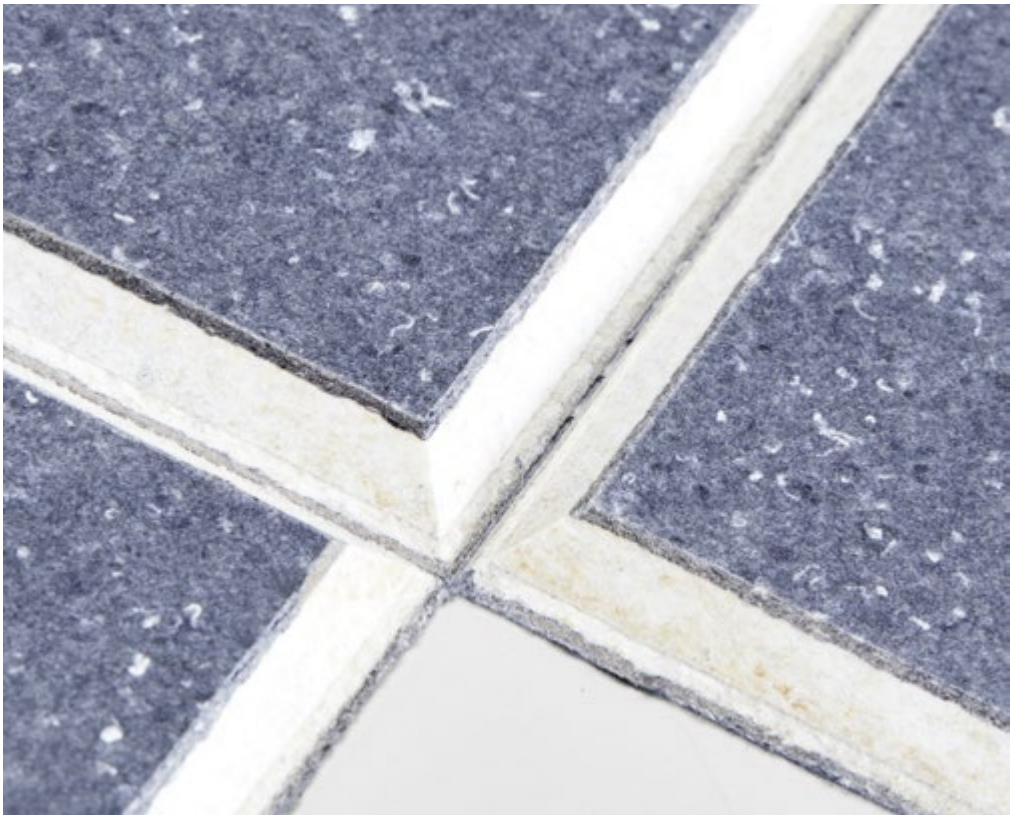
Solid Textile Board responds very well to gluing due to its fibrous nature and porous surface. For most gluing purposes, standard white wood glue (PVA) is recommended. Screws and nails sit well in the material due to its high density.



Miter joint

Miter joint

Cutting through the board at an angle of 45 degrees creates a good surface for making a solid glued assembly. Cutting at an angle can be done with a CNC machine using a blade or a v-groove router bit.



Miter-fold joint cut by a blade in a CNC machine

Miter-fold joint
A very unique feature about Solid Textile Board is its ability to naturally hinge when a v-groove is cut with as little as 0.15 mm- 0.3 mm left of surface material. The fibrous nature of the material makes it very easy to handle the material after it has been cut, giving a large degree of freedom when designing and working with the material.

A miter-fold joint makes it possible to create seamless edges.

Tool	Tool diam	RPM	Speed
V-groove	–	17000	15000 mm/min

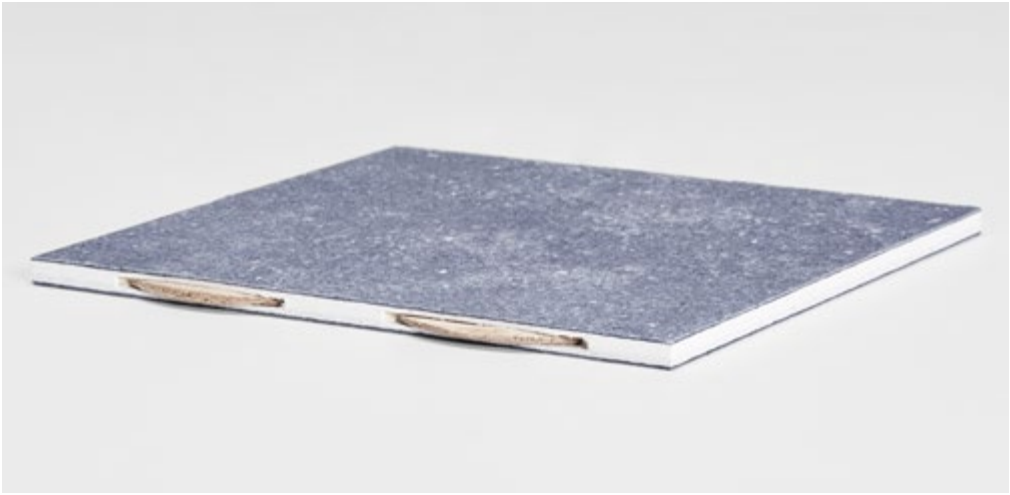
Combined miter joint and miter-fold joint for joining three sides

Dowel joint
A dowel joint allows for a precise and strong assembly. A standard size dowel will typically need to be inserted into a material that is minimum 8 mm thick. For this reason, dowel joints are only recommended when two or more Solid Textile Boards have been glued together.

