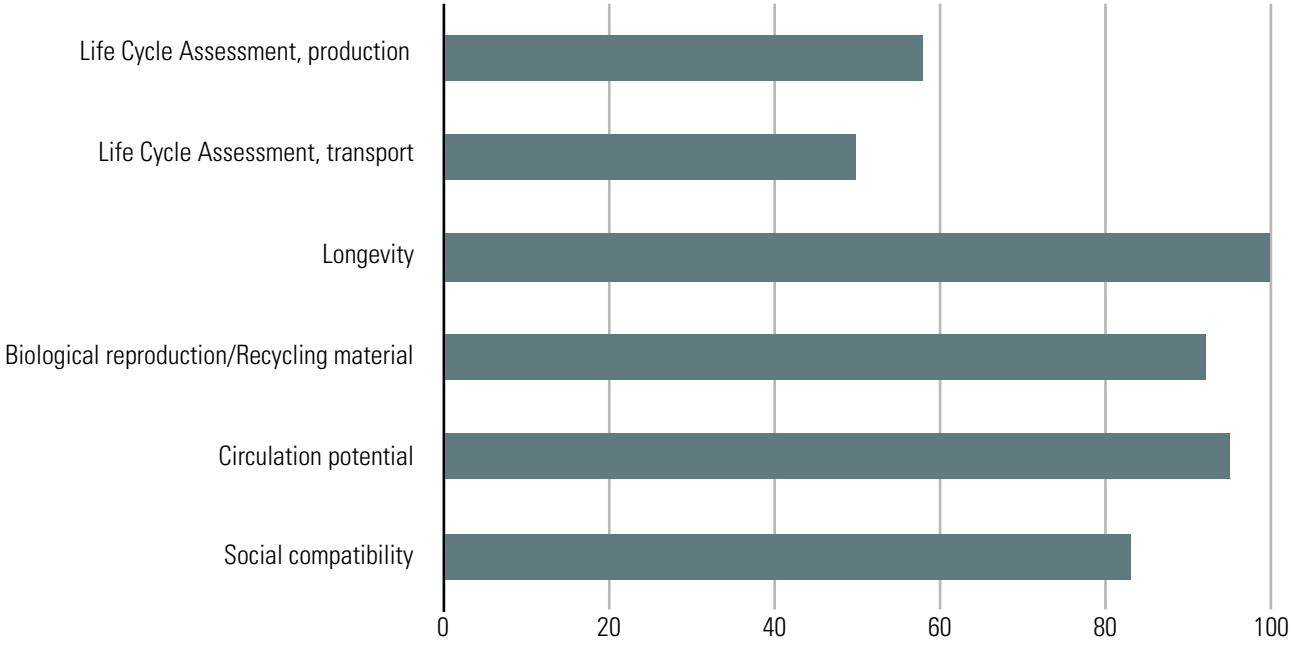
ZEITRAUM

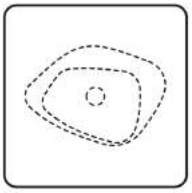
KONTRA

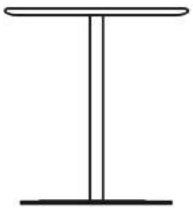
Design by Formstelle, 2012

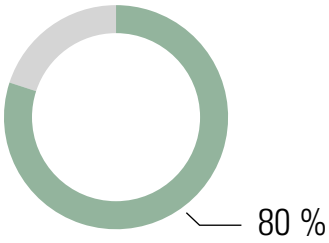
zeitraum-moebel.de

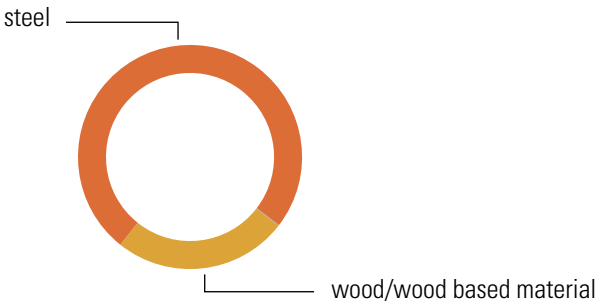
KONTRA, 60x60, h 75; walnut











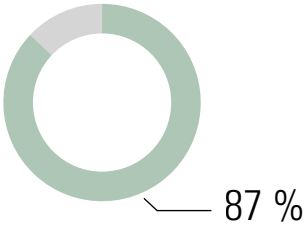
- wood/wood based material
- steel
- natural oil
- PVAC adhesive

Flat pack

KONTRA, 60x60, h 75; walnut	Material/Product rating				
	Walnut	Steel	Natural oil, Osmo	PVAC	Weighted rating, %
Life Cycle Assessment, production	10	4,33	5	10	57,60577 %
Life Cycle Assessment, transport	5	5	9	6,5	50,019 %
Longevity	10	10	10	9	99,974 %
Biological reproduction/Recycling material	10	9	6	0	92,431 %
Circulation potential	8	10	10	4	94,908 %
Social compatibility	9	8	10	9	82,518 %
Average rating, ø	8,666	7,721	8,333	6,416	Total weight
Share in kg	5,9	17,5	0,012	0,016	23,428
