ZEITRAUM

# FRIDAY NIGHT

Design by Formstelle, 2019

# Furniture Footprint

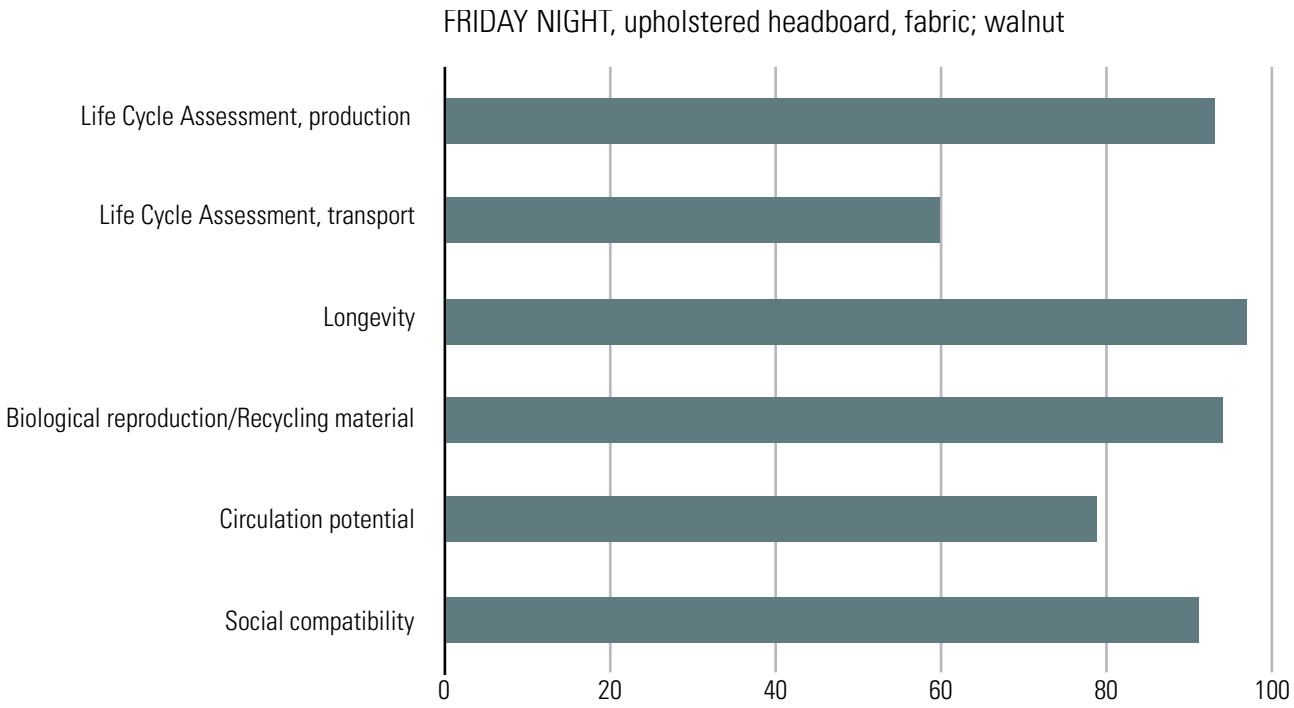
# FRIDAY NIGHT

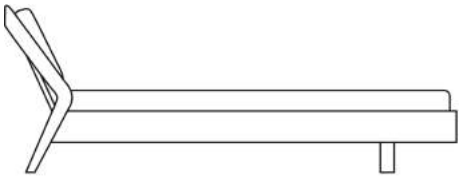
Design by Formstelle, 2019

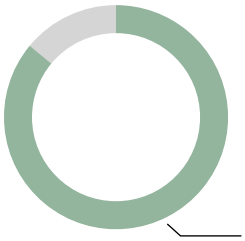
Calm, cozy, modern and soft: these are the ingredients for our bed FRIDAY NIGHT. The designer duo Formstelle has created an extension of the FRIDAY family that brings the coziness of upholstered furniture into the bedroom. In their design, textiles and wood complement each other fluently in their formal language.

ZEITRAUM furniture meets the highest quality and environmental standards and is primarily made of solid wood. All the materials we use come from responsible manufacturing and are for the most part sourced directly from Germany. The following describes the product: FRIDAY NIGHT. Due to the proportion of renewable raw materials, among other things, ZEITRAUM products can contribute to a good rating in certification programmes for sustainable buildings, such as LEED. For more information, please do not hesitate to contact us at any time.

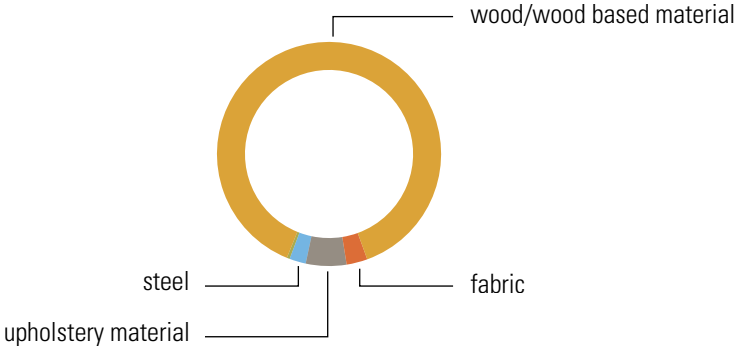
| **Product details** | | | | |
|---|---|---|---|---|
| Product category | Bed | | | |
| Weight | ca. 46 kg | | | |
| **Environmental details** | | | | |
| Recycled content/ renewable raw materials | ca. 1,2 % recycled material (steel, share: 2,4 %, ø 50 % recycled content)<br>ca. 93 % renewable materials | | | |
| Recyclability | ca. 85 % wood (waste wood category 2)<br>ca. 3,5 % wood based materials (thermal utilisation)<br>ca. 3 % textiles<br>ca. 2,4 % steel | | | |
| Repairability | Due to the modular construction and the use of solid wood, the furniture can be repaired and refurbished almost indefinitely. We will be happy to assist with spare parts and service where necessary and possible. | | | |
| **Removeable cover** | | | | |
| Leather | Yes | | | |
| Fabric | Yes | | | |
| **Packaging** | | | | |
| Flatpack | Yes | | | |
| **Manufacturing details** | | | | |
| Furniture element | Production site | Production partner since | Visited by ZEITRAUM | Code of Conduct signed |
| Frame | Bavaria, Germany | 1998 | Yes | Yes |
| Headboard | Bavaria, Germany | 2012 | Yes | Yes |
| Upholstery | Bavaria, Germany | 1999 | Yes | Yes |
| Cushion | Thuringia, Germany | 2024 | Not yet | Not yet |
| **Warehouse** | | | | |
| Country | | Federal state | | |
| Germany | | Bavaria | | |






- wood/wood based material
- fabric
- upholstery material
- steel
- other

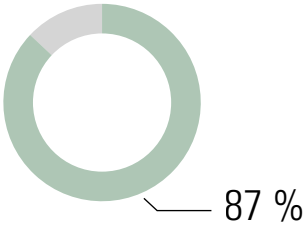


Fabric is removable

| **FRIDAY NIGHT, upholstered headboard, fabric; walnut** | Material/Product rating | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Walnut | Beech | Plywood | Fabric, Rohi, Opera | PUR, Upholstery | PUR foam sticks | Silicon-ised fibre | Poly-ester fiber | Cotton, conv. | Steel | PA | Natural oil, Osmo | PVAC | Weighted rating, % |
| Life Cycle Assessment, production | 10 | 10 | 6,33 | 5,33 | 3 | 3 | 9 | 9 | 6 | 5,33 | 3 | 5 | 10 | 93,20105 % |
| Life Cycle Assessment, transport | 5 | 10 | 9 | 5 | 6,5 | 6,5 | 6,5 | 6,5 | 5 | 4 | 6,5 | 9 | 6,5 | 59,7235 % |
| Longevity | 10 | 10 | 9 | 9 | 5 | 5 | 8 | 8 | 8 | 10 | 8 | 10 | 9 | 97,139 % |
| Biological reproduction/ Recycling material | 10 | 10 | 9 | 10 | 0 | 0 | 0 | 0 | 10 | 6 | 0 | 6 | 0 | 93,534 % |
| Circulation potential | 8 | 8 | 4 | 8 | 7 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 4 | 79,266 % |
| Social compatibility | 9 | 10 | 9 | 10 | 9 | 9 | 9 | 9 | 3 | 8 | 9 | 10 | 9 | 90,929 % |
| Average rating, ø | 8,666 | 9,666 | 7,721 | 7,888 | 5,083 | 5,083 | 7,083 | 7,083 | 7 | 7,221 | 6,083 | 8,333 | 6,416 | Total weight |
| Share in kg | 32 | 7,2 | 1,6 | 1,4 | 1,1 | 0,35 | 0,15 | 0,62 | 0,5 | 1,1 | 0,05 | 0,085 | 0,07 | 46,225 |
| Share in % | 69,22 % | 15,57 % | 3,46 % | 3,02 % | 2,37 % | 0,75 % | 0,32 % | 1,34 % | 1,08 % | 2,37 % | 0,1 % | 0,18 % | 0,15 % | |
| Weighted | 5,998 | 1,504 | 0,267 | 0,238 | 0,12 | 0,038 | 0,022 | 0,094 | 0,075 | 0,171 | 0,006 | 0,014 | 0,009 | |
| **Product rating in %** | **85,56** | | | | | | | | | | | | | |