Two-layer Solid Textile Board laminate with 8 mm dowels

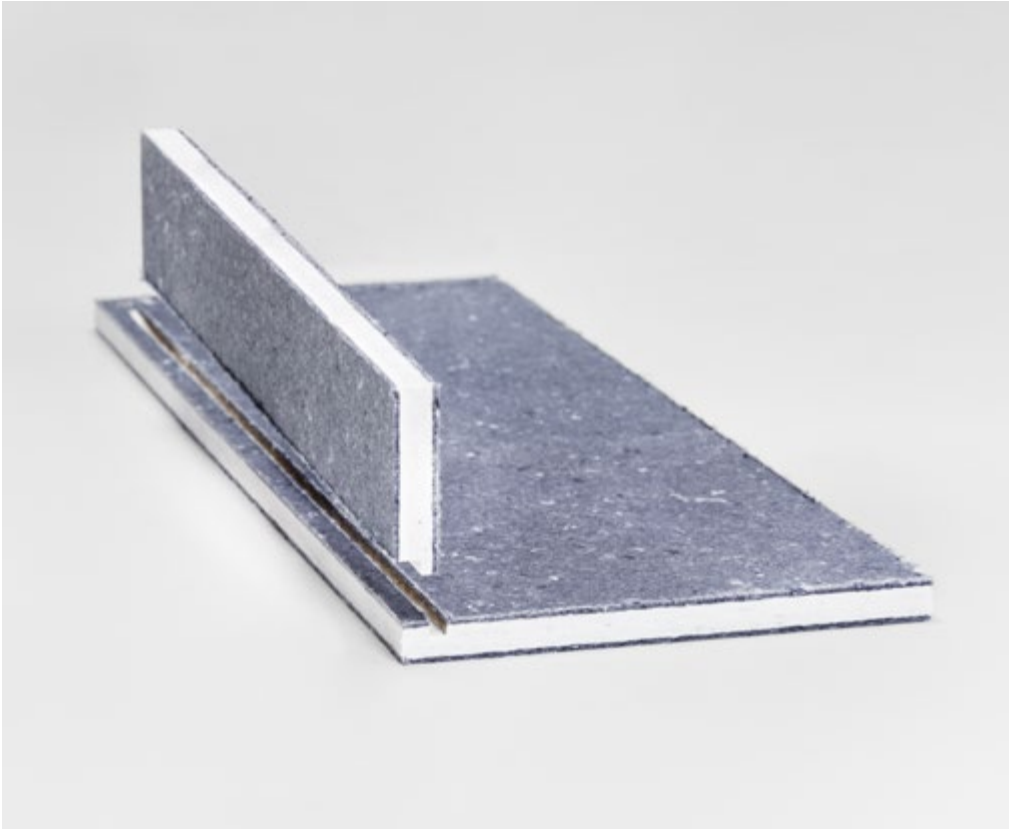
Biscuit joint
Standard biscuits, 4 mm thick, can be used for end-to-end assemblies. Please note that centring the grooves for the biscuits is essential to avoid damaging the board and ensure an optimal assembly.

An alternative to the biscuit joint could be to make a miter joint with a groove and then add a 3 mm spline to the assembly. This will make a stronger joint, but also require some additional processing time.



4 mm biscuit in Solid Textile Board

Tongue and groove joint
The tongue and groove joint is a great alternative to an end-to-end assembly, giving the same look with the added benefit of a larger surface for the glue to stick to. Both tongue and groove can be made using a table saw. The groove in the picture is made with a 3.2 mm wide blade cutting 3 mm down.



Tongue and groove joint

Screw assembly

Screws and bolts sit securely in Solid Textile Board and can be used both for assembling boards or fastening other materials to the board. It is recommended to drill a pilot hole before fitting screws and bolts to prevent delamination.

Making a centred hole when screwing into the edge of the board is crucial to avoid distortion of the surface. If done properly, screws and bolts up to 4 mm in diameter can be fitted into the edge without any surface issues.

When using screws to mount something on the surface of the boards, it is important to make sure that the screw will not leave a dent or even break through on the opposite side. To avoid this, screws should not go deeper than 4 mm into the board.

