

SMILE MATERIALS

SMILE FIBRES FABRICATION GUIDELINES



FABRICATION GUIDELINES

These guidelines set out our recommendations for storing, caring for and working with our Smile Fibres materials. They are not exhaustive, and we are continually testing new possibilities with our materials. Please send us your recommendations so we can expand our knowledge of the workability of our products, so we can share ideas and information with our community.

Our fibre boards share many of the characteristics of other fibre based panels, plastics and composite wood-based boards such as MDF. They can be worked with most woodworking, plastics and metal processing tools, providing they are kept sharp and/or in good condition.

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CAUTION

Smile Fibres boards are flammable and can give off toxic fumes when burned. They also may deform with strong heat. As with any plastic-based material, do not use Smile Fibre products close to a heat source or in any area where there is a high fire risk.

Our materials are not recommended for structural applications.

Our materials are not recommended for cladding the interior/exterior of buildings without technical consideration.

Clean product prior to use (see guideline page 'maintenance' for more information).

When working with our materials, consider health and safety at all times. Always use appropriate protective equipment, including eye protection and face masks.

Review our indicative [data sheets](#) prior to use.

STORAGE

Fibre sheets should be stored in a cool, dry, indoor environment, away from direct sunlight and high-temperature areas.

Always support them fully on a flat, level surface to prevent warping. If flat storage isn't possible, place them as close to upright as you can, with the long edge on the floor. Stack from largest to smallest and prop them securely against a wall, ensuring nothing else leans on them.

Improper stacking may cause bending. If this happens, reversing the stack (placing them in the opposite direction) can often help the sheets return to their original shape, though this is not guaranteed.

The material can scratch if handled roughly, so take care when moving or stacking sheets, particularly when laying them flat on a surface. To minimise the risk of damage, place a sheet of cardboard between stacked sheets or over work surfaces. Always lift and position sheets, never drag them.

Ensure that the material is stored and worked on in a clean environment, as sharp pieces of metal or grit are likely to damage/scratch the material's surface.

Blue Denim/Loom Material Stats

Density: 1.18

Dimensions: 2400x1200x6mm

Sheet Weight: 20.4kg (approx)

Tolerance: +/-1 mm

MAINTENANCE

Smile Fibres sheets require little maintenance. Surface dirt can easily be removed using a mild detergent and warm water, but the material is relatively soft so abrasive cleaners should be used with caution.

The panels are sensitive to organic solvents and some cleaning detergents like industrial catering spray. It's advisable to use waterbased PH-neutral cleaning solutions.

Scratches can be sanded out using appropriate grades of paper and Scotch-Brite pads with a random orbital sander. Avoid using squeegees on the materials as they may create scratches by dragging debris across the surface.

If your material requires a more intensive clean, try the following fixes in order:

1. Start by applying a suitable detergent to a cloth, ensuring that the detergent is safe for use on plastic to avoid any potential damage.
2. You can also use a cream cleaner and a soft sponge. If necessary and handled with care, a fine Scotch-Brite or scouring pad may be used, though be mindful as it could cause fine scratches if not used carefully.
3. If these methods are ineffective, try using scouring powder on a cloth refer to our refinishing protocol.



RESISTANCE

Heat

Smile Fibres sheets must not be exposed to excessive heat as this will burn the material.

We would advise against using our materials anywhere they would come into regular contact with high heat, for example, a kitchen counter around a hob or oven.

NOTE: PLASTICS ARE FLAMMABLE AND CAN GIVE OFF TOXIC FUMES WHEN BURNED. DO NOT USE SMILE FIBRES PRODUCTS CLOSE TO A NAKED FLAME OR WHERE THERE IS A HIGH RISK OF FIRE.

Solvents

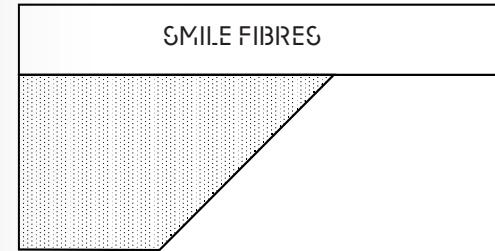
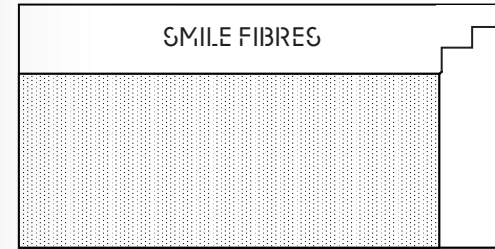
Organic solvents, like acetone, should not be used with Smile Fibres materials in an uncontrolled manner.

