

ZEITRAUM

LOW

Design by Formstelle, 2004



Furniture Footprint

LOW

Design by Formstelle, 2004

The sideboard family is based on the ‚Modulor‘ proportions system developed by Le Corbusier. The proportion is a deliberate attempt to replace the rigidity of symmetry with an asymmetrical arrangement which feels correct.

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: LOW. 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 (174)

Product category	Storage & shelves			
Weight	ca. 66 kg			

Environmental details

Recycled content/ renewable raw materials	ca. 5,5 % recycled material (steel, share: 11 %, ø 50 % recycled content) ca. 87 % renewable materials
Recyclability	ca. 85,8 % wood (waste wood category 2) ca. 3,2 % wood based materials (thermal utilisation) ca. 11 % 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
Body	Bavaria, Germany	1998	Yes	Yes
Drawers	Upper Austria	1998	Yes	Yes
Metal parts	Hunedoara, Romania	2005	No	Not yet

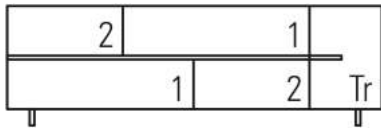
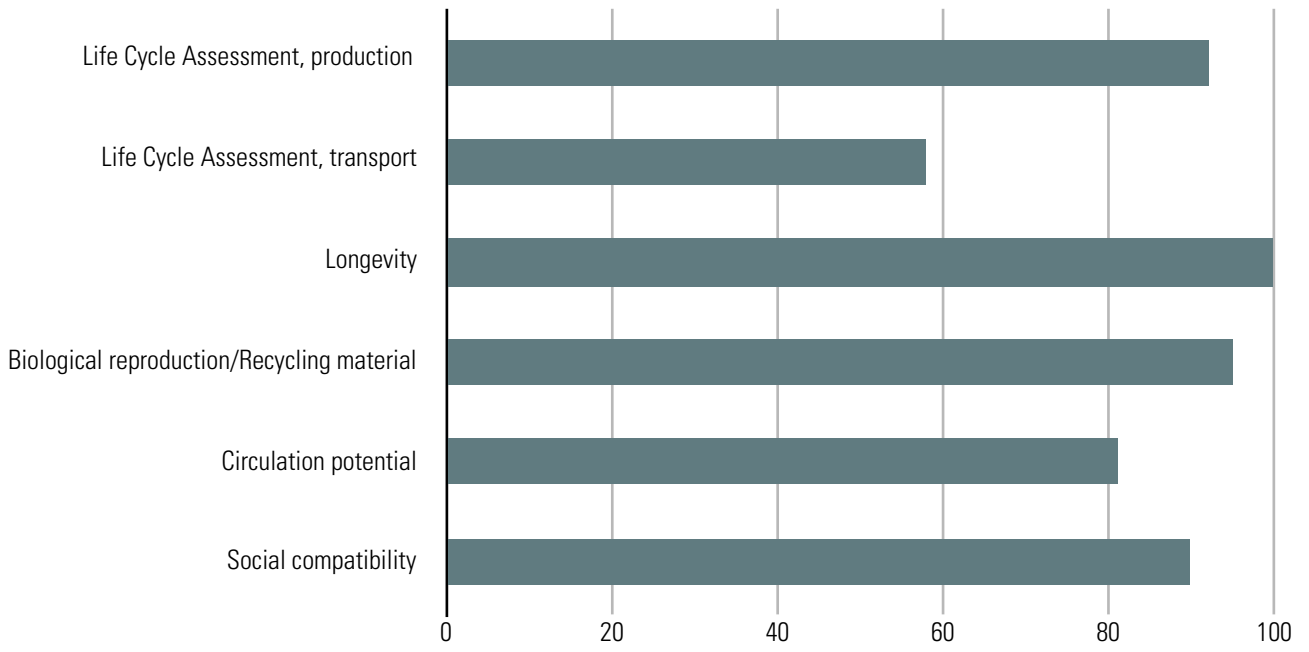
Packaging

