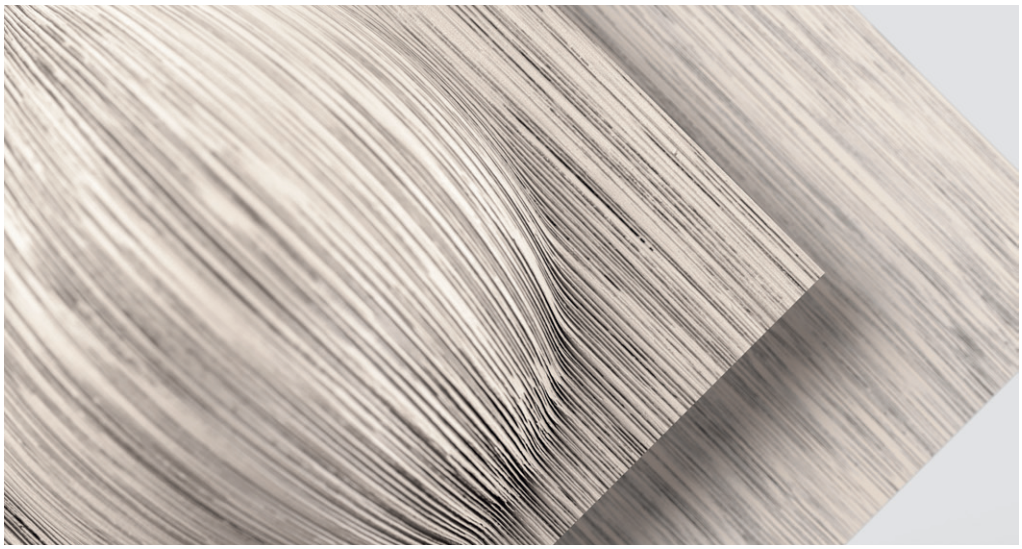
# karuun® 3D
## Info Sheet

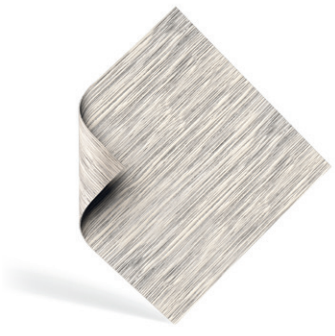


***karuun®* is a natural product obtained from the rattan palm which is produced using a highly energy-efficient manufacturing process. Unlike conventional veneers, the characteristic linear fibre structure of *karuun® 3D* leaves no visible joints after being processed.**

Thanks to a patented technique, we are also able to incorporate unique striped patterns of any colour into the material. The material's parallel fibre structure creates a distinctive dynamic. Either as a cross-glued variation in combination with a special 3D nonwoven fabric, the innovative material allows an unprecedented three-dimensional formability.

In contrast to traditional veneers, spherical objects can be easily produced too.
Lightfastness: *karuun® 3D* is not a finished product, therefore its resistance to light also depends on the cycle and chemical nature of the finish. For optimal results, we recommend testing the product for your specific purpose and intended use.

## Product Specifications



**Thickness:** 0.8 mm (with nonwoven backing, prepolished)
**Dimensions:** custom sizes upon request
**Design:** natural, black, red, blue stripes and custom stripe colour
**Lamination:** Thick 3D cellulose nonwoven fabric

**400** kg/m³
**Density (product)**
+/-

**10** %
**Moisture content**
at 20°C / 65% relative humidity

**0.048** %
**Differential shrinkage (V)**
longitudinal
per % changes of moisture

**0.15** %
**Differential shrinkage (V)**
radial / tangential
per % changes of moisture

**2.3** N/mm²
**Compression (fc,90,k)**
Rectangular to the grain

**12** N/mm²
**Compression (fc,0,k)**
Face grain direction

All dimensions are approximate. *karuun®* is a natural material therefore slight variations in colour cannot be ruled out.

## How to use

Individual pieces of *karuun® 3D* are usually joined to form wide sheets prior to being cross-glued or covered in nonwoven fabric. The lamination is a cellulose nonwoven fabric. The cellulose nonwoven fabric can briefly tolerate temperatures exceeding 220°C, e.g. during compression moulding.

We recommend you perform a test when first gluing the stripe material in order to find the right balance between pressing time, temperature and pressure.

The standard thickness of the material is 0.8 mm *karuun®* and 0.1 mm laminating material. If the material is polished, the minimum final thickness should be no less than 0.4 mm (excluding lamination).

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# karuun® 3D

## Processing guidelines (rolled goods / fixed dimensions)

For general information, see processing guidelines of *karuun® stripe*.

**Storage:** Store *karuun®* materials covered in a dry place protected from dust and UV rays.
**Suitable adhesives:** Common adhesives such as PVAC, PU, UF, MF or adhesive films

## General tips:

- The fibres are oriented longitudinally, which means the material is not as tough across the grain.
- Avoid crushing the material at individual points.

**Shaping tools:**
- Moulds made of plywood, plastic or aluminium for prototypes.
- 1/2/3-piece press moulds depending on geometry.
- Vacuum technology is generally used for 1-piece press moulds.
- Friction bearings may be used for more complex shapes (3-piece moulds).
- Heatable aluminium moulds may be used for series production.

**Processing the material:**
- Slightly moisten the material if necessary depending on the degree of deformation (caution: adhesive may stick).
- Adhesive required: 100–200 g/m.²
- Open time: depends on adhesive (see manufacturer's guidelines).
- Pressing temperature: depends on adhesive (see manufacturer's guidelines) and pressing process (15–130°C).
- Pressing time: depends on adhesive (see manufacturer's guidelines) and pressing process (3–45 mins).
- Pressing pressure: 1–3 MPa depending on application Contour milling.
- Apply steady, full-surface pressure to avoid vibrations when milling.
- Ensure the milling tool moves in the same direction as the milling head.

**Sanding:**
- Use 180–300 grit sandpaper
- Hand sanding (e.g. with an orbit sander)
- Sanding across the grain is recommended.
- Sand protruding fibres across the grain rather than peeling them off.
- To intensify the structure, brush the surface as required then re-sand.
- Blow any residue off the surface with compressed air once sanding is complete.

**Finishing:**
- Surface must be dry, free of dust and grease.
- The finishing process should be performed immediately after sanding.
- Suitable products: varnishes, hard oils and hard waxes
- Environmentally friendly acrylic resin-based water varnishes recommended
- The product you choose shouldn't intensify the material (i.e. cause a yellow tinge).
- The final hardness of the product you use shouldn't further fix the fibres.
- Order: the first application is the priming coat, after curing comes intermediate sanding (e.g. 240 grit – orbit sander), blast surface with air, 1–2 top coats
- Apply the product as thinly as possible so as to retain the material's structure.
- A fine intermediate sanding after each application is recommended.

**Lightfastness:**
*karuun® 3D* can be varnished using any product or method which is suitable for treating natural materials. However, of all the products available those with the following characteristics yield the best results:
- High wetting power
- High yellowing resistance
- High UV protection

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