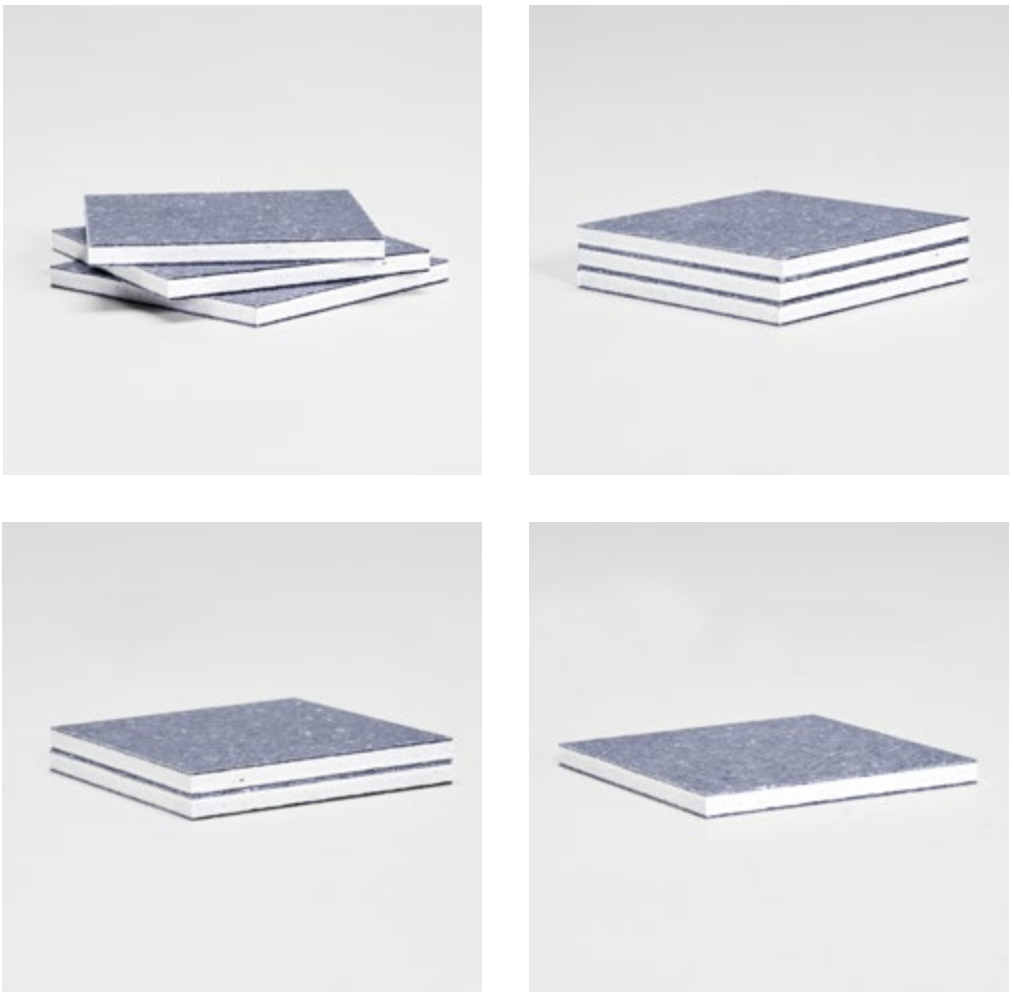
Tapping a hole for 4 mm bolt

Pilot hole for 4 mm screw

Mounting on the surface of Solid Textile Board

Increasing thickness and stiffness

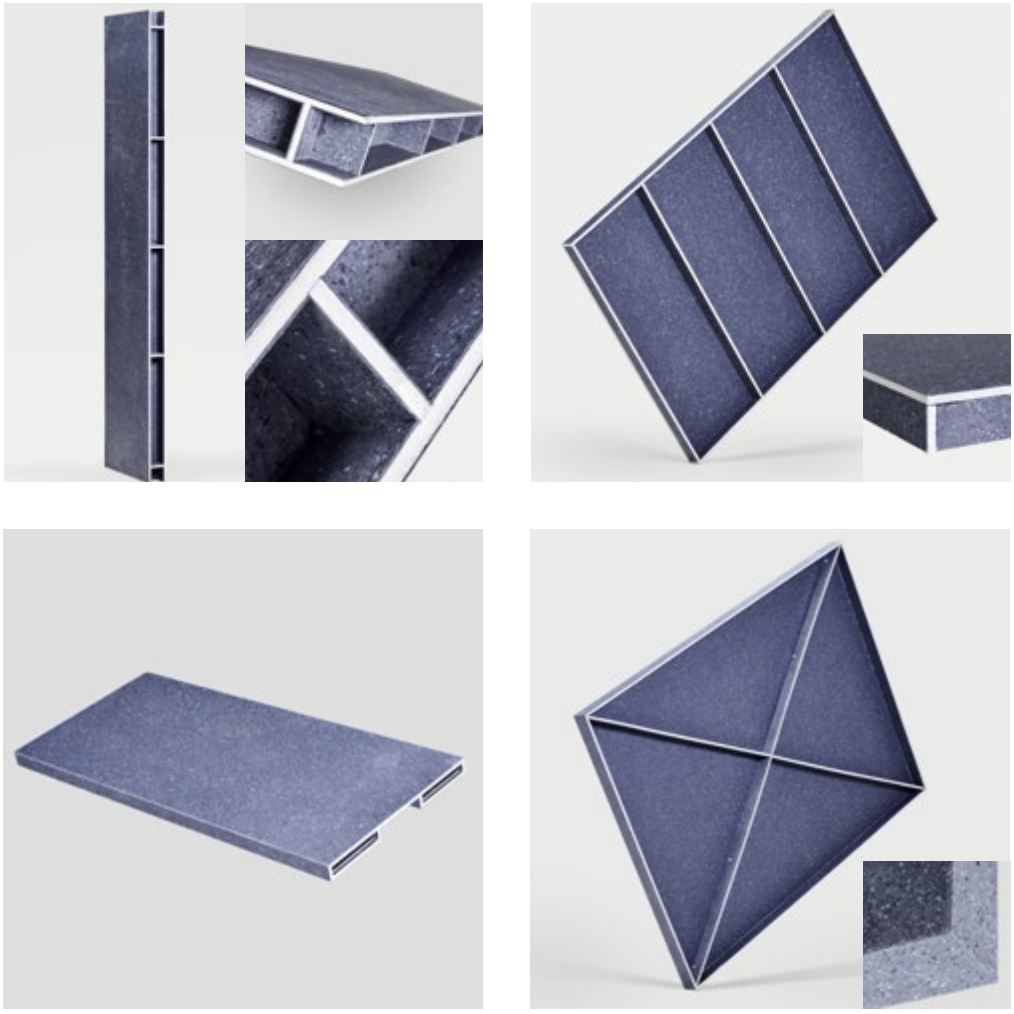
The simplest way to add both thickness and increase stiffness significantly, is to join boards by gluing them together, face to face. Normal wood glue (PVA) is recommended for this purpose. A heated press can be used to reduce curing time and to ensure flatness, especially when laminating full sized boards.



