ZEITRAUM

# CENA HIGH

Design by Birgit Gämmerler & Peter Gaebelein, 2004

# Furniture Footprint

# CENA HIGH

Design by Birgit Gämmerler, Peter Gaebelein, 2004

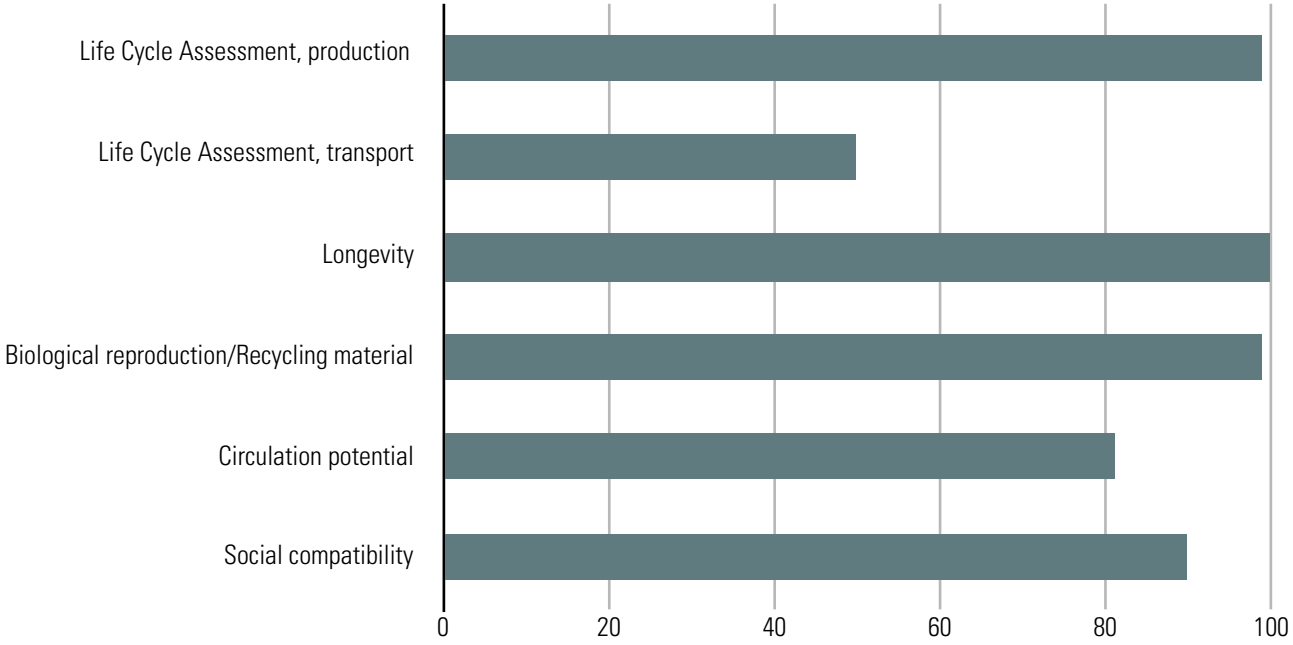
The high table CENA HIGH shows great strength of character. The bevelled table top gives it a lightness and dynamic contrasting nicely with the reassuringly solid trestle.

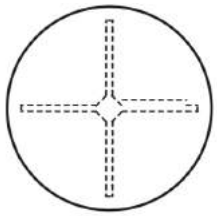
ZEITRAUM furniture meets the highest quality and environmental standards and is primarily made of solid wood. All the materials we use come from responsible manufacturing and are for the most part sourced directly from Germany. The following describes the product: CENA HIGH. Due to the proportion of 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.

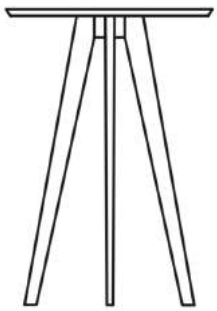
**Product details** (ø 60, h 90)

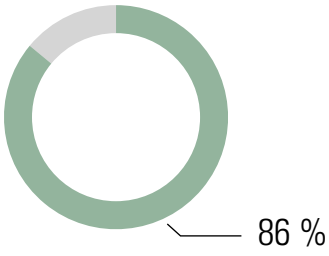
| | | | | |
|---|---|---|---|---|
| Product category | Table | | | |
| Weight | ca. 13 kg | | | |
| **Environmental details** | | | | |
| Recycled content/ renewable raw materials | ca. 1,5 % recycled material (steel, share: 3 %, ø 50 % recycled content)<br>ca. 96,75 % renewable materials | | | |
| Recyclability | ca. 97 % wood (waste wood category 2)<br>ca. 3 % 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. | | | |
| **Manufacturing details** | | | | |
| Furniture element | Production site | Production partner since | Visited by ZEITRAUM | Code of Conduct signed |
| Top | Bavaria, Germany | 1998 | Yes | Yes |
| Frame | Bavaria, Germany | 1998 | Yes | Yes |
| **Packaging** | | | | |
| Flatpack | Yes | | | |
| **Warehouse** | | | | |
| Country | | Federal state | | |
| Germany | | Bavaria | | |