Share in %	25,18 %	74,69 %	0,05 %	0,06 %	
Weighted rating	2,182	5,766	0,004	0,003	
Product rating in %	**79,55**				

Packaging	Material/Product rating			
	Cardboard	PE fleece	PP strapping	Weighted rating, %
Life Cycle Assessment, production	10	3	5	99,073 %
Life Cycle Assessment, transport	9	6,5	6,5	89,5935 %
Longevity	4	5	5	40,155 %
Biological reproduction/Recycling material	6	0	0	59,04 %
Circulation potential	10	10	10	99,99 %
Social compatibility	10	9	10	99,929 %
Average rating, ø	8,166	5,583	6,083	Total weight
Share in kg	4	0,025	0,04	4,065
Share in %	98,4 %	0,61 %	0,98 %	
Weighted rating	8,035	0,034	0,059	
Product rating in %	**81,28**			

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. 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

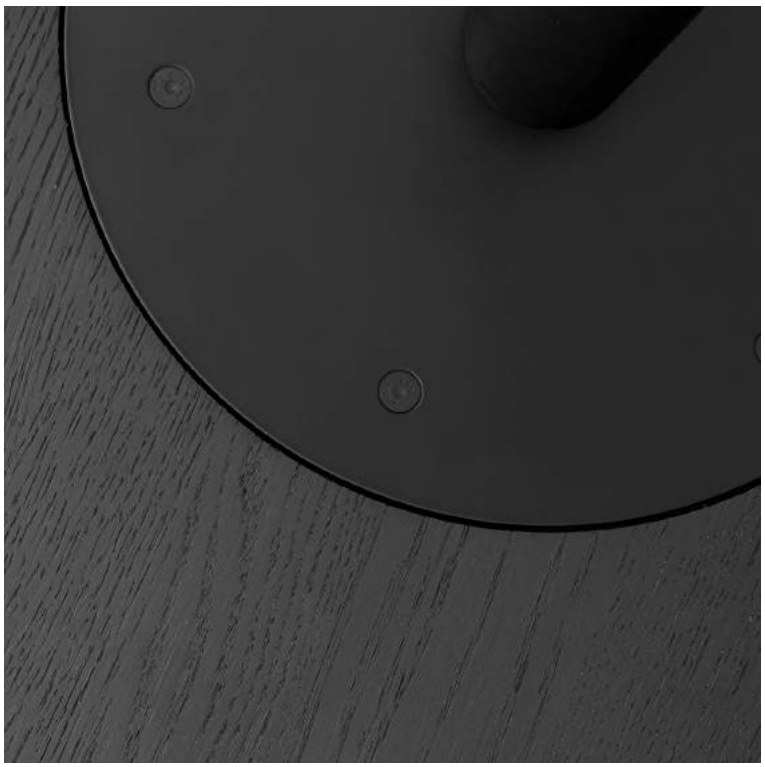
[2] LOHMANN, U. (2010) - Wood encyclopedia. The standard work for wood and forestry. (4) Hamburg: Nikol-Verlag, page 859

