

ZEITRAUM

SIMPLE SOFT Bold

Design by Formstelle, 2022



Furniture Footprint

SIMPLE SOFT Bold

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The purist design of the SIMPLE bed family puts the living material in the foreground. The lightness of the construction is enhanced by the floating frame. SIMPLE – the bed in its simplest form and function.

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: SIMPLE SOFT Bold. 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. 62 kg			

Environmental details

Recycled content/ renewable raw materials	ca. 1 % recycled material (steel, share: 2 %, ø 50 % recycled content) ca. 96% renewable materials
Recyclability	ca. 94 % wood (waste wood category 2) ca. 4 % textiles / 5 % leather ca. 2 % steel
Repairability	Moderately repairable. We will be happy to assist with spare parts and service where necessary and possible.

Removeable cover

Leather	Yes
Fabric	Yes

Manufacturing details

Furniture element	Production site	Production partner since	Visited by ZEITRAUM	Code of Conduct signed
Frame	Bavaria, Germany	1998	Yes	Yes
Upholstery	Bavaria, Germany	1999	Yes	Yes

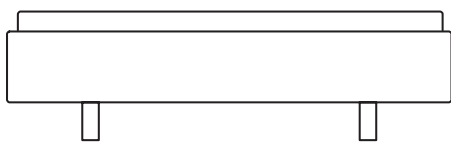
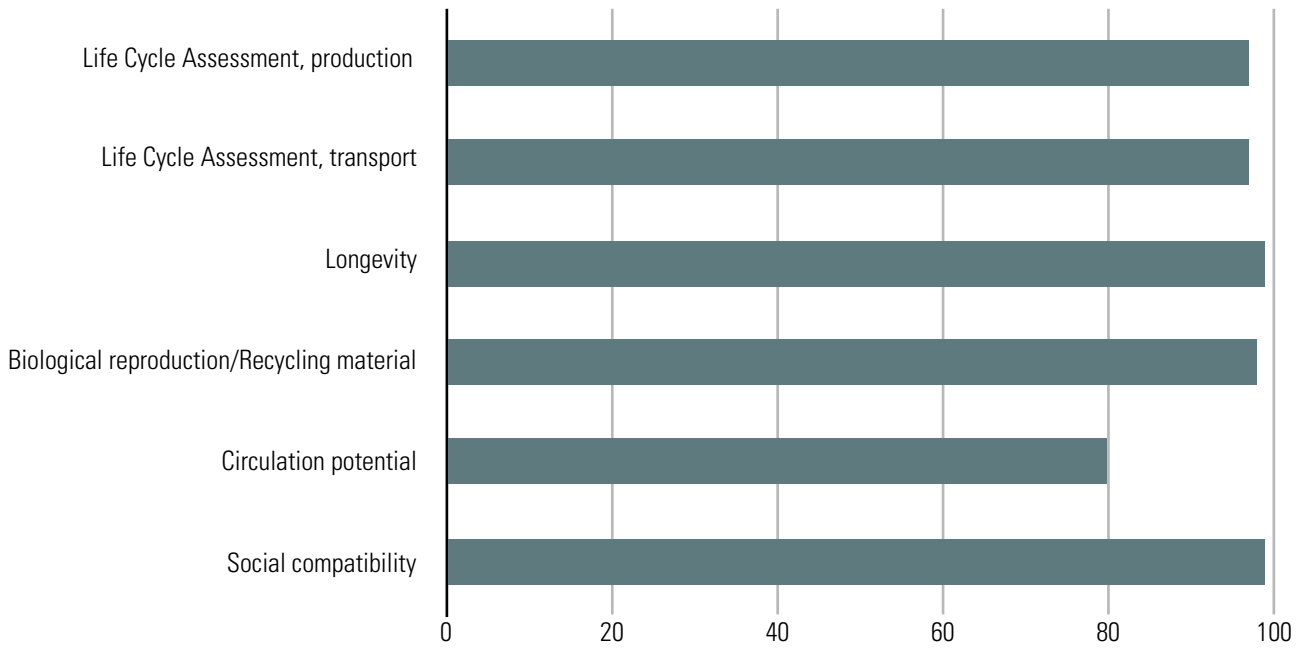
Packaging