| **Packaging** | Material/Product rating | | | | | |
|---|---|---|---|---|---|---|
| | Cardboard | PE fleece | PP strapping | PE foil | PE foam | Weighted rating, % |
| Life Cycle Assessment, production | 10 | 3 | 5 | 5 | 5 | 96,308 % |
| Life Cycle Assessment, transport | 9 | 6,5 | 6,5 | 6 | 6 | 88,398 % |
| Longevity | 4 | 5 | 5 | 0 | 5 | 40,159 % |
| Biological reproduction/ Recycling material | 6 | 0 | 0 | 0 | 3 | 56,661 % |
| Circulation potential | 10 | 10 | 10 | 10 | 10 | 99,97 % |
| Social compatibility | 10 | 9 | 10 | 9 | 10 | 99,544 % |
| Average rating, ø | 8,166 | 5,583 | 6,083 | 5 | 6,5 | Total weight |
| Share in kg | 11 | 0,4 | 0,1 | 0,1 | 0,1 | 11,7 |
| Share in % | 94,01 % | 3,41 % | 0,85 % | 0,85 % | 0,85 % | |
| Weighted rating | 7,676 | 0,19 | 0,051 | 0,042 | 0,055 | |
| **Product rating in %** | **80,14** | | | | | |

1 American walnut




**Tab. 1 A**: Material data sheet, American walnut, general[1] [2]

| | |
|---|---|
| Material group | Natural material; wood; hardwood |
| Botanical name | *Juglans nigra L. (Juglandaceae)* |
| Name | American Walnut (GB); Black Walnut (US); Amerikanischer Nussbaum, Schwarznuss, Schwarze Walnuss (D); Noyer Noir (F) |
| Material Norm. Ref. | DIN EN 13556: JGNG |
| Origin | Missouri |
| Occurrence | Midwestern and northeastern U.S.; Ontario to Florida, Minnesota to Texas; southeastern Canada.<br><br>Prefers deep, loose fresh loam soils and mild climate; fairly winter hardy |
| Use | Solid and veneer, furniture and interior finishing; turning; marine interiors; small and seating furniture; piano making; musical instruments; buttons; inlays; etc. |

[1] WAGENFUEHR, R. (2007) - Wood Atlas. (6) Leipzig: Hanser Wirtschaft, Fachbuchverlag Leipzig, pp. 551-554

[2] LOHMANN, U. (2010) - Wood encyclopedia. The standard work for wood and forestry. (4) Hamburg: Nikol-Verlag, page 859

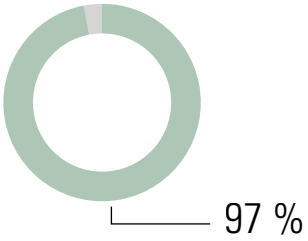
**Tab. 1 B**: Material data sheet, American walnut, specific[3]

| **General description** | | |
|---|---|---|
| Certifications/Information | The Evergreen Initiative; NHLA; FSC on request | |
| **Life cycle assessment data hardwood, average (GER)** | | 10 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 2,18 MJ | 10 |
| Use of freshwater resources (FW) | 0,00048 $m^3$ | 10 |
| **Environmental impact per $m^3$** | **A1-A3** | |
| Global Warming Potential (GWP) | -1,74 Kg $CO_2$-eqv. | 10 |
| **Environmental impact Transport, per 1000 kgkm (580 kg/$m^3$)** | | 5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 300 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 362,4 MJ | |
| Use of freshwater resources (FW) | 0,019164 $m^3$ | |
| Global Warming Potential (GWP) | 26,907 Kg $CO_2$-eqv. | |
| **Main raw material origin: Missouri/Production site** | | 0 |
| **Truck - ca. 2000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 2416 MJ | |
| Use of freshwater resources (FW) | 0,12776 $m^3$ | |
| Global Warming Potential (GWP) | 179,38 Kg $CO_2$-eqv. | |
| **Container ship - ca. 10000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 1094 MJ | |
| Use of freshwater resources (FW) | 0,005636 $m^3$ | |
| Global Warming Potential (GWP) | 90,11 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/repairable (> 20 years) | 10 |
| Biological reproduction/ Recycled material | 100 % | 10 |
| Circulation potential | 70 % - 99 % (technological/recycling) | 8 |
| Socially compatible | Yes | 9 |

[3] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

| | | |
|---|---|---|
| **Total average rating** | | **8,66** |
| **Processing** | | |
| Mechanical | Very good; can be cut and peeled, suitable for turning and carving; low tendency to crack and warp | |
| Drying | good; but slow; low tendency to tear and shed; good stability | |
| Adhesion | good; alkalis can cause stains | |
| Surface finishing | Very good; can be stained and excellently varnished; tinting of the wood color by smoking | |
| **Natural durability DIN EN 350-2** (with weathering) | Moderately durable; sapwood low; heartwood fairly good; resistant to fungi and insects; durability class 3 | |
| **Physical properties** | | |
| Kiln density (0 % wood moisture content) | 560… 610 kg/m³ | |
| Bulk density (12 - 15 % wood moisture) | 580… 640… 810 kg/m³ | |
| Pore ratio | ca. 63 % | |
| Shrinkage rate at 1 % moisture reduction | radial - 0.19 %; tangetial - 0.26 %; volume - 0.40 % | |
| **Mechanical properties** | | |
| Compressive strength ($\sigma_{dB}$) | 44… 53 N/mm² | |
| Flexural strength ($\sigma_{bB}$) | 90… 103 N/mm² | |
| Tensile strength ($\sigma_{zB} \perp$) | ca. 4,7 N/mm² | |
| Shear strength ($\tau_{aB}$) | 8,8… 9,6 N/mm² | |
| Hardness (HB \|\|) | ca. 50 N/mm² | |
| Hardness (HB $\perp$) | ca. 26 N/mm² | |
| E-modulus ($E_b$ \|\|) | 11000… 13500 N/mm² | |

2 Beech




**Tab. 2 A**: Material data sheet, beech, general[4][5]

| | |
|---|---|
| Material group | Natural material; wood; hardwood |
| Botanical name | *Fachs sylvatica L. (Fagaceae)* |
| Name | Beech (GB); Buche, Rotbuche (D); Hétre (F) |
| Material Norm. Ref. | DIN EN 13556: FASY |
| Origin | Northern Germany, Germany, (Central Europe) |
| Occurrence | Western, central and southern Europe; prefers loose, mineral-rich and well-watered soils; sensitive to low temperatures and late frosts |
| Use | Veneer; mainly as peeling lumber for plywood, composite panels, etc.; furniture making; paneling and parquet; structural lumber for medium duty, automotive and mechanical engineering, building construction and civil engineering; specialty lumber for particleboard and fiberboard, pulp and paper, sports equipment, workbenches, stairs; musical instruments, etc. |

[4] WAGENFUEHR, R. (2007) - Wood Atlas. (6) Leipzig: Hanser Wirtschaft, Fachbuchverlag Leipzig, pp. 672-676

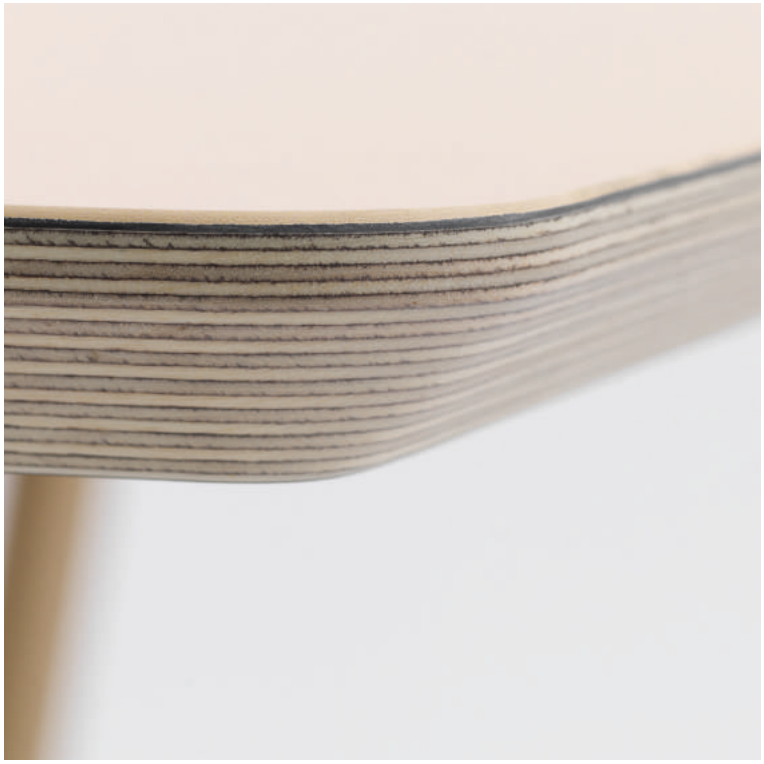
[5] LOHMANN, U. (2010) - Wood encyclopedia. The standard work for wood and forestry. (4) Hamburg: Nikol-Verlag, page 192