Glued layers of Solid Textile Board

Support structures

Support structures increase stiffness and thickness with a minimal increase of the weight of the final product. Support structures can be designed in numerous way, please see the pictures below for inspiration.



Design examples showing how to increase thickness and stiffness of Solid Textile Board

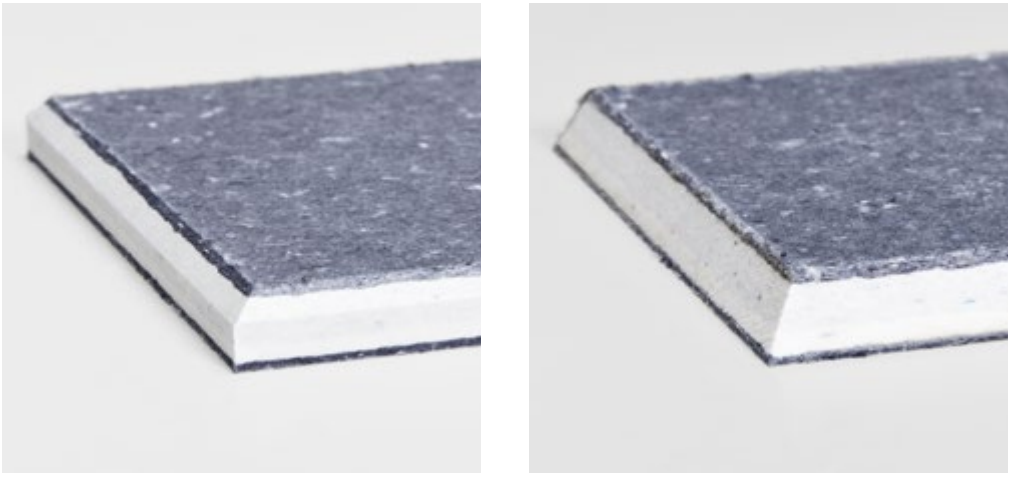
Edges

An edge profile can be made with a router or a table saw. When making an edge profile on Solid Textile Board, always use sharp tools and be careful not to burn the edges. This will give the best possible finish.

Solid Textie Board in Cotton Blue is more fibrous, compared to the other colour variations, and as a result, making a clean edge with no or a minimum of frayed fibres in this colour can be difficult. Frayed fibres can be removed by sanding.

Bevelled edge

Bevelled edge profiles can be made with a table saw with an angled blade. Cutting bevelled edge profiles generates the least amount of frayed fibre and is generally the recommended process for making edge profiles on Solid Textile Board.



Bevelled edge profiles cut with a table saw

Rounded edge

Rounded edge profiles can be made using a router.

Rounded edge profiles made with a router

Cutting

When cutting Solid Textile Board, the choice of blade and rotational speed is crucial to ensure a good result with a minimum of additional processing needed and avoid superheating.

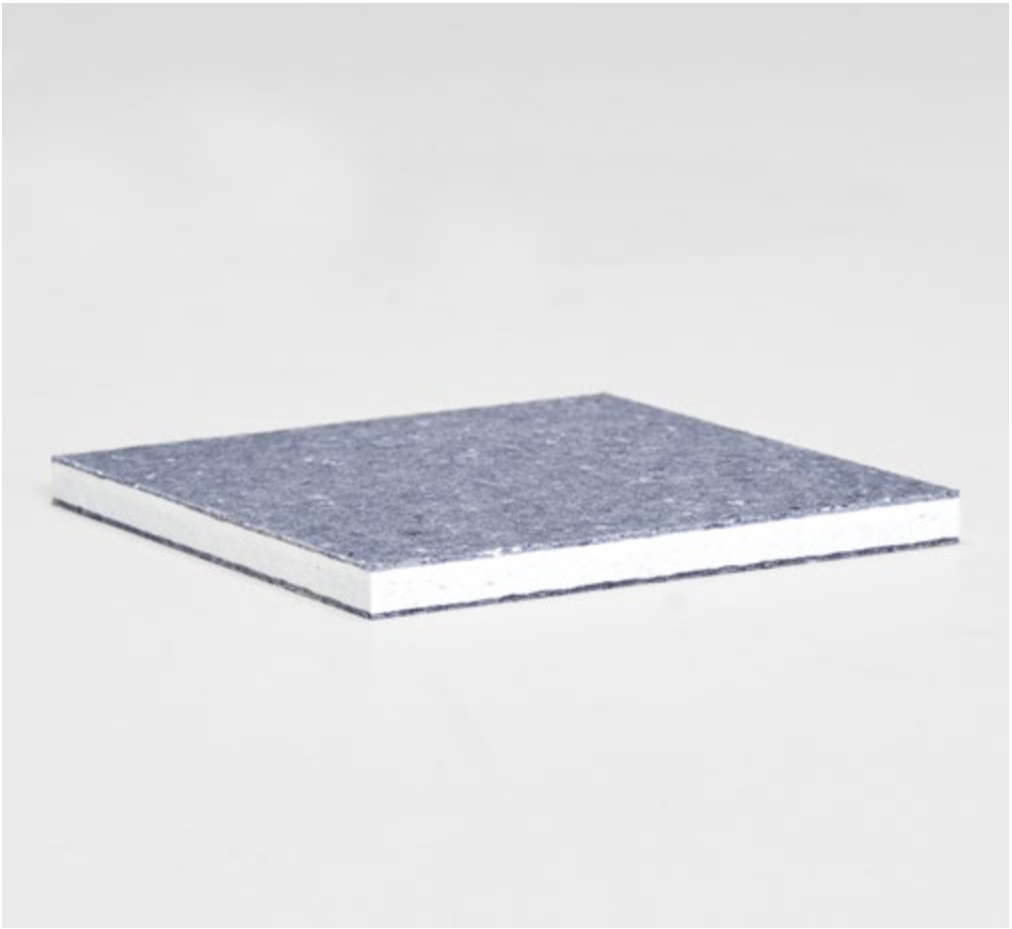
For most cutting purposes a table saw will be the most appropriate tool for cutting the board. Cutting Solid Textile Board with a CNC machine equipped with either a blade or a hard metal router bit is also possible.

