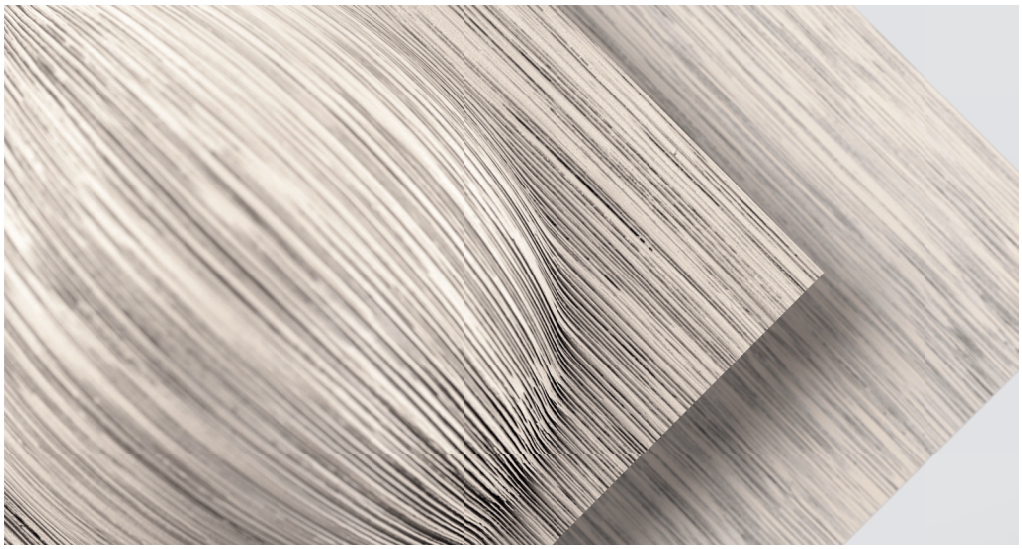
karuun® 3D
Info Sheet



karuun® is a natural material 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. 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.

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 performing a test when first gluing the 3D 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).

karuun® *3D* is a semifinished product, therefore its lightfastness partly depends on the composition of the finished product. For optimal results, we recommend testing the product in advance based on the specific purpose and intended use.

Product Specifications

Thickness: ~ 0.8 mm (with nonwoven backing, prepolished)
Dimensions: lengthwise: ~ 2,530 x 330 mm,
crosswise: custom length x ~ 490 mm
(custom sizes upon request)
Design: natura, black, red, blue stripe and custom (bleached / unbleached)
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 color and dimension cannot be ruled out.

FINALIST
Deutscher Nachhaltigkeitspreis Design 2021
Finalist 2021, 2022 & 2023

SIGNSAWARD

INNOVATIONSPREIS
Bioökonomie Baden-Württemberg
PREISTRÄGER 2023

karuun GmbH
Jaegerstrasse 23
88353 Kisslegg / Germany

+49 756 391 384 01 Tel.
+49 756 391 384 02 Fax.
nature-tech@karuun.com

karuun.com
karuun_materials
out for space feat. karuun®
karuun

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/m²
– 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
– Processing order:
  1. first application is the priming coat (see "Suitable products" above)
  2. after curing comes intermediate sanding (e.g. 240 grit – orbit sander)
  3. blast surface with air
  4. 1–2 top coats of the product (see "Suitable products" above)
– Application rate varies according to field of application and product used
– 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.

FINALIST
Deutscher Nachhaltigkeitspreis Design 2021
Finalist 2021, 2022 & 2023

SIGNSAWARD

INNOVATIONSPREIS Bioökonomie Baden-Württemberg PREISTRÄGER 2023

karuun GmbH
Jaegerstrasse 23
88353 Kisslegg / Germany

+49 756 391 384 01 Tel.
+49 756 391 384 02 Fax.
nature-tech@karuun.com

karuun.com
karuun_materials
out for space feat. karuun®
karuun