**Tab. 2 B**: Material data sheet, beech, specific[6]

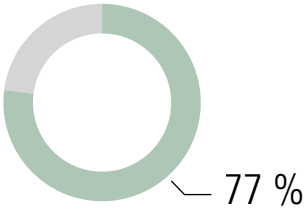
| **General description** | | |
|---|---|---|
| Certifications/Information | FSC and PEFC on request | |
| **Life cycle assessment data hardwood, average (GER)** | | 10 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 2,18 MJ | 10 |
| Use of freshwater resources (FW) | 0,00048 $m^3$ | 10 |
| **Environmental impact per $m^3$** | **A1-A3** | |
| Global Warming Potential (GWP) | -1,74 Kg $CO_2$-eqv. | 10 |
| **Environmental impact Transport, per 1000 kgkm (720 kg/$m^3$)** | | 10 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 300 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 362,4 MJ | |
| Use of freshwater resources (FW) | 0,019164 $m^3$ | |
| Global Warming Potential (GWP) | 26,907 Kg $CO_2$-eqv. | |
| **Main raw material origin: Germany, Central Europe/Production site** | | |
| **Truck - ca. 1000 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 1208 MJ | |
| Use of freshwater resources (FW) | 0,06388 $m^3$ | |
| Global Warming Potential (GWP) | 89,69 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/repairable (> 20 years) | 10 |
| Biological reproduction/ recycled material | 100 % | 10 |
| Circulation potential | 70 % - 99 % (technological/recycling) | 8 |
| Socially compatible | Yes | 10 |
| **Total average rating** | | **9,66** |
| **Processing** | | |
| Mechanical | Good for sawing, planing, turning, bending, carving; optimum cutting speed 30 m/s, can be cut and peeled | |
| Drying | Good; tendency to tear and warp; dry gently as it shrinks a lot | |

[6] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

| | | |
|---|---|---|
| Adhesion | Good | |
| Surface finishing | Good; can be stained and varnished | |
| **Natural durability DIN EN 350-2** (with weathering) | Low; susceptible to fungus and insects; not weather resistant; protect carefully in outdoor areas; durability class 3 to 4 | |
| **Physical properties** | | |
| Kiln density (0 % wood moisture content) | 490… 680… 880 kg/m³ | |
| Bulk density (12 - 15 % wood moisture) | 540… 720… 910 kg/m³ | |
| Pore ratio | ca. 55 % | |
| Shrinkage rate at 1 % moisture reduction | radial - 0,20 %; tangetial - 0,40 %; volume - 0,46… 0,60 % | |
| **Mechanical properties** | | |
| Compressive strength ($\sigma_{dB}$) | 41… 62… 99 N/mm² | |
| Flexural strength ($\sigma_{bB}$) | 74… 123… 210 N/mm² | |
| Tensile strength ($\sigma_{zB} \perp$) | 7,0… 10,7 N/mm² | |
| Shear strength ($\tau_{aB}$) | 6,5… 8,0… 19,0 N/mm² | |
| Hardness (HB \|\|) | ca. 72 N/mm² | |
| Hardness (HB $\perp$) | ca. 34 N/mm² | |
| E-modulus ($E_b$ \|\|) | 10000… 16000… 18000 N/mm² | |



3 Plywood




**Tab. 3 A**: Material data sheet, plywood, plywood, general[7]

| | |
|---|---|
| Material group | Natural-synthetic material; wood-based materials; plywood; veneer panels |
| Name | Plywood (GB, US);Furnierplatten; Schichtholz; Kunstharzpressholz; Brettsperrholz; etc. (D) |
| Short name | FU |
| Manufactured in | France |
| Origin of the wood | France |
| Version | Maritime pine plywood, 24 mm, according to DIN 13986 |
| Use | Maritime pine plywood according to DIN 13986 for use according to DIN EN 1995-1-1/ Maritime pine plywood - according to DIN EN 636-3 |

[7] KALWEIT, A., a.o. (2012) - Handbook of Technical Product Design, Materials and Manufacturing - Decision Bases for Designers and Engineers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

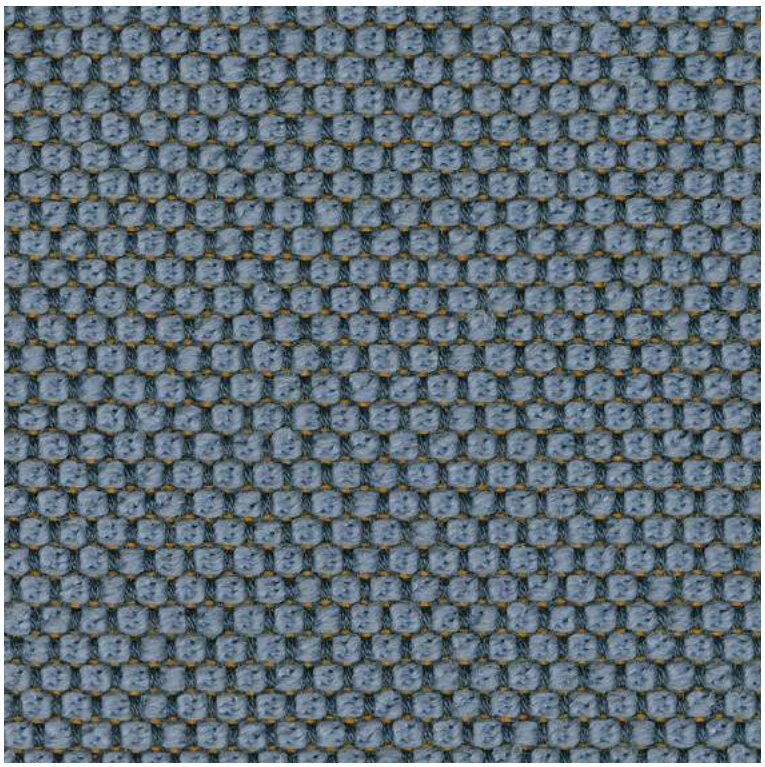
**Tab. 3 B**: Material data sheet, plywood, plywood, specific[89]

| **General description** (manufacturer spec.) | | |
|---|---|---|
| Certifications/Information | PEFC, E1 (EU), CE, BFU 100 | |
| Emission class | E1 | |
| Fire resistance | **Fire behavior**: according to DIN EN 13986: D-s2, d0, normal flammability, no burning dripping/falling off | |
| **General description** (general) | | |
| Length | 2440 - 2800 mm | |
| Wide | 1220 - 1250 mm | |
| Thickness | 7 - 45 mm | |
| Color | Mostly light white yellowish rotary cut veneer (maritime pine) | |
| Texture | Plain, figured, smooth (top view), structure of several layers of veneer, smooth (cross section) | |
| **Basic materials/auxiliary materials** | | |
| Veneer layers | From at least three layers (7 mm) to 17 layers (45 mm) | |
| Binder | DIN EN 314-2 gluing class 3, outdoor use | |
| **Life cycle assessment data plywood, average (GER)** | | 6,33 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 6,8 MJ | 8 |
| Use of freshwater resources (FW) | 0,004 $m^3$ | 1 |
| **Environmental impact per $m^3$** | **A1-A3** | |
| Global Warming Potential (GWP) | -1,5 Kg $CO_2$-eqv. | 10 |
| **Environmental impact Transport, per 1000 kgkm (590-600 kg/$m^3$)** | | 9 |
| **Production site: France/ZEITRAUM** | | |
| **Truck - ca. 1500 km** | A4 | 8 |
| Total non-renewable primary energy (PENRT) | 1812 MJ | |
| Use of freshwater resources (FW) | 0,096 $m^3$ | |
| Global Warming Potential (GWP) | 134,535 Kg $CO_2$-eqv. | |
| **Main raw material origin: Central Europe/Production site** | | |
| **Truck - ca. 1000 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 1208 MJ | |