Flatpack	Yes
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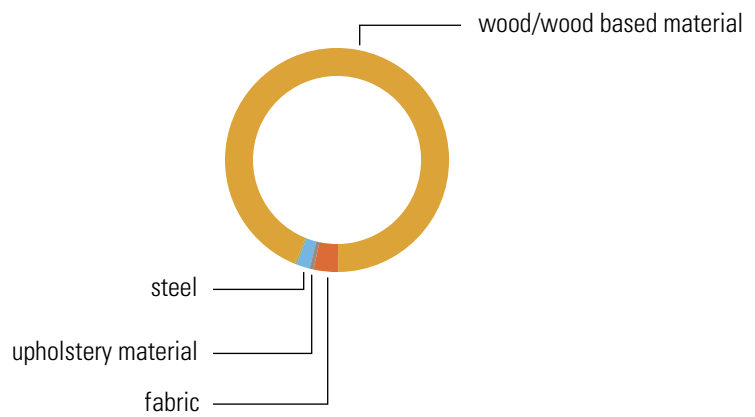
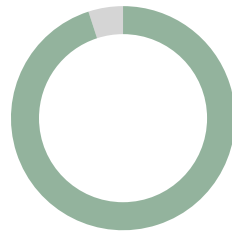
Warehouse

Country	Federal state
Germany	Bavaria

SIMPLE SOFT Bold, fabric



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



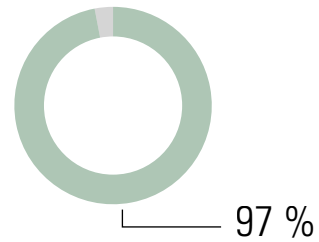
== Flat pack

SIMPLE SOFT Bold, fabric	Material/Product rating									
	Beech	Fabric, Rohi, Opera	PUR, Uphols- tery	Cotton, conv.	Polyester fiber	Steel	PA	Natural oil, Osmo	PVAC	Weighted rating, %
Life Cycle Assessment, production	10	5,33	3	6	9	5,33	3	5	10	96,98617 %
Life Cycle Assessment, transport	10	5	6,5	5	6,5	4	6,5	9	6,5	96,6095 %
Longevity	10	9	5	8	8	10	8	10	9	99,315 %
Biological reproduction/ Recycling material	10	10	0	10	0	6	0	6	0	98,362 %
Circulation potential	8	8	7	10	10	10	10	10	4	80,382 %
Social compatibility	10	10	9	3	9	8	9	10	9	99,312 %
Average rating, $\bar{\sigma}$	9,666	7,888	5,083	7	7,083	7,221	6,083	8,333	6,416	Total weight
Share in kg	58,1	2,2	0,2	0,16	0,16	1,22	0,05	0,01	0,1	62,2
Share in %	93,4 %	3,53 %	0,32 %	0,25 %	0,25 %	1,96 %	0,08 %	0,01 %	0,16 %	
Weighted rating	9,028	0,278	0,016	0,017	0,017	0,141	0,004	0	0,01	
Product rating in %	95,11									

Packaging	Material/Product rating				
	Cardboard	PE fleece	PP strapping	PE foil	Weighted rating, %
Life Cycle Assessment, production	10	3	5	5	91,704 %
Life Cycle Assessment, transport	9	6,5	6,5	6	86,1505 %
Longevity	4	5	5	0	38,337 %
Biological reproduction/Recycling material	6	0	0	0	51,528 %
Circulation potential	10	10	10	10	99,98 %
Social compatibility	10	9	10	9	98,754 %
Average rating, $\bar{\sigma}$	8,166	5,583	6,083	5	Total weight
Share in kg	7	0,5	0,15	0,5	8,15
Share in %	85,88 %	6,13 %	1,84 %	6,13 %	
Weighted rating	7,012	0,342	0,111	0,306	
Product rating in %	77,71				



1 Beech



Tab. 1 A: Material data sheet, beech, general^{1,2}

Material group	Natural material; wood; hardwood
Botanical name	<i>Fachs sylvatica L. (Fagaceae)</i>
Name	Beech (GB); Buche, Rotbuche (D); Hêtre (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.