An ideal cut will leave the edge of the board straight and white with no discolouration from heat build-up and with a minimum of frayed fibres.

Cutting with a table saw

Blade diam.	**Kerf width**	**No. of teeth**	**RPM**
300 mm	3.2 mm	96	4000–8000

Using a hard metal blade is essential for a good cutting result. If frayed edges occur, cutting with an overlay on the face with frayed fibres could prevent this.



Correctly cut Solid Textile Board with no additional finishing

Cutting with a CNC machine

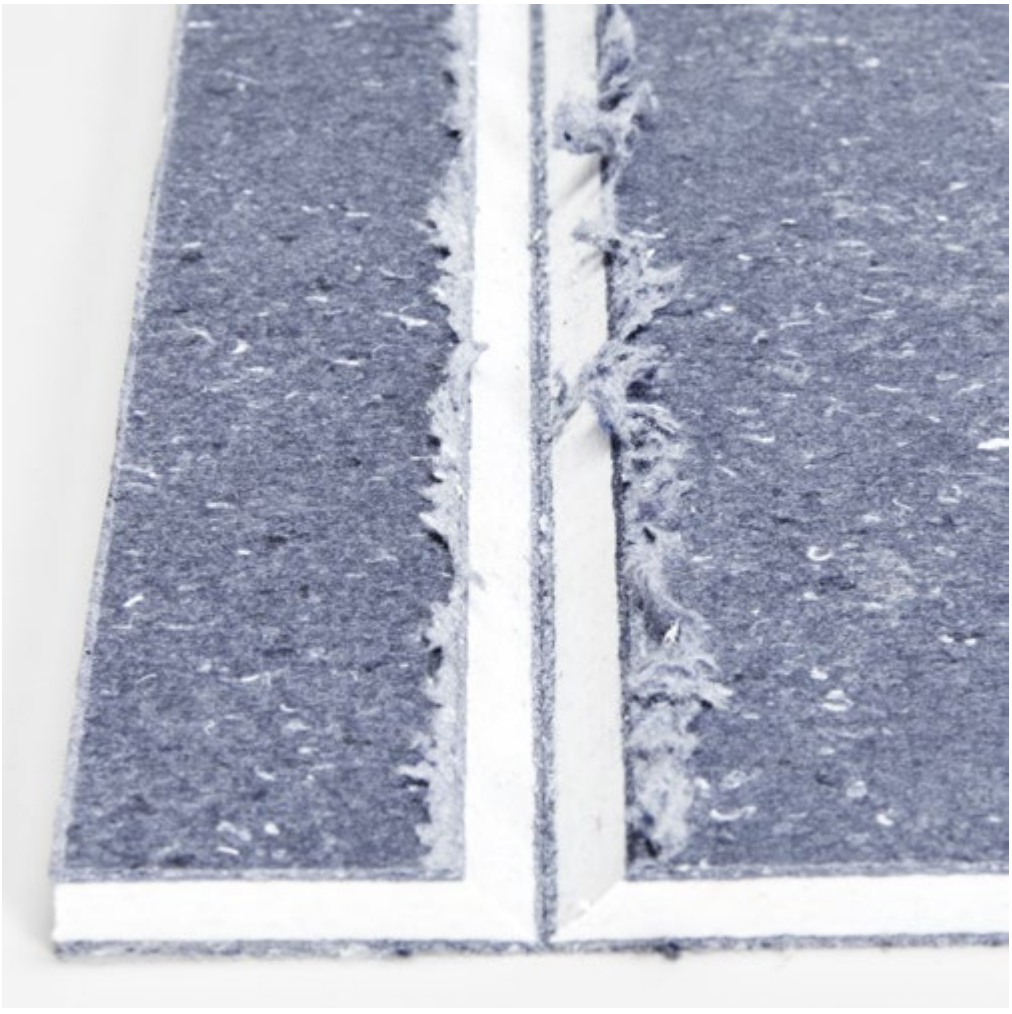
Using a blade

Blade diam.	**Kerf width**	**No. of teeth**	**RPM**	**Speed**
300 mm	3.2 mm	96	4000–8000	15000 mm/min

Using a milling cutter

Tool	**Tool diam**	**RPM**	**Speed**
Straight hard metal, two flute	10 mm	17000	15000 mm/min
Positive/negative diamond coated, three flute	12 mm	19000	15000 mm/min

The settings should always be suitable for the actual equipment. If the settings, blade or router bit are not correct, frayed edges and build-up of material on the bit will cause problems.