[8] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[9] WEZEL, O. (2019) - Strength properties of wood-based materials according to DIN EN 622 <http://www.tischler-ole-welzel.de/Holzwerkstoffe/Faserplatten%20nach%20DIN%20EN%2013986.pdf> Accessed, on 09/03/2019

| | | |
|---|---|---|
| Use of freshwater resources (FW) | 0,06388 $m^3$ | |
| Global Warming Potential (GWP) | 89,69 $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/moderately repairable (> 20 years) | 9 |
| Biological reproduction/ recycled material | 90 % | 9 |
| Circulation potential | Only thermally recyclable | 4 |
| Socially compatible | Yes | 9 |
| **Total average rating** | | **7,72** |
| **Processing** | | |
| Mechanical | Very good; can be sawed, drilled and milled with common machines | |
| Adhesion | Very good | |
| Surface finishing | good; varnishable; coating possible | |
| **Durability** | By changing the synthetic binder or adding further additives, an increase in fire resistance, resistance to fungi and insects and moisture resistance can be achieved (see manufacturer's instructions) | |
| **Physical properties** | | |
| Bulk density | 540 $kg/m^3$ | |
| Basis weight (18 mm) | n.a. | |
| Material moisture at delivery | ca. 8 % | |
| **Mechanical properties** | | |
| Compressive strength ($\sigma_{dB}$) | ca. 22,5 $N/mm^2$ | |
| Flexural strength ($\sigma_{bB}$) | ca. 15 $N/mm^2$ | |
| Tensile strength ($\sigma_{zB}$ \|\|) | ca. 13,5 $N/mm^2$ | |
| Shear strength ($\tau_{aB}$) (transverse to plate plane) | n.a. | |
| E-modulus ($E_b$ \|\|) | ca. 5000 $N/mm^2$ | |



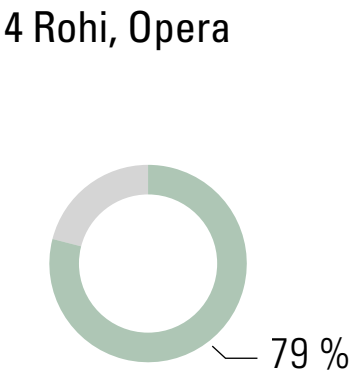



**Fig. 4**: www.rohi.com

**Tab. 4 A**: Material data sheet, Opera, general[10]

| | |
|---|---|
| Material group | Natural synthetic material; textiles; upholstery fabric; virgin wool, polyamide |
| Name | Opera |
| Material abbreviation | WV (virgin wool); PA (polyamide) |
| Manufacturer | Rohi, Germany (GER) |
| Manufactured in | Germany (GER) |
| Designer | Rohi |
| Version | 29 different colors |
| Use | Object areas and private living spaces with very high stresses |

[10] ROHI (2021) - Rohi; Products <https://www.rohi.com/en/products/living/> Accessed, on 11/12/2021

**Tab. 4 B**: Material data sheet, Opera, specific[11][12]

| **General description** (manufacturer spec.) | | |
|---|---|---|
| Certifications/Information | RAL-UZ 117 2+3, IWTO Guidelines for Sheep Welfare, FR-free, AB2998 (US Export Norm), ISO 9001, REACH, CP65 (on request) | |
| Fire resistance | **Fire tests (without additional flame retardant finish)**: CAL TB 117 - 2013 • DIN EN 1021-1/-2 • BS 5852 Part 1: 1979 • UNI 9175 1 IM • ÖNORM B1/Q1 • IMO 2014/90/EU<br><br>**Fire tests (with optional flame retardant finish)**:<br>BS 5852: 2006 Crib5 • DIN 4102-1 B2 • DIN EN 13501-1 E • FAR 25.853 12 sec. vertical • NF P92-507 M2 | |
| **Environmental benefits** | | |
| AZO dyes | Not contained | |
| Heavy metals | Not contained | |
| Formaldehyde | Not contained | |
| Brominated flame retardants | Not contained | |
| Spinning oil used | n.a. | |
| **Appearance** | | |
| Pattern | Solid | |
| Length | n.a. | |
| Width | 140 cm | |
| Thickness | n.a. | |
| Color | www.rohi.com; Differences may occur | |
| Textile surface | n.a. | |
| **Basic materials** | | |
| Virgin wool | 96 % | |
| Polyamide (Nylon) | 4 % | |
| **LCA data comparator for Opera, Rohi (no data available) - Hero (96 % WV, 4 % PA), Kvadrat** | | 5,33 |
| **Resource use per m²** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 89 MJ | 7 |
| Use of freshwater resources (FW) | 0,34 m³ | 4 |
| **Environmental impact per m²** | **A1-A3** | |
| Global Warming Potential (GWP) | 7,3 Kg $CO_2$-eqv. | 5 |
| **Environmental impact Transport, per 1000 kgkm (0.870 kg/m)** | | 5 |

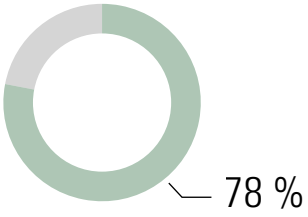
[11] ROHI (2021) - Rohi; Products <https://www.rohi.com/en/products/living/> Accessed, on 11/12/2021

[12] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

| | | |
|---|---|---|
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - < 100 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 120,8 MJ | |
| Use of freshwater resources (FW) | 0,006388 $m^3$ | |
| Global Warming Potential (GWP) | 8,969 Kg $CO_2$-eqv. | |
| **Main raw material origin: Australia/production site** | | 0 |
| **Truck - ca. 2000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 2416 MJ | |
| Use of freshwater resources (FW) | 0,12776 $m^3$ | |
| Global Warming Potential (GWP) | 179,38 Kg $CO_2$-eqv. | |
| **Container ship - ca. 10000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 1094 MJ | |
| Use of freshwater resources (FW) | 0,005636 $m^3$ | |
| Global Warming Potential (GWP) | 90,11 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/moderately repairable (> 20 years) | 9 |
| Biological reproduction/ recycled material | 96 % | 10 |
| Circulation potential | 70 - 99 % technological/recycling | 8 |
| Socially compatible | Yes | 10 |
| **Total average rating** | | **7,88** |
| **Resistance to dirt** | Not sensitive to dirt | |
| **Physical properties** | | |
| Weight | ca. 1010 g/m | |
| **Mechanical properties** | | |
| Resilience | 90.000 Martindale | |
| Pilling (ISO1-5) | min. 4 - 5 | |
| Light fastness (ISO 1-5) | min. 5 - 8 | |
| Seam slippage | n.a. | |
| **Care** | | |
| Washing | Professional cleaning recommended | |
| Chlorine | Do not bleach | |
| Drying drum | Do not dry | |

| | | |
|---|---|---|
| Ironing | Moderate hot ironing | |
| Dry cleaning | Professional cleaning recommended | |

## 5 Reinhardt Leather, Jepard




**Tab. 5 A**: Material data sheet, Jepard, general[13]

| | |
|---|---|
| Material group | Natural materials; animal products; mammalian leather, cowhide (mineral tanning) |
| Name | Jepard |
| Manufacturer | Leder Reinhardt GmbH |
| Manufactured in | Germany (GER) |
| Cattle origin | Italy |
| Version | 13 different colors |
| Use | Clothing: jackets, pants, bags, backpacks, belts, etc.; jewelry; hats; caps; shoe soles, straps Furniture making: upholstery materials, seat shells, etc.; saddlery; automotive industry; book covers; art objects; etc. |

[13] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

**Tab. 5 B**: Material data sheet, Jepard, specific[14][15]

| **General description** (manufacturer spec.) | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Fire resistance | **Fire tests**: CA TB 117-2013 | |
| **Appearance** | | |
| Size | 4,2… 5,2 m² | |
| Thickness | 1,1… 1,3 mm | |
| Color | 13 color versions | |
| Texture | Pappillary layer - smooth, scarred<br>Reticular layer: fibrous (also called flesh side) | |
| **Life cycle assessment data leather** | | 5 |
| **Resource use per m²** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | n.a. | |
| Use of freshwater resources (FW) | n.a. | |
| **Environmental impact per m²** | **A1-A3** | |
| Global Warming Potential (GWP) | n.a. | |
| **Environmental impact Transport, per 1000 kgkm (approx. 0,9 kg/m²)** | | 10 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 200 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 241,6 MJ | |
| Use of freshwater resources (FW) | 0,012776 m³ | |
| Global Warming Potential (GWP) | 17,938 Kg $CO_2$-eqv. | |
| **Main raw material origin: Italy/production site** | | |
| **Truck - ca. 1000 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 1208 MJ | |
| Use of freshwater resources (FW) | 0,06388 m³ | |
| Global Warming Potential (GWP) | 89,69 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/moderately repairable (> 20 years) | 9 |
| Biological reproduction/ recycled material | > 95 % (chrome tanning) | 10 |