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

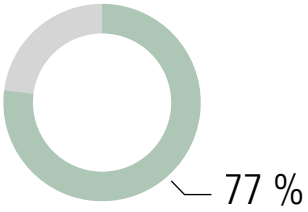
General description		
Certifications/Information	The Evergreen Initiative; NHLA; FSC on request	
Life cycle assessment data hardwood, average (GER)		10
Resource input per kg	**A1-A3**	
Total non-renewable primary energy (PENRT)	2,18 MJ	10
Use of freshwater resources (FW)	0,00048 m^3	10
Environmental 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 (σ_{dB})	44… 53 N/mm²	
Flexural strength (σ_{bB})	90… 103 N/mm²	
Tensile strength ($\sigma_{zB} \perp$)	ca. 4,7 N/mm²	
Shear strength (τ_{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, powder coated rack, KONTRA/VERMU



Tab. 2 A: Material data sheet, steel, powder coated frames, KONTRA/VERMU, general

Material group	Natural material; metals; transition metals
Parts origin	Bavaria, Germany
Occurrence	Worldwide; South America, Western Australia, China and Eastern Europe, Canada
Use	Metal table rack

Tab. 2 B: Material data sheet, steel, powder coated frames, KONTRA/VERMU specific[45]

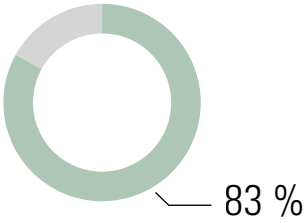
General description		
Certifications/Information	ISO 3834, ISO 9001, EN 15085-2	
Emission class (formaldehyde)	Formaldehyde free	
Surface	smooth, hard	
Color	black	
Life cycle assessment data Steel profile, (GER)		4,33
Resource input per kg	**A1-A3**	
Total non-renewable primary energy (PENRT)	12,49 MJ	2
Use of freshwater resources (FW)	0,0026 m^3	4
Environmental impact per kg	**A1-A3**	
Global Warming Potential (GWP)	1,09 Kg CO_2-eqv.	7
Environmental impact Transport, per 1000 kgkm (7850 kg/m^3)		5
Production site: Germany/ZEITRAUM		
Truck ø - ca. 200 km	A4	10
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		

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

[5] 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	80 - 90 %	9
Circulation potential	100 % (technological)	10
Socially compatible	Yes	8
Total average rating		**7,72**
Processing		
Mechanical	More difficult to machine due to hardness, drilling, turning, milling, cutting; forming (bending, compression, tension forming)	
Joints	Riveting; screwing and welding	
Surface finishing	Engraving, polishing, embossing, grinding, lasering	
Other	High plastic deformability under impact loading; materials with low carbon content are easier to deform	
Durability	Heat resistant, corrosion and heat resistant	
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[67]