Build-up of frayed fibres along the edge of a v-groove cut

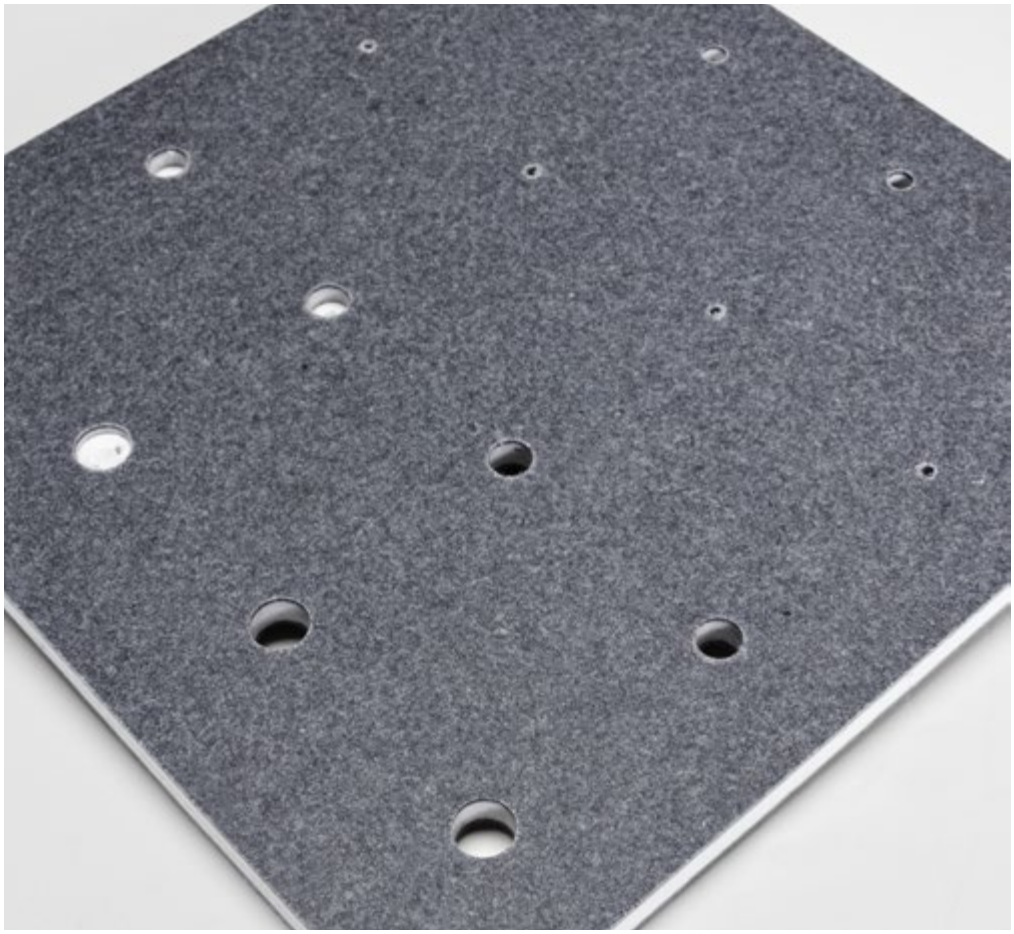
Milling and drilling

Milling can be used for cutting and for v-grooving when doing miter-fold joints, but can also be used for pre-drilling holes for assembly and engraving on the surface. Most importantly when drilling in the board is to make sure that the tools and bits are sharp. Especially when drilling a countersunk hole, tool sharpness is crucial.

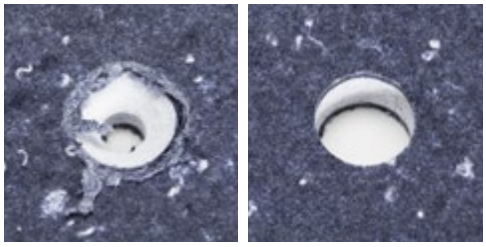
Drilling using a CNC machine

Tool	Tool diam. mm	RPM	Speed mm/min
Straight hard metal, two flute	Various	15000	–

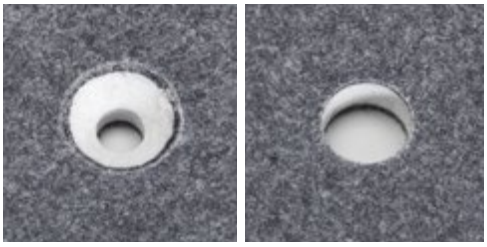
Due to its fibrous surface, Cotton Blue is more prone to creating frayed fibre residue compared to the other colours of Solid Textile Board.