[14] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

[15] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

| | | |
|---|---|---|
| Circulation potential | 40 - 70 % technological/downcycling | 4 |
| Socially compatible | Yes | 9 |
| **Total average rating** | | **7,83** |
| **Resistance to dirt** | Not sensitive to dirt | |
| **Processing** | | |
| Mechanically | Mechanical processing of the material with tools designed for this purpose; cutting possible; offcut (upholstered furniture) approx. 30-45 % | |
| Storage | Relative humidity: 50-70 %; Temperature: 5-15 % | |
| Adhesion | good; possible with suitable adhesives | |
| Surface processing | good; can be dyed; smooth leather can and should be greased, oiled or waxed to protect the der from drying out; too much grease can also cause the leather to dry out; leather can be cleaned with lukewarm water; avoid using solvents | |
| Other | Untreated leather is porous and permeable to water and air; direct sunlight can cause drying and color change | |
| **Natural durability** | With regular care, the service life of leather can be increased many times over | |
| **Properties** | Very tear-resistant; elastic; water-permeable; breathable | |
| **Physical properties** | | |
| Density | 400… 900 kg/m³ | |
| **Mechanical properties** | | |
| Continuous folding behavior (EN ISO 5402) | 30.000 | |
| Light fastness (ISO 105-B02) | 3 | |
| Wet abrasion (ISO 11640) | 20 | |
| Dry abrasion (ISO 11640) | 50 | |
| Elongation at break (unwashed underleather) | n.a. | |
| **Notes** | The most important leather is cowhide; leather is largely a by-product of the meat industry; some animals are bred only for their leather, e.g. snakes, crocodiles or lizards | |

## 6 PUR flexible foam, (MDI)




**Tab. 6 A**: Material data sheet, PUR flexible foam, general[16]

| | |
|---|---|
| Material group | Synthetic Material; Synthetic Upholstery Material |
| Name | Polyurethane Foam (GB); Polyurethan Weichschaum (D); |
| Material abbreviation | PUR foam |
| Manufactured in | Germany (GER) |
| Use | Automotive industry (upholstery, fittings); furniture upholstery; shoe soles; etc. |

[16] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

**Tab. 6 B**: Material data sheet, PUR flexible foam, specific[17][18]

| **General description** (manufacturer spec.) | | |
|---|---|---|
| Certifications/Information | Product specific | |
| Fire resistance | Product specific | |
| Delivery form | Bales, flakes, mats, etc. | |
| Texture | soft, porous | |
| Color | Available in all colors | |
| **Life cycle assessment data Comparative material for PUR flexible foam (no data available) - PU slabstock foam insulation panels (GER)** | | 3 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 98,5 MJ | 0 |
| Use of freshwater resources (FW) | 0,028696 $m^3$ | 9 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 4,48 Kg $CO_2$-eqv. | 0 |
| **Environmental impact Transport, per 1000 kgkm (approx. 75 kg/$m^3$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 $m^3$ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Durable (10 - 20 years) | 5 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 70 - 99 % technological/downcycling | 7 |

[17] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021.

[18] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Socially compatible | Yes | 9 |
| **Total average rating** | | **5,08** |
| **Resistance to dirt** | Not sensitive to dirt | |
| **Physical properties (Type 75140)** | | |
| Weight | ca. 75 kg/m³ | |
| Compression hardness (DIN 53577/ ISO3386) | 14,5 kpa | |
| Indentation hardness (40 %; DIN 53576 B/ISO2439-B) | 560 N | |
| Compression set test (50 %, 70 °C, 22 h; DIN 53572) | 1,0 % | |
| Rebound elasticity (UNI 6457-ASTM D-3574) | 56 % | |
| **Mechanical properties (Type 75140)** | | |
| Tensile strength (DIN 53571/ISO 1798) | 220 Kpa | |
| Fatigue test (UNI 6356 Pt. 2) | 20 % | |
| **Thermal properties** | | |
| Continuous operating temperature | ca. -40 bis 100 °C | |
| **Notes** | MDI: methylene diphenyl isocyanate; chemical compounds from the group of aromatic isocyanates | |

# 7 PUR foam sticks (cushions)



51 %

**Tab. 7 A**: Material data sheet, PUR foam sticks, general[19]

| | |
|---|---|
| Material group | Synthetic Material; Synthetic Upholstery Material |
| Name | Polyurethane Foam (GB); Polyurethan Weichschaum (D); |
| Material abbreviation | PUR foam |
| Manufactured in | Germany (GER) |
| Use | furniture upholstery |

[19] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

**Tab. 7 B**: Material data sheet, PUR foam sticks, specific[20][21]

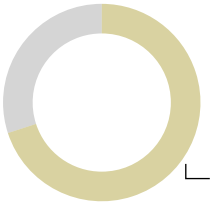
| **General description** (manufacturer spec.) | | |
|---|---|---|
| Certifications/Information | OEKOTEX STeP | |
| Fire resistance | BS5852 Part 2 (CMHR) | |
| Delivery form | foam sticks | |
| Texture | soft, porous | |
| Color | Yellow | |
| **Life cycle assessment data Comparative material for PUR flexible foam (no data available) - PU slabstock foam insulation panels (GER)** | | 3 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 98,5 MJ | 0 |
| Use of freshwater resources (FW) | 0,028696 $m^3$ | 9 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 4,48 Kg $CO_2$-eqv. | 0 |
| **Environmental impact Transport, per 1000 kgkm (approx. 75 kg/$m^3$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 $m^3$ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Durable (10 - 20 years) | 5 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 70 - 99 % technological/downcycling | 7 |

[20] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021.

[21] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Socially compatible | Yes | 9 |
| **Total average rating** | | **5,08** |
| **Resistance to dirt** | Not sensitive to dirt | |
| **Physical properties (Type 75140)** | | |
| Weight | ca. 33 kg/m³ | |
| Compression hardness (DIN EN ISO 3386) | 4,9 kpa | |
| Compression set test (50 %, DIN EN ISO 1856) | 4,0 % | |
| **Mechanical properties (Type 75140)** | | |
| Tensile strength (DIN EN ISO 1798) | 90 Kpa | |
| **Notes** | Free from CFCs and solvents | |

# 8 Siliconised hollow profile fibre




**Tab. 8 A**: Material data sheet, siliconised hollow profile fibre, general[22]

| | |
|---|---|
| Material group | Synthetic Material; Synthetic Upholstery Material |
| Name | Siliconised hollow profile fibre (GB); Silikonisierte Hohlprofilfaser (D) |
| Material abbreviation | PES |
| Manufactured in | Germany (GER) |
| Further processed in | Germany (GER) |
| Use | Furniture upholstery |

[22] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

**Tab. 8 B**: Material data sheet, siliconised hollow profile fibre, specific[23][24]

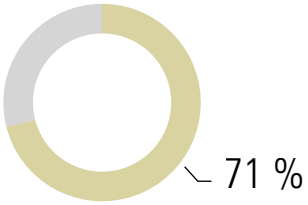
| **General description** | | |
|---|---|---|
| Certifications/Information | OEKOTEX STANDARD 100, EN ISO 9001 | |
| Fire resistance | BS 5852 Part 2 | |
| Delivery form | Hollow profile fibre | |
| Texture | soft | |
| Color | White | |
| **Life cycle assessment data Comparative material for PE wadding (no data available) - PE nonwoven (GER)** | | 9 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 22 MJ | 8 |
| Use of freshwater resources (FW) | 0,00252 $m^3$ | 10 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 0,73 Kg $CO_2$-eqv. | 8 |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/$m^2$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 $m^3$ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable (> 20 years) | 8 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 9 |

[23] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[24] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| **Total average rating** | | **7,08** |
| **Resistance to dirt** | Not sensitive to dirt | |

9 Polyester fibers




**Tab. 9 A**: Material data sheet, polyester fibers, general[25]

| | |
|---|---|
| Material group | Synthetic Material; Synthetic Upholstery Material |
| Name | Polyester Fibers (GB); Polyesterfaser (D) |
| Material abbreviation | PES |
| Manufactured in | Germany (GER) |
| Use | Furniture upholstery |

[25] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

**Tab. 9 B**: Material data sheet, polyester fibers, specific[26][27]

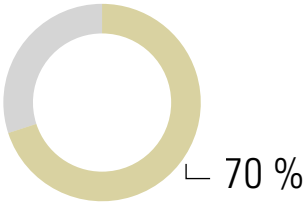
| **General description** | | |
|---|---|---|
| Certifications/Information | REACH, OEKO-TEX® STANDARD 100, DIN EN ISO 9001, DIN EN ISO 14001, DIN EN ISO 50001, CP65 | |
| Fire resistance | BS 5852 Part 2, CAL117 | |
| Delivery form | Mats, wadding, etc. | |
| Texture | soft, fibrous | |
| Color | Available in all colors | |
| **Life cycle assessment data Comparative material for PE wadding (no data available) - PE nonwoven (GER)** | | 9 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 22 MJ | 8 |
| Use of freshwater resources (FW) | 0,00252 $m^3$ | 10 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 0,73 Kg $CO_2$-eqv. | 8 |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/$m^2$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 $m^3$ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable (> 20 years) | 8 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |

[26] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[27] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Socially compatible | Yes | 9 |
| **Total average rating** | | **7,08** |
| **Resistance to dirt** | Not sensitive to dirt | |
| **Properties** | | |
| Density | 1380 kg/m³ | |
| Acid resistance | Conditionally resistant to organic and mineral acids | |
| Moisture absorption | 0,2 to 0,5 % | |
| **Thermal properties** | | |
| Softening temperature Vicat | ca. 230 °C to 240 °C | |
| Melting point/range | 250 °C | |

10 Cotton (conventional)




**Tab. 10 A**: Material data sheet, cotton (conventional), general[28][29]

| | |
|---|---|
| Material group | Natural material; Textile fiber material; Natural fiber; Seed fiber |
| Botanical name | *Gossypium (Malvaceae)* |
| Name | Cotton (GB, US); coton (FR); Baumwolle (D) |
| Material abbreviation | CO |
| Origin | Asia, South America |
| Further processed in | Germany (GER) |
| Occurrence | Tropical to subtropical; largest growing areas: China, USA, India, Pakistan, Uzbekistan, Brazil, Turkey and Australia<br><br>Frost-sensitive plant; Requires a lot of water and heat |
| Use | Mainly in the textile industry; cotton pads and sticks; bandages and plasters; coffee filters; book covers; various types of paper; automotive industry; pet food; natural fiber-reinforced plastics |

[28] BOBETH, W. (1993) - Textile Fibers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

[29] URBANA (2019) - Commodities <https://www.urbanara.de/blogs/magazin/warenkunde> Accessed, on 03/13/2019

**Tab. 10 B**: Material data sheet, cotton (conventional), specific[30][31][32]

| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Fire resistance | n.a. | |
| Fiber type | Natural fiber | |
| Natural fiber type | Seed fiber | |
| Fiber length | ca. 15 - 56 mm | |
| Fiber diameter | 12 - 35 µm | |
| Color | White gray | |
| Fabric types | Batiste; Cotton satin; Canvas; Corduroy; Denim; Flannel; Terry; Cotton jersey; Calico; Molton; Muslin; Velvet; Velour | |
| **Basic materials** | | |
| Cellulose | ca. 80 - 90 % | |
| **Life cycle assessment data cotton (conventional)** | | 6 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 11,71 MJ | 9 |
| Use of freshwater resources (FW) | 1,081 $m^3$ | 0 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | - 0,7779 Kg $CO_2$-eqv. | 8 |
| **Environmental impact Transport, per 1000 kgkm (1.51 g/$cm^3$)** | | 5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 604 MJ | |
| Use of freshwater resources (FW) | 0,03194 $m^3$ | |
| Global Warming Potential (GWP) | 44,845 Kg $CO_2$-eqv. | |
| **Main raw material origin: China/production site** | | 0 |
| **Truck - ca. 2000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 1721,2 MJ | |
| Use of freshwater resources (FW) | 0,12106 $m^3$ | |

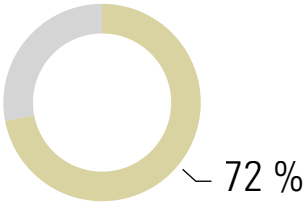
[30] BOBETH, W. (1993) - Textile Fibers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

[31] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[32] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Global Warming Potential (GWP) | 128,22 Kg $CO_2$-eqv. | |
| **Container ship - ca. 10000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 1903 MJ | |
| Use of freshwater resources (FW) | 0,009298 $m^3$ | |
| Global Warming Potential (GWP) | 157,1 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Permanent (10 - 20 years) | 8 |
| Biological reproduction/ recycled material | 100 % | 10 |
| Circulation potential | 100 % (biodegradable) | 10 |
| Socially compatible | No transparency | 3 |
| **Total average rating** | | **7** |
| **Resistance to dirt** | n.a. | |
| **Physical properties** | | |
| Weight | 1,51 g/$cm^3$ | |
| **Mechanical properties** | | |
| Tensile strength | 287 - 800 N/$mm^2$ | |
| Modulus of elasticity | 4500 - 11000 N/$mm^2$ | |
| Elongation at break | 6 - 10 % | |
| Water absorption | 8 % | |
| **General properties** | Resistant to mechanical and chemical influences; tear-, wet- and boil-proof; elastic; little dimensional stability; skin-friendly; high moisture absorption; tends to shrink after the first wash cycle | |
| **Notes** | Water consumption of the plant problematic: up to 2000 liters for the production of a T-shirt; often artificially irrigated fields | |

11 Steel




**Tab. 11 A**: Material data sheet, steel, general[33]

| | |
|---|---|
| Material group | Natural material; metals; transition metals |
| Parts origin | n.a. |
| Occurrence | Worldwide; South America, Western Australia, China and Eastern Europe, Canada |
| Use | According to application: building structural and tool steel, structural steel for machinery, vehicle and shipbuilding or mechanical engineering; line pipe, pressure vessel, etc.; handicraft and design; furniture making |

[33] KALWEIT, A., a.o. (2012) - Handbook of Technical Product Design, Materials and Manufacturing - Decision Bases for Designers and Engineers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

**Tab. 11 B**: Material data sheet, steel, specific[34][35]

| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Emission class (formaldehyde) | Formaldehyde free | |
| Surface | smooth, hard | |
| Color | Grey | |
| **Life cycle assessment data Steel profile, (GER)** | | 5,33 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 10,99 MJ | 4 |
| Use of freshwater resources (FW) | 0,002314 $m^3$ | 4 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 0,9944 Kg $CO_2$-eqv. | 8 |
| **Environmental impact Transport, per 1000 kgkm (7850 kg/$m^3$)** | | 4 |
| **Production site: Europe/ZEITRAUM** | | |
| **Truck ø - ca. 1500 km** | A4 | 8 |
| Total non-renewable primary energy (PENRT) | 1812 MJ | |
| Use of freshwater resources (FW) | 0,09582 $m^3$ | |
| Global Warming Potential (GWP) | 134 Kg $CO_2$-eqv. | |
| **Main raw material origin: China/production location** | | 0 |
| **Truck - ca. 2000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 2416 MJ | |
| Use of freshwater resources (FW) | 0,12776 $m^3$ | |
| Global Warming Potential (GWP) | 179,38 Kg $CO_2$-eqv. | |
| **Container ship - ca. 10000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 1094 MJ | |
| Use of freshwater resources (FW) | 0,005636 $m^3$ | |
| Global Warming Potential (GWP) | 90,11 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |

[34] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[35] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Longevity | Very durable/repairable (> 20 years) | 10 |
| Biological reproduction/ recycled material | 50 - 60 % | 6 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 8 |
| **Total average rating** | | **7,22** |
| **Notes** | The life cycle assessment of iron improves the more often the material has been recycled or the proportion of recycled material increases | |

12 Polyamide



61 %

**Tab. 12 A**: Material data sheet, polyamide, general[36]

| | |
|---|---|
| Material group | Synthetic material; plastic |
| Name | Polyamide (GB, US); Polyamid (D) |
| Short name | PA |
| Manufactured in | Germany (GER) |
| Use | Machine and equipment construction; vehicle construction; electrical engineering; furniture construction |

[36] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

**Tab. 12 B**: Material data sheet, polyamide, specific[37][38]

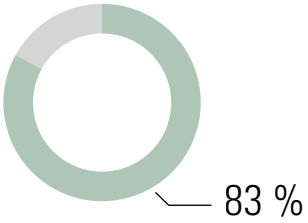
| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Delivery forms | Granules, fibers, pipes, films, molded parts | |
| Color | Available in all colors | |
| **Life cycle assessment data Nylon casting (PA 6.6) (GER)** | | 3 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 251,7 MJ | 0 |
| Use of freshwater resources (FW) | 0,04378 $m^3$ | 10 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 16,91 Kg $CO_2$-eqv. | 0 |
| **Environmental impact Transport, per 1000 kgkm (1140 kg/$m^3$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 604 MJ | |
| Use of freshwater resources (FW) | 0,03194 $m^3$ | |
| Global Warming Potential (GWP) | 44,845 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | |
| **n.a. - ø > 7000 km** | A4 | 3 |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable (> 20 years) | 8 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 9 |
| **Total average rating** | | **6,08** |
| **Processing** | | |

[37] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[38] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Mechanically | Very good; with conventional plastic processing machines; drilling, sawing; milling; etc. | |
| Adhesion | Good; with adhesives for low-energy plastics | |
| Surface processing | Brushing; Sanding; Painting; Oiling; Embossing | |
| **Resistance** | Easy care; water resistant; resistant to fungi and insects | |
| **Properties** | | |
| Elongation at break | 50,0 % | |
| Density | 1140 kg/m³ | |
| Moisture absorption | 2,5 - 3,5 % | |
| Dielectric strength | 25 kV/mm | |
| Notched impact strength (Charpy) | 3,0 kJ/m² | |
| **Thermal properties** | | |
| Vicat softening temperature according to DIN EN ISO 306 Vicat B/50 | 250 °C | |
| Continuous operating temperature | -30 bis 95 °C | |