Flatpack	No
----------	----

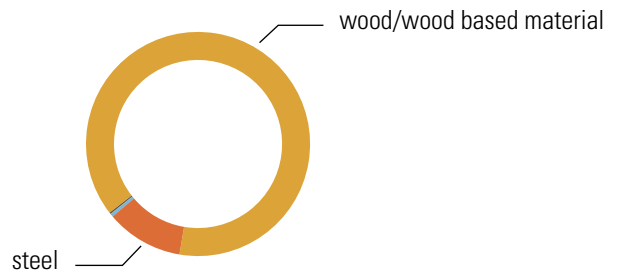
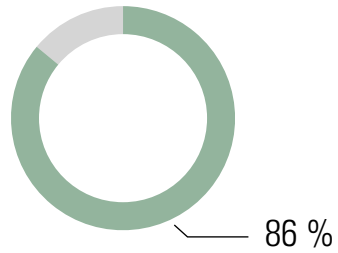
Warehouse

Country	Federal state
Germany	Bavaria

LOW, 174; walnut



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

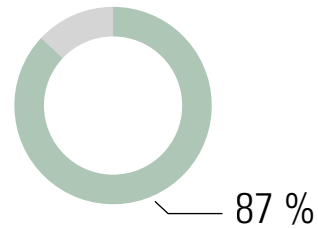


LOW, 174; walnut	Material/Product rating								
	Walnut	Beech	Plywood	Steel	Plastic, PA	Natural oil, Osmo	Varnish	PVAC	Weighted rating, %
Life Cycle Assessment, production	10	10	6,33	4,33	3	5	5	10	92,22189 %
Life Cycle Assessment, transport	5	10	8,5	5	6,5	9	9	6,5	58,329 %
Longevity	10	10	9	10	8	10	9	9	99,603 %
Biological reproduction/ Recycling material	10	10	9	6	0	6	0	0	94,706 %
Circulation potential	8	8	4	10	10	10	0	4	80,854 %
Social compatibility	9	10	8	8	9	10	9	9	89,971 %
Average rating, $\bar{\mu}$	8,666	9,666	7,471	7,221	6,083	8,333	5,333	6,416	Total weight
Share in kg	46,5	9,2	2,1	7,3	0,03	0,25	0,05	0,15	65,58
Share in %	70,9 %	14,02 %	3,2 %	11,13 %	0,04 %	0,38 %	0,07 %	0,22 %	
Weighted rating	6,144	1,355	0,239	0,803	0,002	0,031	0,003	0,014	
Product rating in %	85,91								

Packaging	Material/Product rating			
	Cardboard	PE fleece	PP strapping	Weighted rating, %
Life Cycle Assessment, production	10	3	5	97,392 %
Life Cycle Assessment, transport	9	6,5	6,5	89,012 %
Longevity	4	5	5	40,38 %
Biological reproduction/Recycling material	6	0	0	57,66 %
Circulation potential	10	10	10	99,98 %
Social compatibility	10	9	10	99,656 %
Average rating, $\bar{\mu}$	8,166	5,583	6,083	Total weight
Share in kg	7,4	0,25	0,05	7,7
Share in %	96,1 %	3,24 %	0,64 %	
Weighted rating	7,847	0,18	0,038	
Product rating in %	80,65			



1 American walnut



Tab. 1 A: Material data sheet, American walnut, general¹²

Material group	Natural material; wood; hardwood
Botanical name	<i>Juglans nigra L. (Juglandaceae)</i>
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, specific³

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 m³	A1-A3	
Global Warming Potential (GWP)	-1,74 Kg CO ₂ -eqv.	10
Environmental impact Transport, per 1000 kgkm (580 kg/m³)		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