¹ WAGENFUEHR, R. (2007) - Wood Atlas. (6) Leipzig: Hanser Wirtschaft, Fachbuchverlag Leipzig, pp. 672-676

² LOHMANN, U. (2010) - Wood encyclopedia. The standard work for wood and forestry. (4) Hamburg: Nikol-Verlag, page 192

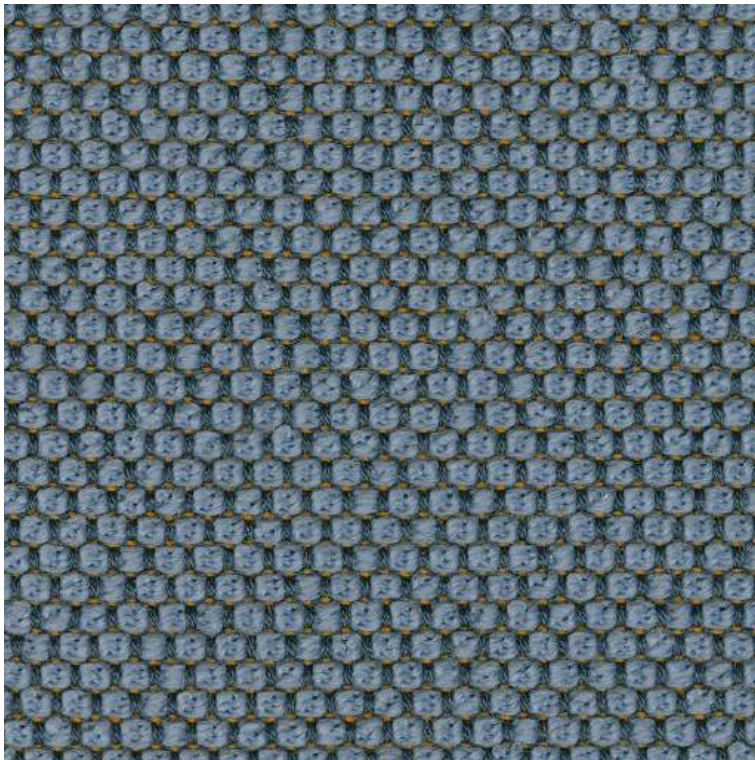
Tab. 1 B: Material data sheet, beech, specific³

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 m³	A1-A3	
Global Warming Potential (GWP)	-1,74 Kg CO ₂ -eqv.	10
Environmental impact Transport, per 1000 kgkm (720 kg/m³)		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	

³ 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/m ³	
Bulk density (12 - 15 % wood moisture)	540... 720... 910 kg/m ³	
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 (σ_{dB})	41... 62... 99 N/mm ²	
Flexural strength (σ_{bB})	74... 123... 210 N/mm ²	
Tensile strength ($\sigma_{zB \perp}$)	7,0... 10,7 N/mm ²	
Shear strength (τ_{aB})	6,5... 8,0... 19,0 N/mm ²	
Hardness (HB)	ca. 72 N/mm ²	
Hardness (HB \perp)	ca. 34 N/mm ²	
E-modulus (E_b)	10000... 16000... 18000 N/mm ²	



2 Rohi, Opera

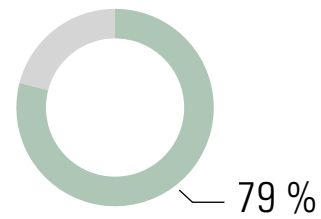


Fig. 2: www.rohi.com

Tab. 2 A: Material data sheet, Opera, general⁴

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

⁴ ROHI (2021) - Rohi; Products <<https://www.rohi.com/en/products/living/>> Accessed, on 11/12/2021

Tab. 2 B: Material data sheet, Opera, specific⁵⁶

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	<p>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</p> <p>Fire tests (with optional flame retardant finish): BS 5852: 2006 Crib5 • DIN 4102-1 B2 • DIN EN 13501-1 E • FAR 25.853 12 sec. vertical • NF P92-507 M2</p>	

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
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Resource use per m²	A1-A3	
Total non-renewable primary energy (PENRT)	89 MJ	7
Use of freshwater resources (FW)	0,34 m ³	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

⁵ ROHI (2021) - Rohi; Products <<https://www.rohi.com/en/products/living/>> Accessed, on 11/12/2021

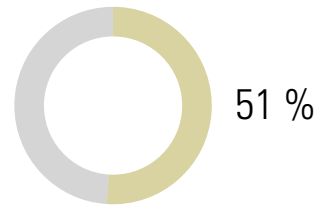
⁶ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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	



3 PUR flexible foam, (MDI)



Tab. 3 A: Material data sheet, PUR flexible foam, general⁷

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.