Different drillings



Straight and counter sunk holes in Cotton Blue



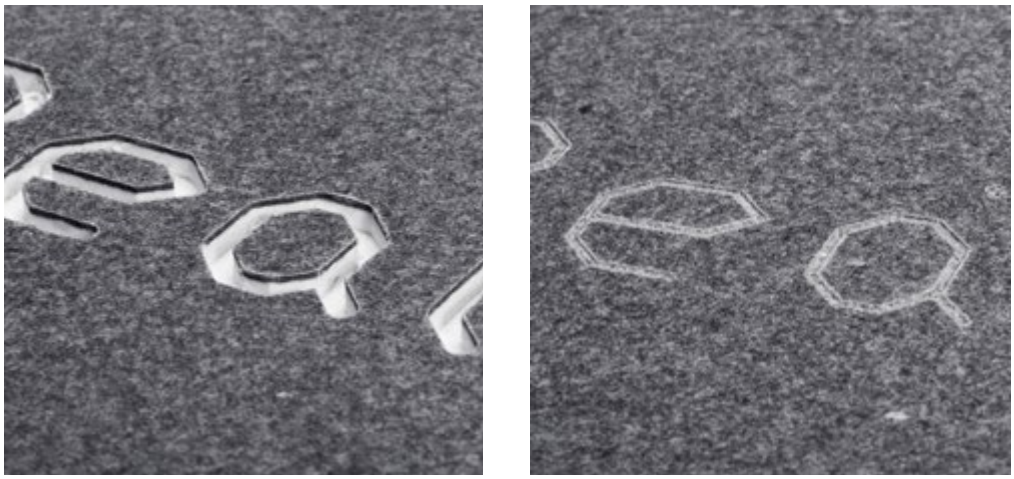
Straight and counter sunk holes in Wool Slate

Engraving

Due to the high density and layered construction of Solid Textile Board, precise engraving and two-tone 3D designs are possible.

Depending on the design of the engraving, different tools and settings can be used. Due to the slow cutting speed used for engraving, chips can easily build up. Therefore, it is recommended to use a cutting tool intended for Plexiglas, as these tools are specifically designed to remove chippings.

Tool	Tool diam	RPM	Speed
For Plexiglas, two flute	3 mm	20000	6000 mm/min



Engravings in Solid Textile Board

Three-dimensional pressing

Acoustic Textile Felt can be pressed into three-dimensional structures in a heated press. The hardness and strength of the pressed product is comparable to Solid Textile Board. Depending on the required thickness of the finished product, several layers of Acoustic Textile Felt can be placed in a press and heated to approx. 145 °C. The pressing time depends on the thickness, but for a 7.5 mm thick pressed product the pressing time will be approx. 10 minutes with a pressure of 85 bar.

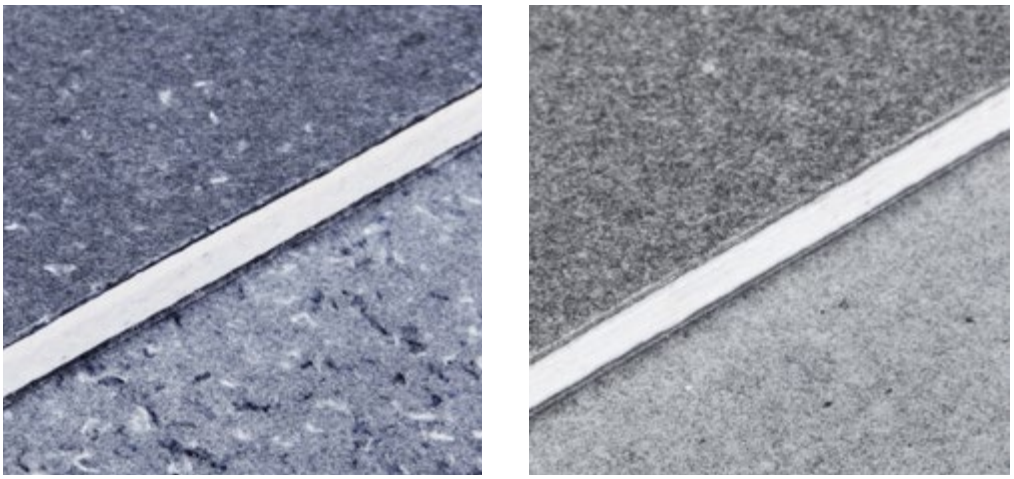
Due to the heat, the high pressure and the material's tendency to stick to metal surfaces, the pressing tool has to be manufactured in hardened steel with a low friction treatment, e.g. a low friction nickel surface.

Surface Treatment

Sanding

Sanding the surface of Solid Textile Board can be done using sandpaper and an electric sander or other means of motorised sanding. Sanding is essential when applying surface treatments, but can also be used to ensure that surface texture and colour is the same on multiple surfaces.

Please note that the surface colour will become slightly lighter when sanded. Applying a surface finish will most often restore the colour or even darken it, except when applying a melamine foil. A sanded surface will very easily be affected by moisture and dirt so make sure to handle the board with care before the surface finish is applied.



Untreated surface (top) next to sanded surface (below)

Lacquer

Most lacquers applicable for wood can be used with Solid Textile Board. The quality of the finished surface, the tint of the treated material and abrasion resistance will depend on the choice of lacquer and method of application.

Please note that different types of clear lacquers will affect the colours of Solid Textile Board differently. Many lacquers for wood will leave a yellow tint, notably on Cotton White. Most lacquers will slightly darken and increase the depth of the colour. Be aware that some lacquers will make the fibres on the surface rise.

Preparation

Solid Textile Board comes with a protective foil that should be removed before further processing.