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

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

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

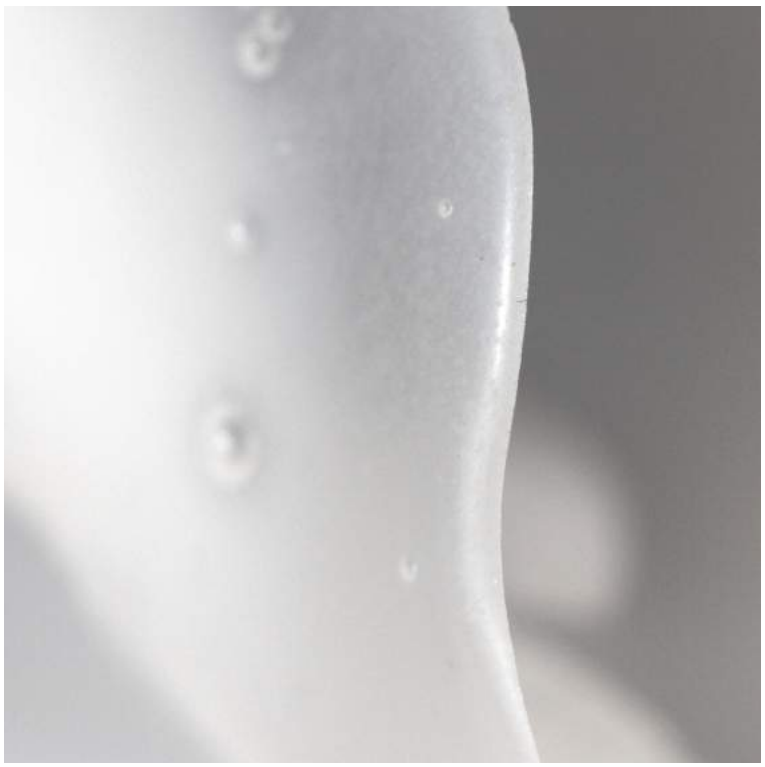
Tab. 3 B: Material data sheet, Osmo, hard wax oil, specific[89]

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	

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

[9] 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[10][11]

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

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

[11] 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

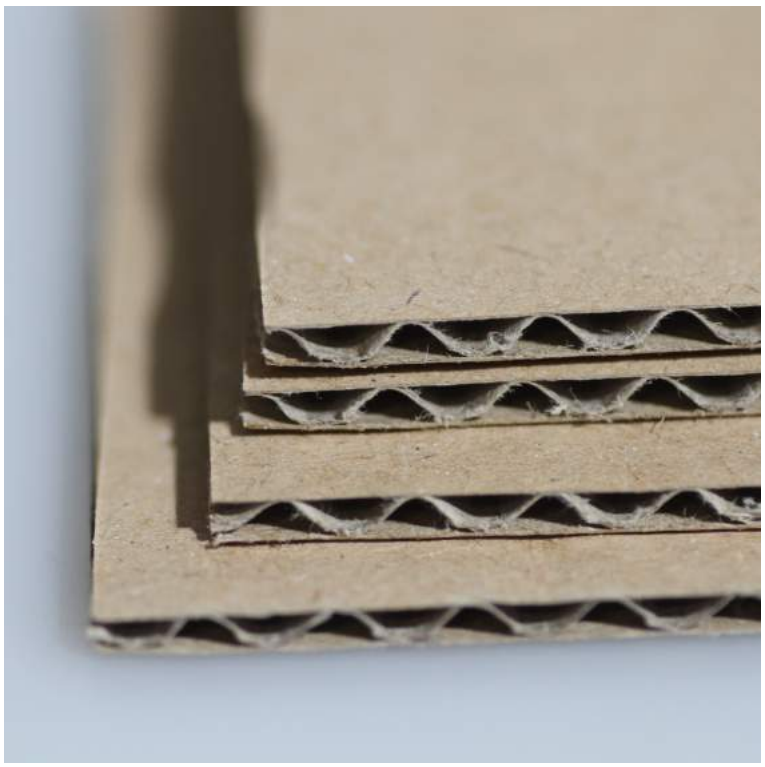
Tab. 4 B: Material data sheet, PVAc dispersion adhesive, D3, specific[12][13]

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

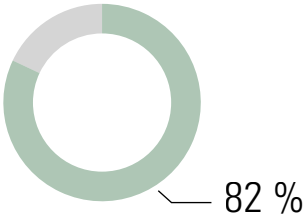
[12] BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

[13] 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[14][15]

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

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

[15] 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[16][17]

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**

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

[17] 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[18][19]

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	

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

[19] 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

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.