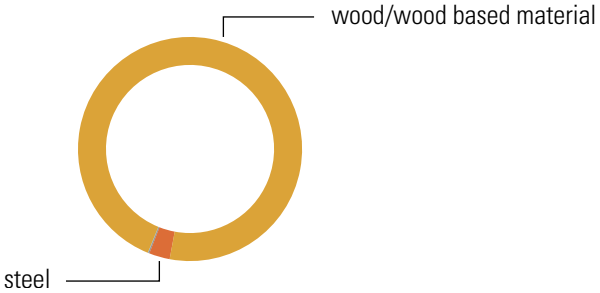
CENA HIGH, ø 60, h 90; walnut







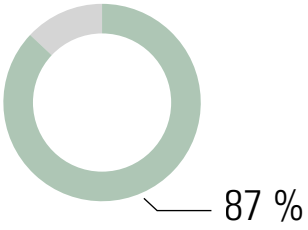

- wood/wood based material
- steel
- natural oil
- PVAC adhesive

Flat pack

| **CENA HIGH, ø 60, h 90; walnut** | Material/Product rating | | | | |
|---|---|---|---|---|---|
| | Walnut | Steel | Natural oil, Osmo | PVAC | Weighted rating, % |
| Life Cycle Assessment, production | 10 | 5,33 | 5 | 10 | 98,504 % |
| Life Cycle Assessment, transport | 5 | 4 | 9 | 6,5 | 49,762 % |
| Longevity | 10 | 10 | 10 | 9 | 99,972 % |
| Biological reproduction/Recycling material | 10 | 6 | 6 | 0 | 98,64 % |
| Circulation potential | 8 | 10 | 10 | 4 | 80,582 % |
| Social compatibility | 9 | 8 | 10 | 9 | 89,697 % |
| Average rating, ø | 8,666 | 7,221 | 8,333 | 6,416 | Total weight |
| Share in kg | 12,9 | 0,4 | 0,021 | 0,011 | 13,332 |
| Share in % | 96,75 % | 3 % | 0,15 % | 0,08 % | |
| Weighted rating | 8,384 | 0,216 | 0,012 | 0,005 | |
| **Product rating in %** | **86,17** | | | | |

| **Packaging** | Material/Product rating | | | |
|---|---|---|---|---|
| | Cardboard | PE fleece | PP strapping | Weighted rating, % |
| Life Cycle Assessment, production | 10 | 3 | 5 | 94,693 % |
| Life Cycle Assessment, transport | 9 | 6,5 | 6,5 | 88,0335 % |
| Longevity | 4 | 5 | 5 | 40,779 % |
| Biological reproduction/Recycling material | 6 | 0 | 0 | 55,296 % |
| Circulation potential | 10 | 10 | 10 | 99,99 % |
| Social compatibility | 10 | 9 | 10 | 99,299 % |
| Average rating, ø | 8,166 | 5,583 | 6,083 | Total weight |
| Share in kg | 4 | 0,3 | 0,04 | 4,34 |
| Share in % | 92,16 % | 6,91 % | 0,92 % | |
| Weighted rating | 7,525 | 0,385 | 0,055 | |
| **Product rating in %** | **79,65** | | | |

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

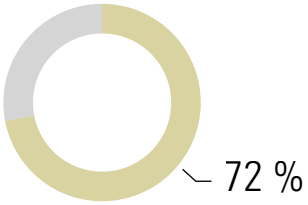
**Tab. 1 B**: Material data sheet, American walnut, specific[3]

| **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 Steel




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

| | |
|---|---|
| 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 |

[4] 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. 2 B**: Material data sheet, steel, specific[56]

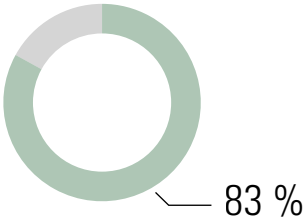
| **General description** | | |
|---|---|---|
| Certifications/Information | n.a. | |
| Emission class (formaldehyde) | Formaldehyde free | |
| Surface | smooth, hard | |
| Color | Grey | |
| **Life cycle assessment data Steel profile, (GER)** | | 5,33 |
| **Resource input per kg** | **A1-A3** | |
| 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** | | |