13 Osmo, hard wax oil




**Tab. 13 A**: Material data sheet, Osmo, hard wax oil, general[39][40]

| | |
|---|---|
| Material group | Coating materials; Oils |
| Name | Hard wax oil (GB, US); Hartwachsöl (D) |
| Manufacturer | Osmo Holz und Color GmbH & Co. KG |
| Manufactured in | Germany (GER) |
| Version | Osmo Hard Wax Oil 3032 satin, 3062 matt |
| Use | Furniture construction; for interior use; also suitable for parquet, cork and terracotta |

[39] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

[40] Osmo (2019) - Osmo Hard Wax Oil 3032 satin, 3062 matte <https://www.osmo.de> Accessed, on 03/02/2019

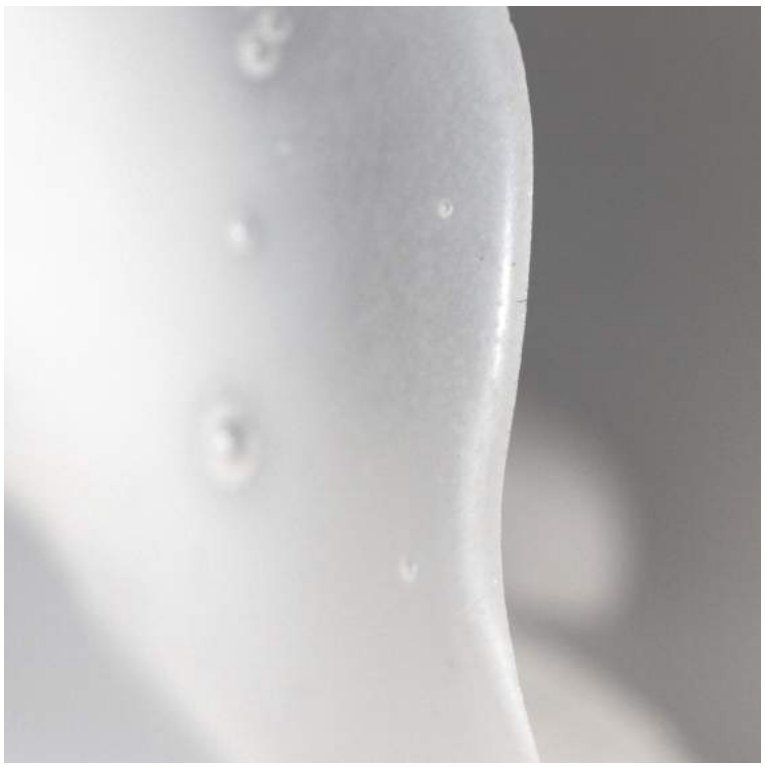
**Tab. 13 B**: Material data sheet, Osmo, hard wax oil, specific[41][42]

| **General description** | | |
|---|---|---|
| Certifications/Information | ISO 9001, ISO 14001, ISO 18001 | |
| Emission class (formaldehyde) | Formaldehyde-free | |
| VOC's | < 500 g/l (volatile components emit during curing) | |
| Delivery forms | Liquid | |
| Color | yellowish (transparent/yellowish in cured form) | |
| Texture | Glossy to matt (cured) | |
| Contents | | |
| 50 - 60 % solids | Natural oils and waxes (sunflower oil, soybean oil, safflower oil, carnauba and candellila wax) Paraffins | |
| Additives | Siccatives (desiccants) and water-repellent additives | |
| Solvent | Desaromatized white spirit (gasoline-free - according to the purity requirements of the European Pharmacopoeia) | |
| **Life cycle assessment data hard wax oil (GER)** | | 5 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | n.a. | |
| Use of freshwater resources (FW) | n.a. | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | n.a. | |
| **Environmental impact Transport, per 1000 kgkm** | | 9 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 200 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 172,12 MJ | |
| Use of freshwater resources (FW) | 0,012106 $m^3$ | |
| Global Warming Potential (GWP) | 12,822 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | |
| **n.a. - ø 3000 km** | A4 | 8 |
| Total non-renewable primary energy (PENRT) | 3624 MJ | |
| Use of freshwater resources (FW) | 0,19164 $m^3$ | |

[41] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[42] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Global Warming Potential (GWP) | 296,07 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/repairable (> 20 years, with good care) | 10 |
| Biological reproduction/ recycled material | 51 - 60 % | 6 |
| Circulation potential | 100 % (biodegradable) | 10 |
| Socially compatible | Yes | 10 |
| **Total average rating** | | **8,33** |
| **Processing** | | |
| Application | With brush, spatula or spray gun | |
| Storage | Can be stored up to 5 years with tight closure | |
| **Properties** | | |
| Density | 0,89 g/cm³ | |
| Viscosity | Thixotropic, creamy | |
| Consistency | Medium viscosity | |
| Moisture resistance | Good | |
| **Notes** | Osmo Polyx®-Oil is based on natural vegetable oils and waxes; Osmo Polyx®-Oil contains neither biocides nor preservatives. It is harmless to humans, animals and plants when dry and complies with DIN 53160 (sweat- and saliva-proof) and EURO-NORM EN 71 (suitable for children's toys) | |



## 14 PVAc dispersion adhesive, D3



64 %

**Tab. 14 A**: Material data sheet, PVAc dispersion adhesive, D3, general[43][44]

| | |
|---|---|
| Material group | Synthetic material; adhesives; dispersion adhesives |
| Name | Dispersion Adhesive (GB, US); Dispersionsklebstoff, PVAc-(Polyvinylacetat) Klebstoffe, Weißleim (D) |
| Manufacturer | Kleiberit Klebstoffe GmbH |
| Manufactured in | Germany (GER) |
| Version | Kleiberit 303, D3-adhesive |
| Use | Furniture construction; especially for interiors; staircase construction, ship interior finishing; surface bonding of HWS; door and window production |

[43] KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

[44] KEIBERIT (2019) - KLEIBERIT 303, D3, PVAC Adhesive <https://interior-construction.kleiberit.com/fileadmin/Content/Documents/DE/Infoblaetter/303_D3_Leim_D.pdf> Accessed, on 02/03/2019

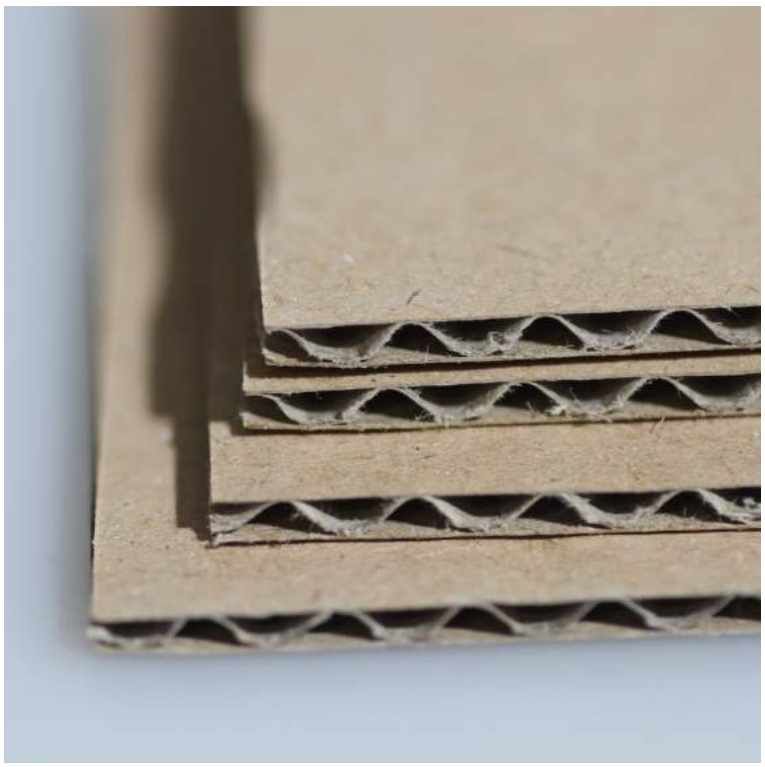
**Tab. 14 B**: Material data sheet, PVAc dispersion adhesive, D3, specific[45][46]

| **General description** | | |
|---|---|---|
| Certifications/Information | ISO 9001, ISO 14001, ISO 50001 | |
| Emission class (formaldehyde) | Formaldehyde-free | |
| Delivery forms | Liquid | |
| Color | Whitish (transparent in cured form) | |
| Texture | Glossy | |
| **Life cycle assessment data Dispersion-based solvent-free adhesives, coatings and sealants (GER)** | | 10 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 26,7 MJ | 10 |
| Use of freshwater resources (FW) | 0,00758 $m^3$ | 10 |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 0,955 Kg $CO_2$-eqv. | 10 |
| **Environmental impact Transport, per 1000 kgkm** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 200 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 172,12 MJ | |
| Use of freshwater resources (FW) | 0,012106 $m^3$ | |
| Global Warming Potential (GWP) | 12,822 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | |
| **n.a. - ø > 7000 km** | A4 | 3 |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Very durable/moderately repairable (> 20 years) | 9 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | Only thermally recyclable | 4 |
| Socially compatible | Yes | 9 |