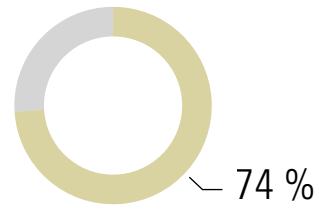
³ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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/m ³
Bulk density (12 - 15 % wood moisture)	580... 640... 810 kg/m ³
Pore ratio	ca. 63 %
Shrinkage rate at 1 % moisture reduction	radial - 0.19 %; tangential - 0.26 %; volume - 0.40 %
Mechanical properties	
Compressive strength (σ_{dB})	44... 53 N/mm ²
Flexural strength (σ_{bB})	90... 103 N/mm ²
Tensile strength ($\sigma_{zB \perp}$)	ca. 4,7 N/mm ²
Shear strength (τ_{aB})	8,8... 9,6 N/mm ²
Hardness (HB)	ca. 50 N/mm ²
Hardness (HB \perp)	ca. 26 N/mm ²
E-modulus (E_b)	11000... 13500 N/mm ²



2 Plywood, back panels



Tab. 2 A: Material data sheet, Plywood, back panels, general⁴

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	Slovakia
Origin of the wood	Europe (international)
Version	Plywood, 4-19 mm
Use	Back panels

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, Plywood, back panels, specific⁵⁶

General description (manufacturer spec.)

Certifications/Information	FSC 100 %, FSC Mix, FSC Controlled Wood	
Emission class	n.a.	
Fire resistance	Fire behavior: B1	

General description (general)

Length	2540 mm	
Wide	1840 mm	
Thickness	4 - 19 mm	
Texture	Plain, figured, smooth (top view), structure of several layers of veneer, smooth (cross section)	

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 m³	A1-A3	
Global Warming Potential (GWP)	-1,5 Kg CO ₂ -eqv.	10

Environmental impact Transport, per 1000 kgkm (590-600 kg/m³) 8,5

Production site: Slovakia/ZEITRAUM

Truck - ca. 1000 km	A4	9
Total non-renewable primary energy (PENRT)	1208 MJ	
Use of freshwater resources (FW)	0,06388 m ³	
Global Warming Potential (GWP)	89,69 CO ₂ -eqv.	

Main raw material origin: Europe/Production site

Truck - ca. 3000 km	A4	8
Total non-renewable primary energy (PENRT)	3624 MJ	
Use of freshwater resources (FW)	0,19164 m ³	
Global Warming Potential (GWP)	269,07 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 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

Longevity	Very durable/moderately repairable (> 20 years)	9
Biological reproduction/ recycled material	90 %	9
Circulation potential	Only thermally recyclable	4
Socially compatible	Yes	8
Total average rating		7,47

Processing

Mechanical	Very good; can be sawed, drilled and milled with common machines	
Adhesion	Very good	
Surface finishing	good; varnishable; coating possible	

Durability

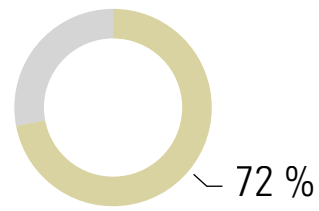
	By changing the synthetic binder or adding further additives, an increase in fire resistance, resistance to fungi and insects and moisture resistance can be achieved (see manufacturer's instructions)	
--	---	--

Physical properties

Bulk density	450 kg/m ³	
--------------	-----------------------	--



3 Steel



Tab. 3 A: Material data sheet, steel, general⁷

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

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, steel, specific⁸⁹

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

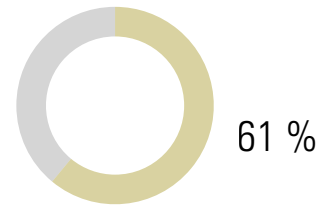
⁸ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

⁹ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

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	



4 Polyamide



Tab. 4 A: Material data sheet, polyamide, general¹⁰

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

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

Tab. 4 B: Material data sheet, polyamide, specific^{11,12}**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
-----------------------------	--	-------------

Processing

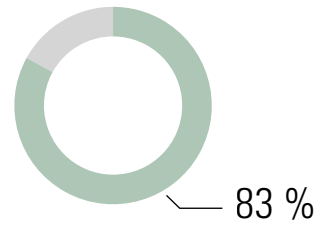
¹¹ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