Solid Textile Board is made of fibres and sanding the surface will make the top fibres rise, making it more difficult to achieve a smooth surface. Therefore, initial sanding of the surface is not recommended as preparation for the base coat.

PU coating
For a smooth and sealed surface, a combination of 2-component PU base coat and top cost lacquer is recommended.

Base coat
Base coat is best applied by spraying. The surface absorbs well, so two layers are necessary in order to get a smooth and sealed base.

Fibres will rise when coating is applied, so intermediate sanding between each layer of lacquer is necessary. Make sure that the surface is smooth and without any fibres protruding before applying the top coat.

Top coat
Top coat is best applied by spraying to ensure a perfectly smooth and even finish. The necessary number of top coat layers will depend on the type of lacquer used and the desired abrasion resistance, but if a proper base coat has been achieved, two layers of top coat should be sufficient to ensure excellent chemical and scratch resistance.

Recommended workflow for PU coating

1. Remove the protective foil right before the treatment begins
2. PU base coat, first layer
3. Sanding with approx. grit 600
4. PU base coat, second layer
5. Sanding with approx. grit 600
6. PU top coat, first layer
7. Sanding with approx. grit 1200
8. PU top coat, final layer

UV Coating

UV coating can be used to achieve a sealed surface on flat panels in a more economical way.

Please note that when using UV coatings, the colours and surface of the treated board might differ from the results that can be achieved with PU coating.

Primer

Clear primer film 10 g/m^2

Sanding lacquer

Clear sanding lacquer 20 g/m^2

Top coat

Top coat 16-18 g/m^2, gloss 10

Recommended workflow for UV coating

1. Remove the protective foil right before the treatment begins

First run:

2. Primer film, applied with primer roll
3. Drying, 1 Mercury UV lamp
4. Sanding lacquer, applied with groove roll
5. Drying, 2 Mercury UV lamps

Second run:

6. Primer film, applied with primer roll
7. Drying, 1 Mercury UV lamp
8. Sanding lacquer, applied with groove roll
9. Drying, 2 Mercury UV lamps
10. Sanding, 1 band grit 600
11. Top coat, applied with groove roll
12. Drying, 2 Mercury UV lamps

Wax
Most wax applicable for wood can be used with Solid Textile Board. The quality of the finished surface, the tint of the treated material and abrasion resistance will depend on the choice of wax and number of layers applied.

Please note that different types of wax will affect the colours of Solid Textile Board differently. In general, wax will leave the colour of the material slightly darkened. If a colourless wax is applied, discoloration should not be an issue. Surface shine and smoothness can be varied with the level of polishing.

Preparation
Solid Textile Board comes with a protective foil that should be removed before further processing. Initial sanding of the surface is recommended as preparation for the treatment.

Wax coating
Wax is best applied with a brush or a saturated cloth, depending on the viscosity. Apply the wax in an even layer and let it soak in. Sand, wipe off with a clean cloth and repeat the process at least three times. If heavy use is expected, it is advised to apply five layers of wax.

It should be noted that a wax surface will need regular maintenance in order to retain its protective properties.

Recommended workflow for wax coating

1. Remove the protective foil
2. Sanding with approx. grit 240
3. Wax on and off
4. Drying
5. Sanding with approx. grit 240
6. Wax on and off
7. Drying
8. Sanding with approx. grit 240
9. Wax on and off
10. Drying
11. Sanding with approx. grit 320

For a smooth and silky touch, polish the treated surface. This can be done either by hand, using a clean cloth, or with a polishing machine.

Product properties

Specifications

Board	Thickness	Length	Width	Density
Cotton Board	7.6 mm ± 0.4 mm	3000 mm ± 10 mm	1100 mm ± 2 mm	1200 kg/m^3 ± 50 kg/m^3
Cotton Blue	7.6 mm ± 0.4 mm	3000 mm ± 10 mm	1100 mm ± 2 mm	1200 kg/m^3 ± 50 kg/m^3
Wool Slate	7.6 mm ± 0.4 mm	3000 mm ± 10 mm	1100 mm ± 2 mm	1200 kg/m^3 ± 50 kg/m^3
Wool Natural	7.6 mm ± 0.4 mm	3000 mm ± 10 mm	1100 mm ± 2 mm	1200 kg/m^3 ± 50 kg/m^3

Mechanical properties

Property	Unit	Cotton	Wool	Standard
Tensile strength, max	MPa	39.80	35.50	ISO 527-2:2012
Tensile strength, break	MPa	34.50	32.80	ISO 527-2:2012
Tensile modulus	MPa	2853	2650	ISO 527-2:2012
Elongation at break	%	5.80	5.80	ISO 527-2:2012
Bending strength	MPa	56.70	41.30	EN 310:1993
E-modulus at bending	MPa	4270	2400	EN 310:1993

Colour fastness

Test	Scale	Cotton	Wool	Standard
Colour fastness to artificial light	1 – 8	White 4 Blue 5	Slate 6 Natural 4	ISO 105-B02:2014

Safety

As Really materials are based on upcycled textile milled down to small fibres, it is possible that the material may contain harmful substances that were part of the original textile. It is important to ventilate carefully when processing the material (milling, sawing and drilling) as processing can generate heat and release small fibres. It is also important to wear long pants, long-sleeved shirts and gloves when processing the material, to avoid that harmful substances from the small fibres are absorbed into the skin.

Upcycled textiles Engineered materials Designed for circularity

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