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

Tab. 3 B: Material data sheet, PUR flexible foam, specific⁸⁹**General description** (manufacturer spec.)

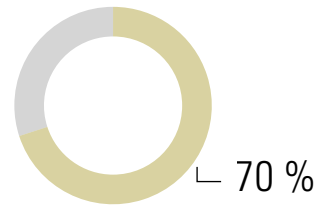
Certifications/Information	OEKO TEX® 100 STANDARD, REACH, CP65	
Fire resistance	CAL117 and BS5852 Part 2 Crib 5 on request	
Delivery form	Bales, flakes, mats, etc.	
Texture	soft, porous	
Color	Available in all colors	
Life cycle assessment data Comparative material for PUR flexible foam (no data available) - 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/m³)		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

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

Socially compatible	Yes	9
Total average rating		5,08
Resistance to dirt	Not sensitive to dirt	
Physical properties (Type 75140)		
Weight	ca. 75 kg/m ³	
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	



4 Cotton (conventional)



Tab. 4 A: Material data sheet, cotton (conventional), general¹⁰¹¹

Material group	Natural material; Textile fiber material; Natural fiber; Seed fiber
Botanical name	<i>Gossypium (Malvaceae)</i>
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 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

¹⁰ BOBETH, W. (1993) - Textile Fibers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

¹¹ URBANA (2019) - Commodities <<https://www.urbanara.de/blogs/magazin/warenkunde>> Accessed, on 03/13/2019

Tab. 4 B: Material data sheet, cotton (conventional), specific¹²¹³¹⁴

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/cm³)		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	

¹² BOBETH, W. (1993) - Textile Fibers (2) Berlin: Springer-Verlag Berlin Heidelberg GmbH

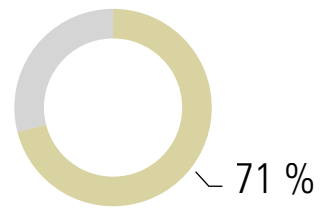
¹³ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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

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	



5 Polyester fibers



Tab. 5 A: Material data sheet, polyester fibers, general¹⁵

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

¹⁵ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

Tab. 5 B: Material data sheet, polyester fibers, specific¹⁶¹⁷

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
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Resource input per kg	A1-A3	
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Total non-renewable primary energy (PENRT)	22 MJ	8
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Use of freshwater resources (FW)	0,00252 m ³	10
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Environmental impact per kg	A1-A3	
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Global Warming Potential (GWP)	0,73 Kg CO ₂ -eqv.	8
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Environmental impact Transport, per 1000 kgkm (approx. 0.5 kg/m²)		6,5
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Production site: Germany/ZEITRAUM		
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Truck - ca. 500 km	A4	10
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Total non-renewable primary energy (PENRT)	430,3 MJ	
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Use of freshwater resources (FW)	0,030265 m ³	
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Global Warming Potential (GWP)	32,055 Kg CO ₂ -eqv.	
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Main raw material origin: n.a./production site		3
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n.a. - ø > 7000 km	A4	
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Total non-renewable primary energy (PENRT)	8456 MJ	
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Use of freshwater resources (FW)	0,44716 m ³	
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Global Warming Potential (GWP)	627,83 Kg CO ₂ -eqv.	
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Sustainability Assessment		
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Longevity	Very durable (> 20 years)	8
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Biological reproduction/ recycled material	0 %	0
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Circulation potential	100 % (technological)	10
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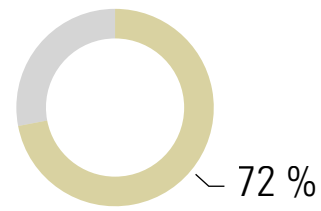
¹⁶ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