¹² 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	



5 Osmo, hard wax oil



Tab. 5 A: Material data sheet, Osmo, hard wax oil, general¹³¹⁴

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

¹³ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

¹⁴ Osmo (2019) - Osmo Hard Wax Oil 3032 satin, 3062 matte <<https://www.osmo.de>> Accessed, on 03/02/2019

Tab. 5 B: Material data sheet, Osmo, hard wax oil, specific¹⁵¹⁶

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	

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

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	

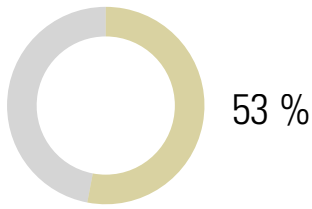
Properties

Density	0,89 g/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)

6 Varnish



Tab. 6 A: Material data sheet, lacquer, general¹⁷¹⁸

Material group	Synthetic material; coating materials; varnish
Name	varnish (GB, US); Lack (D)
Manufacturer	ADLER-Werk Lackfabrik Johann Berghofer GmbH & Co KG
Manufactured in	Germany (GER)
Version	ADLER PUR-Antiscratch HQ
Use	For the varnishing of heavily stressed surfaces in furniture and interior finishing, for hotel and school furnishings, for kitchen and sanitary furniture: areas of use II - IV according to ÖNORM A 1610-12

¹⁷ KALWEIT A. (2012) - Handbook of technical product design - materials and manufacturing. Berlin: Springer Verlag

¹⁸ ADLER (2019) - ADLER PUR-Antiscratch HQ <<https://www.adler-lacke.com/de>> Accessed, on 02/03/2019

Tab. 6 B: Material data sheet, paint, specific¹⁹²⁰**General description**

Certifications/Information	ISO 9001, ISO 14001, ISO 50001, A+ (see VOC's), CP65, DIN 4102 B1	
Emission class (formaldehyde)	Formaldehyde-free	
VOC's	approx. 72 % volatile components emitted during curing) French regulation DEVL1104875A on the labeling of construction coating products for their emissions of volatile pollutants: A+	
Delivery forms	Liquid	
Color	Transparent, colorless	
Texture	Glossy to matt (cured)	

Life cycle assessment data n.a. (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 nicht erneuerbare Primärenergie (PENRT)	172,12 MJ	
Einsatz von Süßwasserressourcen (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 nicht erneuerbare Primärenergie (PENRT)	3624 MJ	
Einsatz von Süßwasserressourcen (FW)	0,19164 m ³	
Global Warming Potential (GWP)	296,07 Kg CO ₂ -eqv.	

Sustainability Assessment

Longevity	Very durable/moderately repairable (> 20 years)	9
Biological reproduction/ recycled material	0 %	0
Circulation potential	Hazardous waste	0

¹⁹ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021²⁰ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

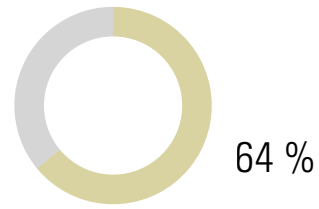
Socially compatible	Yes	9
Total average rating		5,33

Processing

Apply	Spray gun	
Storage	Can be stored up to 5 years with tight closure	
Notes	For hardly combustible or hardly flammable superstructures	



7 PVAc dispersion adhesive, D3



Tab. 7 A: Material data sheet, PVAc dispersion adhesive, D3, general²¹²²

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

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

²² 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. 7 B: Material data sheet, PVAc dispersion adhesive, D3, specific²³²⁴