Sunlight

All of our materials have moderate UV resistance, but prolonged exposure to UV will cause gradual degradation. This will affect each material differently, leading to changes in both their mechanical properties and appearance over time:

UV lacquers e.g. a water-based acrylic should work to reduce the impact of UV.

SUPPORTING SHEETS



Fixing to supporting sheets

We do not recommend laminating our materials to substrates, instead using mechanical fixings with oversized holes to allow for movement of the plastic which will likely expand and contract.

We would recommend using a full supporting substructure under 6mm Smile Fibres sheets if used for table tops or counters so that the material does not buckle or warp over time.

JOINING CORNERS AND LENGTHS

Thickness may vary by +/- 1mm, so it's important to consider this when designing junctions or detailed areas. You might need to adjust your design around the finished surface. Techniques to achieve this could include using specialised jigs or clamps, or machine calibrating specific surfaces or joints.

Smile materials can be used to fabricate a variety of structures and items, and the corner joining method needed may vary with the application.

Most carpentry joints will work with our materials, but a few we recommend:

1 Lap joint: if a fillet or chamfer is needed on the corner this is a good option.

2 Butt joint: the simplest joint if the corner does not need to be too strong.

3 Mitred joint: this is possible but will leave a sharp edge unless softened post production.

Smile Fibres materials can be joined to create longer runs easily and relatively seamlessly.

Most carpentry joints will work with our materials, but we'd recommend:

1. Fixing to a back plate: using a full sheet backing plate that the material is fixed to with adhesives.

2. Screw plate: using a smaller metal plate to bridge the join on the underside.

JOINING

Settings

While basic workshop equipment and precise tools can achieve quality seam settings, using specialised tools like seamless setters for angles and flat surfaces significantly helps in calibrating the surfaces to a more 'seamless' finish. These tools are commonly used in the installation of granite, stone, marble and solid surface countertops.

Fastenings

Most types of physical fastenings can be used including screws, clips, rivets and bolts - especially those recommended for MDF boards. When screwing, try to find screws designed for plastics. We recommend using a coarse threaded stainless steel screw. Do not use impact drivers as they can over-stress and split the material. Always make a pilot hole prior to inserting screws.

Sealing Edges

We recommend fine sanding of edges followed by applying a clear water based varnish to seal the edges from the elements. This will also provide a good cosmetic finish.



JOINING

Adhesives

Our Smile Materials clear structural glue for PET/HIPS plastics will work on Smile Fibres materials. Bondchem M455 Structural Acrylic Adhesive performs well across a wide range of materials including Smile Fibres. In addition, solid surface structural glues work well on Smile Fibres though we recommend testing first.

A two-part epoxy should generally be effective, though it's important to verify compatibility with your specific product.

We strongly advise you to conduct testing to determine the most suitable adhesive and application method for your specific needs. Resin adhesives will fill some voids, and an oil or powder pigment can be added to make a colour matched seam or surface/edge filling if required.

NOTE: If you do use glues or other adhesives, do not let the glue sit on the finished surface as it can damage the surface of the material. For any seam bonding we recommend using masking tape to mask off the face of the panel to prevent surface damage, as well as using setting jigs/tools to achieve the best seamless join possible with the material. Remove excess adhesive immediately.



DRILLING

Drilling Smile Fibres Boards

Hole size: Standard tools can drill holes up to 25mm diameter. For larger holes, use trepanning or hole cutter tools.

Drills: Keep all drill bits sharp. Withdraw the drill regularly to prevent melting at the tip (the “woodpecker” method). Use a point angle of at least 100°. Special plastics drills with fast helices and polished flutes are recommended.

Cooling: Use air blast for cooling; avoid oil-based coolants.

Securing material: Always clamp sheets securely with soft-faced jaws to prevent damage during drilling.

CUTTING

Sawing Smile Fibres Boards

Most saws can be used to cut Smile Fibres boards, though fine-toothed blades are preferred. We recommend a wavy set or skip tooth blade to minimise friction on the face of the material and help swarf clear quickly.