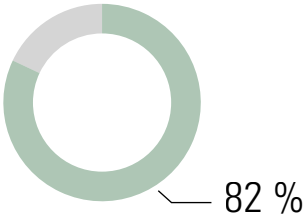
[45] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[46] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| **Total average rating** | | **6,41** |
| **Processing** | | |
| Adhesion | With brush, spatula or glue roller | |
| **Properties** | | |
| Density | 1,1 g/cm³ | |
| PH level | 3 | |
| Consistency | Medium viscosity | |
| Moisture resistance | D3 | |
| Heat resistance | Up to 120 °C | |
| **Notes** | PVAc adhesive is available solvent-free and solvent-based | |



## 15 Cardboard, beds, tables & storage




**Tab. 15 A**: Cardboard, beds, tables & storage, general

| | |
|---|---|
| Material group | Packaging |
| Name | Cardboard (GB, US); Karton (D) |
| Manufacturer | Monowell GmbH & Co. KG |
| Manufactured in | Germany (GER) |
| Use | Packing material for individual wrapping of the furniture |

**Tab. 15 B**: Cardboard, beds, tables & storage, specific[47][48]

| **General description** | | |
|---|---|---|
| Certifications/Information | ISO 9001, ISO 50001, ISO 22000 DE, ISO 22000 EN, FSC | |
| Color | Brown | |
| Texture | matt | |
| Contents | | |
| 60 % | Recycled paper | |
| 40 % | Primary raw material | |
| **Life cycle assessment data „Kraftpapier" (GER)** | | 10 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 5,888 MJ | |
| Use of freshwater resources (FW) | 0,004899 $m^3$ | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | -0,8973 Kg $CO_2$-eqv. | |
| **Environmental impact Transport, per 1000 kgkm** | | 9 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 200 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 172,12 MJ | |
| Use of freshwater resources (FW) | 0,012106 $m^3$ | |
| Global Warming Potential (GWP) | 12,822 Kg $CO_2$-eqv. | |
| **Main raw material origin: Germany, Central Europe/Production site** | | |
| **Truck - ca. 1500 km** | A4 | 8 |
| Total non-renewable primary energy (PENRT) | 1812 MJ | |
| Use of freshwater resources (FW) | 0,09582 $m^3$ | |
| Global Warming Potential (GWP) | 134,535 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Moderately durable/repairable (< 10 years) | 4 |
| Biological reproduction/ recycled material | 60 % | 6 |
| Circulation potential | 100 % (technological) | 10 |

[47] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[48] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| Socially compatible | Yes | 10 |
| **Total average rating** | | **8,16** |
| **Disposal note** | Waste paper | |

# 16 Polyester fleece



56 %

**Tab. 16 A**: Material data sheet, polyester fleece, general

| Material group | Packaging |
|---|---|
| Name | Polyester fleece (GB); Polyestervlies (D) |
| Material abbreviation | PES |
| Manufactured in | Germany (GER) |
| Use | Packing material for protection |

**Tab. 16 B**: Material data sheet, polyester fleece, specific[49][50]

| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Delivery form | Mats, wadding, etc. | |
| Texture | soft, fibrous | |
| **Life cycle assessment data Comparative material for PE wadding (no data available) - PE nonwoven (GER)** | | 3 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | 22 MJ | |
| Use of freshwater resources (FW) | 0,00252 $m^3$ | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | 0,73 Kg $CO_2$-eqv. | |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/$m^2$)** | | 6,5 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 500 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 $m^3$ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 $m^3$ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Durable (10 - 20 years) | 5 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 9 |
| **Total average rating** | | **5,58** |

[49] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[50] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

| | | |
|---|---|---|
| **Disposal note** | Recyclable waste | |

# 17 PE foil

50 %

**Tab. 17 A**: Material data sheet, PE foil, general

| | |
|---|---|
| Material group | Packaging |
| Material abbreviation | PE foil (polyethelene) |
| Manufactured in | Germany (GER) |
| Use | Packing material for protection |

**Tab. 17 B**: Material data sheet, PE foil, specific[51][52]

| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| **Life cycle assessment data Comparative material for PE foil (no data available) (GER)** | | 5 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | n.a. | |
| Use of freshwater resources (FW) | n.a. | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | n.a. | |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/m²)** | | 6 |
| **Production site: Germany/ZEITRAUM** | | |
| **Truck - ca. 1000 km** | A4 | 9 |
| Total non-renewable primary energy (PENRT) | 430,3 MJ | |
| Use of freshwater resources (FW) | 0,030265 m³ | |
| Global Warming Potential (GWP) | 32,055 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 m³ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Not durable (< 3 years) | 0 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 9 |
| **Total average rating** | | **5** |
| **Disposal note** | Recyclable waste | |

[51] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[52] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

# 18 PP strapping



61 %

**Tab. 18 A**: Material data sheet, PP strapping, general

| | |
|---|---|
| Material group | Packaging |
| Name | TEWE® Polypropylene strapping |
| Material abbreviation | PP |
| Manufacturer | Teufelberger |
| Manufactured in | Austria (AT) |
| Use | Packing material for protection |

**Tab. 18 B**: Material data sheet, PP strapping, specific[53][54]

| **General description** | | |
|---|---|---|
| Certifications/Information | ISO 9001, ISO 14001 | |
| **Life cycle assessment data Comparative material for PP (no data available) (GER)** | | 5 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | n.a. | |
| Use of freshwater resources (FW) | n.a. | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | n.a. | |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/m²)** | | 6,5 |
| **Production site: Austria/ZEITRAUM** | | |
| **Truck - ca. 300 km** | A4 | 10 |
| Total non-renewable primary energy (PENRT) | 362,4 MJ | |
| Use of freshwater resources (FW) | 0,019164 m³ | |
| Global Warming Potential (GWP) | 26,907 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 m³ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Durable (10 - 20 years) | 5 |
| Biological reproduction/ recycled material | 0 % | 0 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 10 |
| **Total average rating** | | **6,08** |
| **Disposal note** | Recyclable waste | |

[53] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[54] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

# 19 Polyester foam edge protection, NOMAPACK®



65 %

**Tab. 19 A**: Material data sheet, NOMAPACK®, general

| Material group | Packaging |
|---|---|
| Name | NOMAPACK® |
| Material abbreviation | PE LD foam |
| Manufacturer | NMC |
| Manufactured in | Germany (GER) |
| Use | Packing material for protection |

**Tab. 19 B**: Material data sheet, NOMAPACK®, specific[55][56]

| **General description** | | |
|---|---|---|
| Certifications/Information | ISO 9001, ISO 14001 | |
| **Life cycle assessment data Comparative material for PE wadding (no data available) - PE nonwoven (GER)** | | 5 |
| **Resource input per kg** | **A1-A3** | |
| Total non-renewable primary energy (PENRT) | n.a. | |
| Use of freshwater resources (FW) | n.a. | |
| **Environmental impact per kg** | **A1-A3** | |
| Global Warming Potential (GWP) | n.a. | |
| **Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/m²)** | | 6 |
| **Production site: Belgium/ZEITRAUM** | | |
| **Truck - ca. 1000 km** | A4 | 9 |
| Total non-renewable primary energy (PENRT) | 860,6 MJ | |
| Use of freshwater resources (FW) | 0,06053 m³ | |
| Global Warming Potential (GWP) | 64,12 Kg $CO_2$-eqv. | |
| **Main raw material origin: n.a./production site** | | 3 |
| **n.a. - ø > 7000 km** | A4 | |
| Total non-renewable primary energy (PENRT) | 8456 MJ | |
| Use of freshwater resources (FW) | 0,44716 m³ | |
| Global Warming Potential (GWP) | 627,83 Kg $CO_2$-eqv. | |
| **Sustainability Assessment** | | |
| Longevity | Durable (10 - 20 years) | 5 |
| Biological reproduction/ recycled material | 30 % | 3 |
| Circulation potential | 100 % (technological) | 10 |
| Socially compatible | Yes | 10 |
| **Total average rating** | | **6,5** |
| **Disposal note** | Recyclable waste | |

[55] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[56] MATERIALARCHIV (2019) - Materialarchiv <http://www.materialarchiv.ch/app-tablet/#search> Accessed, on 03/01/2019

Information on all materials used by ZEITRAUM
can be found in our material library at:

**www.zeitraum-moebel.com**

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**Important note**: Our Furniture Footprint product data sheets have no scientific claim and are to be understood as a guide for our customers and us. All data are marked with corresponding source information. The contents of our Furniture Footprint product database have been compiled with the utmost care. However, we do not guarantee the accuracy, completeness and timeliness of the content, so we do not assume any liability for incorrect, outdated or incomplete information.