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
---	-----	---

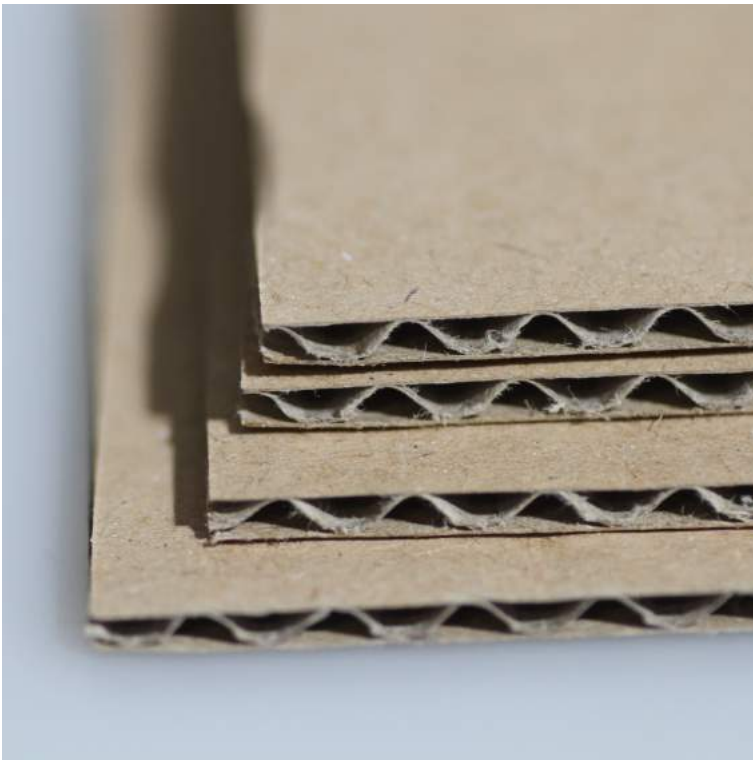
Circulation potential	Only thermally recyclable	4
-----------------------	---------------------------	---

Socially compatible	Yes	9
---------------------	-----	---

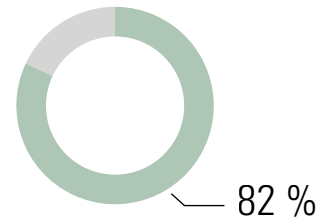
²³ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

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

Total average rating		6,41
Processing		
Adhesion	With brush, spatula or glue roller	
Properties		
Density	1,1 g/cm ³	
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	



8 Cardboard, beds, tables & storage



Tab. 8 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. 8 B: Cardboard, beds, tables & storage, specific²⁵²⁶

General description

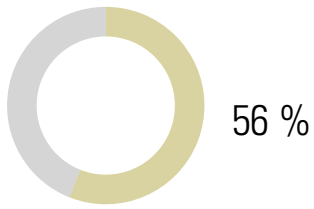
Certifications/Information	ISO 9001, ISO 50001, ISO 22000 DE, ISO 22000 EN, FSC	
Color	Brown	
Texture	matt	
Contents		
60 %	Recycled paper	
40 %	Primary raw material	
Life cycle assessment data „Kraftpapier“ (GER)		10
Resource input per kg	A1-A3	
Total non-renewable primary energy (PENRT)	5,888 MJ	
Use 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

²⁵ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

²⁶ 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	

9 Polyester fleece



Tab. 9 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. 9 B: Material data sheet, polyester fleece, specific²⁷²⁸

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

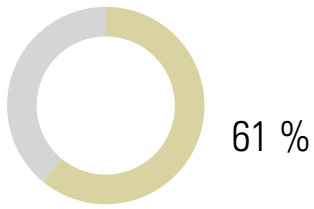
²⁷ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

²⁸ MATERIALARCHIV (2019) - Materialarchiv <<http://www.materialarchiv.ch/app-tablet/#search>> Accessed, on 03/01/2019

Disposal note

Recyclable waste

10 PP strapping



Tab. 10 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. 10 B: Material data sheet, PP strapping, specific^{29,30}

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	

²⁹ BMI 2021: Oekobaudat. Database <https://www.oekobaudat.de/no_cache/en/database/search.html> Accessed, on 10/27/2021

³⁰ 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.