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

[6] 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 | |

3 Osmo, hard wax oil




**Tab. 3 A**: Material data sheet, Osmo, hard wax oil, general[78]

| | |
|---|---|
| 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 |

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

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

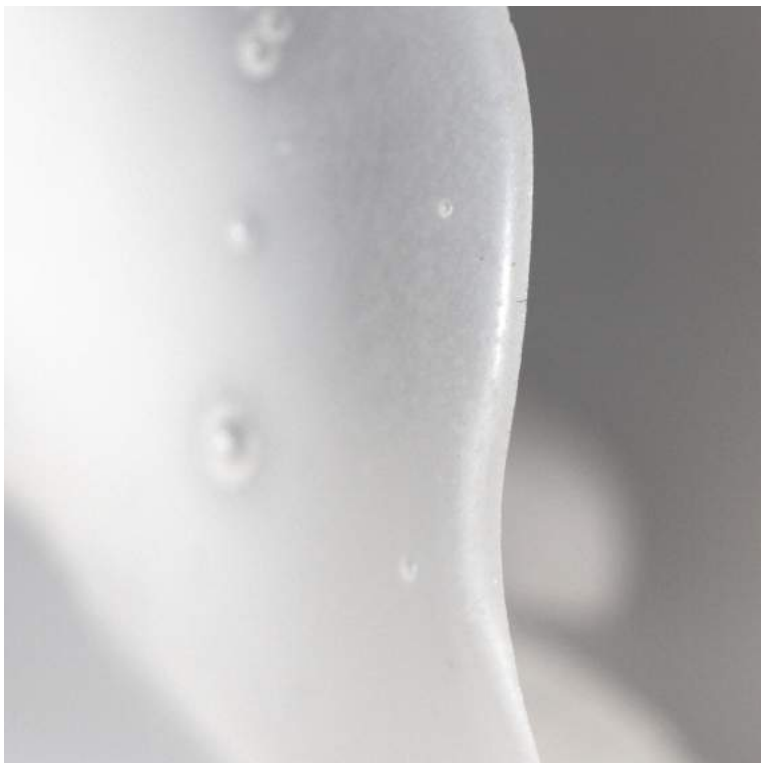
**Tab. 3 B**: Material data sheet, Osmo, hard wax oil, specific[9][10]

| **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 $m^3$ | |

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

[10] 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) | |



## 4 PVAc dispersion adhesive, D3



64 %

**Tab. 4 A**: Material data sheet, PVAc dispersion adhesive, D3, general[11][12]

| | |
|---|---|
| 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 |

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

[12] 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

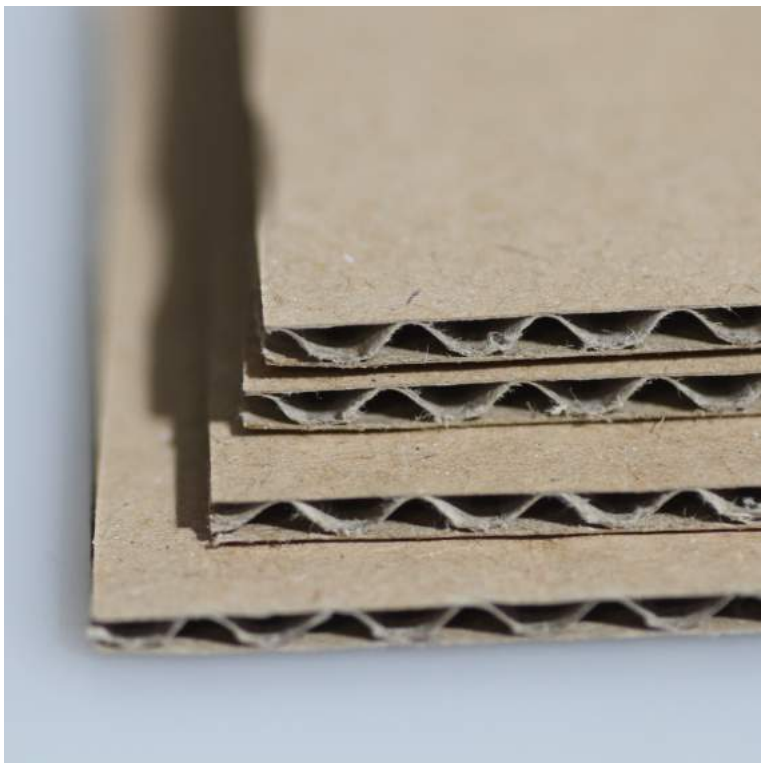
**Tab. 4 B**: Material data sheet, PVAc dispersion adhesive, D3, specific[13][14]

| **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 |

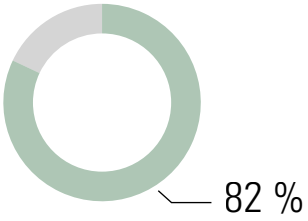
[13] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[14] 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 | |



## 5 Cardboard, beds, tables & storage




**Tab. 5 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. 5 B**: Cardboard, beds, tables & storage, specific[15][16]

| **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 |

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

[16] 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 | |

# 6 Polyester fleece



56 %

**Tab. 6 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. 6 B**: Material data sheet, polyester fleece, specific[17][18]

| **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** |

[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

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

# 7 PP strapping



61 %

**Tab. 7 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. 7 B**: Material data sheet, PP strapping, specific[19][20]

| **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 | |

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

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

Information on all materials used by ZEITRAUM
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