¹⁷ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

Socially compatible	Yes	9
Total average rating		7,08
Resistance to dirt	Not sensitive to dirt	
Properties		
Density	1380 kg/m ³	
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	



6 Steel



Tab. 6 A: Material data sheet, steel, general¹⁸

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

¹⁸ 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

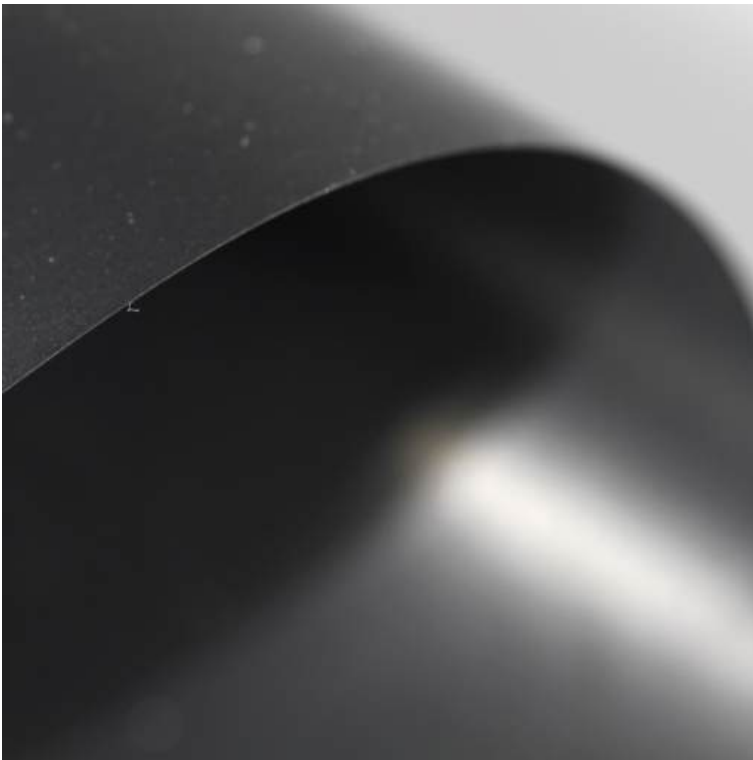
Tab. 6 B: Material data sheet, steel,
specific¹⁹²⁰

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/m³)		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		

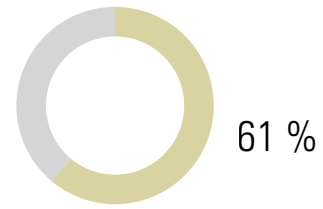
¹⁹ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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

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	



7 Polyamide



Tab. 7 A: Material data sheet, polyamide, general²¹

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

²¹ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

Tab. 7 B: Material data sheet, polyamide, specific^{22,23}**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/m³) 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

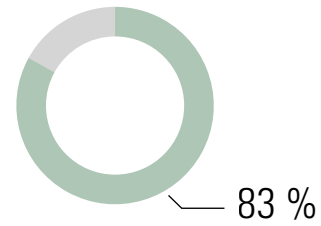
Longevity	Very durable (> 20 years)	8
Biological reproduction/ recycled material	0 %	0
Circulation potential	100 % (technological)	10
Socially compatible	Yes	9
Total average rating		6,08

Processing²² BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021²³ 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/m ³	
Moisture absorption	2,5 - 3,5 %	
Dielectric strength	25 kV/mm	
Notched impact strength (Charpy)	3,0 kJ/m ²	
Thermal properties		
Vicat softening temperature according to DIN EN ISO 306 Vicat B/50	250 °C	
Continuous operating temperature	-30 bis 95 °C	



8 Osmo, hard wax oil



Tab. 8 A: Material data sheet, Osmo, hard wax oil, general²⁴²⁵

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

²⁴ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

²⁵ Osmo (2019) - Osmo Hard Wax Oil 3032 satin, 3062 matte <<https://www.osmo.de>> Accessed, on 03/02/2019