Circular and Table/Wall Saws

Circular saws on a rail, as well as table or wall saws, are ideal for clean, straight cuts and typically produce the best finish. Blades designed for plastics or soft metals (e.g., aluminium) work particularly well. TCT blades with a negative rake are preferred. Ideally, the kerf width should be slightly larger than the blade itself. Perforated blades help reduce heat build-up.

We recommend between 4,000-8,000 RPM for a circular saw with a 300mm blade diameter, 3mm kerf width and 96 tooth nr. Keep blades sharp to avoid fibre fraying or material cracking. Plunge cutting from the reverse face is usually best. Any minor fraying can be removed with light sanding or a trim cutter.

Reciprocating/Jig Saws

Reciprocating blade saws, such as jigsaws, can also be used. Test cuts are recommended. Always secure the material with soft or rubberised clamps to prevent movement and damage. Be aware that this method may require more edge finishing than CNC or circular saw cuts.

Need help?

We offer a cutting service — please contact us for more information.

CUTTING

Milling and Routing (e.g. CNC machining)

Milling machines and woodworking routers can be successfully used on the panels. Sharp tools and a relatively slow feed rate give the best results. To prevent chatter, care should be taken to ensure that the material is securely clamped using broad, soft-faced jaws. Use a template to guide the router / sheet and, if possible, cool the bit with compressed air when routing.

For CNC cutting, you can use standard multi-flute router cutters although we recommend the same type of cutter that we use with other plastic types (single flute polished spiral upward cutter for plastics and soft metals). CNC machines cope with feed rates and speeds differently. We have generally found that faster spindle speed to feed rates work better in Smile Fibres materials, ensuring all swarf is removed during the cutting process,

Laser Cutting

We have limited experience of laser cutting but have heard anecdotally that Smile Fibres materials are compatible with laser cutters.

KERFING

Smile Fibres sheets cannot be thermoformed.

Curves can be created by **kerfing** — using a table saw or CNC router to cut parallel grooves into the material. For a smooth curved face, leave a 2 mm skin on the outer face of the curve.

For best results:

- Space grooves evenly and test bend radius before committing to the final cut.
- Avoid cutting too deep, as this can weaken the sheet or cause cracking.
- Always support the panel during bending to prevent stress at the groove points.
- Wear suitable PPE (eye protection, dust mask) and ensure adequate dust extraction.

EDGE FINISHING

Chamfered and straight edges can be produced using table saws, rail saws, or routers.

Curved edges and fillets are best achieved with a router.

Tips for clean cuts:

- Always use sharp tools to minimise heat build-up and ensure a smooth finish.
- Mask the surface to protect it from damage caused by equipment movement on the cutting bed.
- Using the recommended cutting methods can result in a ready-to-use edge, while incorrect methods may leave rough or frayed edges.
- If an edge is very rough, sand with 320-grit abrasive paper.

Removing sharp edges:

Use a laminate trimmer with a rollover edge or a hand deburring tool for a clean, easy finish.

Restoring edge colour:

Freshly cut edges may appear paler than the top surface. To restore colour depth:

1. Sand with 320–400 grit paper.
2. Wipe clean with a cloth.
3. Apply a suitable sealant.

Sealants:

- Acrylic lacquers, PU lacquers, or water-based sealants work well and can be applied with a brush, cloth, or spray.
- We have found PU lacquers provide the highest water resistance.
- For best protection, apply 2–3 coats, lightly sanding between each application. Always follow the manufacturer's guidelines for application and curing times.

Finishing service:

If ordering cut pieces from us, we offer an edge finishing service—please contact us to discuss your requirements.

SURFACE FINISHING

Blue Denim and Loom materials are provided with a semi satin finish. Scratches and marks can be carefully sanded out using gentle pressure and a fine grade of sandpaper or Scotch-Brite pads. Fine Scotch-Brite pads are particularly effective for light surface marking.

For optimal results we recommend using dual-action random orbital sanders with medium pressure and fine grit sandpaper, no coarser than 120 grit. To prevent overheating, do not linger too long in any single area while sanding. For the best finish, use Scotch-Brite pad style sandpaper.

ADDITIONAL SERVICES

Cutting and Finishing Service

We offer a cutting and finishing service on all our materials, including semi-finished and finished parts. We take your design, help you develop it and then bring it to life.

You can choose from a large selection of edge finishes and details. Please contact us for help.

Buy Back

We offer a buyback scheme where we purchase end-of-life Smile Materials and any offcuts so that we can rework them into new panels. To learn more about our buyback scheme, read about it [here](#).



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