Tab. 8 B: Material data sheet, Osmo, hard wax oil, specific²⁶²⁷

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	

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

Global Warming Potential (GWP)	296,07 Kg CO ₂ -eqv.	
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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

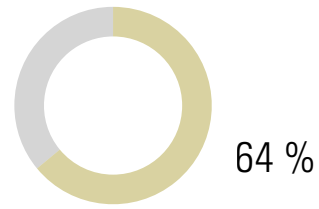
Density	0,89 g/cm ³	
Viscosity	Thixotropic, creamy	
Consistency	Medium viscosity	
Moisture resistance	Good	

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)



9 PVAc dispersion adhesive, D3



Tab. 9 A: Material data sheet, PVAc dispersion adhesive, D3, general^{28,29}

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

²⁸ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

²⁹ 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. 9 B: Material data sheet, PVAc dispersion adhesive, D3, specific³⁰³¹

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
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Use of freshwater resources (FW)	0,00758 m ³	10
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Environmental impact per kg A1-A3

Global Warming Potential (GWP)	0,955 Kg CO ₂ -eqv.	10
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Environmental impact Transport, per 1000 kgkm 6,5

Production site: Germany/ZEITRAUM

Truck - ca. 200 km	A4	10
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Total non-renewable primary energy (PENRT)	172,12 MJ	
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Use of freshwater resources (FW)	0,012106 m ³	
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Global Warming Potential (GWP)	12,822 Kg CO ₂ -eqv.	
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Main raw material origin: n.a./production site

n.a. - ø > 7000 km	A4	3
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Total non-renewable primary energy (PENRT)	8456 MJ	
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Use of freshwater resources (FW)	0,44716 m ³	
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Global Warming Potential (GWP)	627,83 Kg CO ₂ -eqv.	
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Sustainability Assessment

Longevity	Very durable/moderately repairable (> 20 years)	9
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Biological reproduction/ recycled material	0 %	0
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Circulation potential	Only thermally recyclable	4
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Socially compatible	Yes	9
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³⁰ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

³¹ 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	
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Properties

Density	1,1 g/cm ³	
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PH level	3	
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Consistency	Medium viscosity	
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Moisture resistance	D3	
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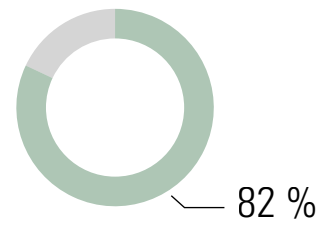
Heat resistance	Up to 120 °C	
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Notes

PVAc adhesive is available solvent-free and solvent-based	
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10 Cardboard, beds, tables & storage



Tab. 10 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. 10 B: Cardboard, beds, tables & storage, specific³²³³

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

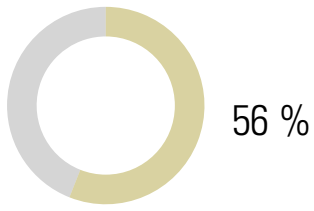
Longevity	Moderately durable/repairable (< 10 years)	4
Biological reproduction/ recycled material	60 %	6
Circulation potential	100 % (technological)	10

³² BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

³³ 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	

11 Polyester fleece



Tab. 11 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. 11 B: Material data sheet, polyester fleece, specific³⁴³⁵

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/m²)		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

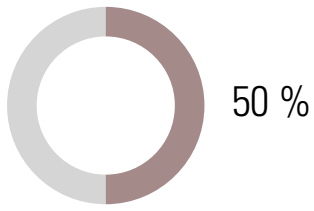
³⁴ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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

Disposal note

Recyclable waste

12 PE foil



Tab. 12 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. 12 B: Material data sheet, PE foil, specific³⁶³⁷

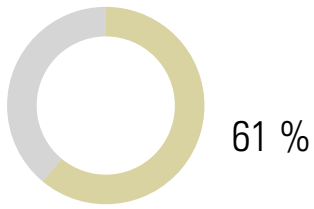
General description

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 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	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	

³⁶ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

³⁷ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

13 PP strapping



Tab. 13 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. 13 B: Material data sheet, PP strapping, specific³⁸³⁹

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 m ³	
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 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	10
Total average rating		6,08
Disposal note	Recyclable waste	

³⁸ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

³⁹ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

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