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Seatings

SAVA, TANYA, NEW_SCHOOL, SHILA, GAYA, EVO, RENYA, HI DRIVE, ULTRA, GRACE, MESH, AGORA, ULTI, FRANK, TEAM, AFI, BALTIC, STILT, PARALEL, ARTIKO, ORBITA, MILLENIUM, BAZALTO, KAIVA, MIX, SHAPE, ROLL, COOL, VELA



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Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on ISO 14040 and EN 15804 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment. Their aspects were verified by the independent body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to ISO 14040 and EN 15804 (see point 5.3 of the standard).

Life cycle analysis (LCA): A1-A4, C1-C4 and D modules in accordance with EN 15804
(Cradle to Gate with options)

The year of preparing the EPD: 2022

Service Life: minimum 10 years, depending on application type

PCR: ITB-PCR A (PCR based on EN 15804)

Declared unit: 1 piece of furniture

Reasons for performing LCA: B2B

Representativeness: Polish production, year 2021

Products description

The MDD office furniture factory located in Sępólno Krajeńskie (Poland) was founded in 1993. Initially, the main stem of its production was the processing of wood. Since 1997, the production of office furniture is a base in the company's operations, which enables its dynamic development. Essential elements in production are made on site. MDD now distributes its products to more than twenty countries on three continents. Among the various MDD proposals are seatings types covered by this EPD.



The office chairs with armrests are an important element of an ergonomic workstation. Mechanisms allow adjusting the settings to the user's needs, make chair convenient element for a computer workstation. Adjustability includes the position of the seat, adjustment of the armrests in three dimensions as well as lumbar support height. The comfort is enhanced by the runner mesh on the backrest and headrest of the chair, and it is also an option for the seat fabric. Wide range of colours expand the arrangement possibilities. Seat is moulded with foam with density of 66 kg/m^3 , 55 mm thick, upholstered, sliding. Base is made of polypropylene, $\text{Ø}=680 \text{ mm}$, $h=124 \text{ mm}$ with option of polished aluminium ($\text{Ø}=680 \text{ mm}$, $h=124 \text{ mm}$). Castors are $\text{Ø}65 \text{ mm}$ are made of PP+PA. Mechanism has an automated regulation chair back, designed for usage 45 and 120 kg, allows the backrest to tilt from 0° to 18° and the seat to tilt from 0° to $4,5^\circ$ at the same time, it is possible to lock the backrest only in the 0° position, seat depth adjustment range 100 mm, possibility to lock in 11 different positions. The ergonomic Ultra chairs are designed with the special attention to user comfort. The most characteristic feature of the Ultra product is a cushion fixed to the backrest, which improves posture and draws attention. Elegant, and functional Ultra chair works as a conference or an office chair in a variant with a wooden leg may be element of home decor. A wide range of available bases and a variety of colours allow matching the chair to needs and to the character of an interior. Seat are based on the metal frame filled with foam, density of 55 kg/m^3 . The seating poufs (third group) introduce a climate of freedom and independence to every interior. Customizable layouts are the element of nature in less formal public and work spaces. These seats are designed for chill-out zones and social areas, can also be employed in waiting rooms, halls, and meeting places. Bazalto is a piece of furniture that through the joy of playing with theform, releases the natural creativity of the user. Body is made of MFC 18 mm, 28 mm and HDF 3 mm, fixed with confirmat screws. The seat is made with a foam thickness 50 mm and polypropylene feet - $\text{Ø}30 \text{ mm}$. There may be also metal connecting elements - profile 2 mm, laser-cut, powder coated.



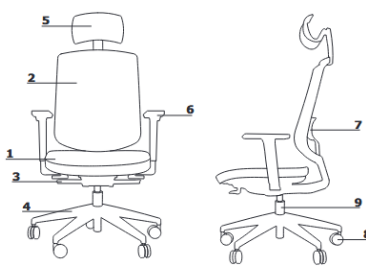
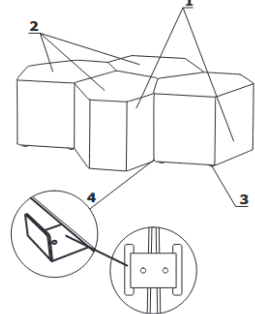
Technical data of acoustic products covered by EPD is available at manufacturer [web-site](#).

Life Cycle Assessment (LCA) – general rules applied

Declared Unit

The declared unit is 1 piece of a seating furniture. The environmental characteristics have been prepared for 3 groups of tables (represented by selected and specific products) made of different materials (Table 1).

Table 1. Groups of products covered by EPD, and selected representative products for each group

Products types	Representative product for each sub group	Weight
SAVA	<p>SAVA</p> <p>Technical specification</p>  <ul style="list-style-type: none"> 1. Seat - moulded foam, density of 66 kg/m³, 55 mm thick; upholstered, sliding 2. Backrest - mesh in Runner colours 3. Mechanism - Auto Synchro; OPTION WITH EXTRA CHARGE - Synchro Pro 4. Base - 5-star, polypropylene, Ø=680 mm, h=124 mm; OPTION WITH EXTRA CHARGE - 5-star, polished aluminium, Ø=680 mm, h=124 mm 5. OPTION WITH EXTRA CHARGE - headrest - black mesh 6. OPTIONS WITH EXTRA CHARGE: <ul style="list-style-type: none"> - armrest 2D - V3 - polyurethane, colour: black - armrest 3D - V3 - polyurethane, colour: black 7. OPTION WITH EXTRA CHARGE - manual height adjustable (60 mm) lumbar support 8. Castors - Ø65 mm, for soft floors PP+PA, colour: black; OPTION WITH EXTRA CHARGE - for hard floors PP+PA, colour: black 9. Actuator - steel gas spring; adjustment range 100 mm; colour: chrome or black 	20.0 kg
TANYA		
NEW_SCHOOL		
SHILA		
GAYA		
EVO		
RENYA		
HI DRIVE		
ULTRA		
GRACE		
MESH		
AGORA		
ULTI		
FRANK		
TEAM		
AFI		
BALTIC		
STILT		
PARALEL		
ARTIKO		
ORBITA		
MILLENIUM		
BAZALTO	<p>BPN1</p> <p>Technical specification - Bazalto</p>  <ul style="list-style-type: none"> 1. Body - MFC 18 mm, 28 mm and HDF 3 mm, fixed with confirmat screws 2. Seat - cut foam; thickness 50 mm 3. Polypropylene feet - Ø30 mm, 6 pcs 4. Metal connecting elements - profile 2 mm, laser-cut, powder coated, colour: black 	10.1 kg
KAIVA		
MIX		
SHAPE		
ROLL		
COOL		
VELA		

System boundary

The life cycle analysis of the declared product covers "Product Stage" A1-A4 modules, "End of Life stage" C1, C2, C3, C4 modules and loads&gains beyond system in D module (Cradle to Gate with options) in accordance with ISO 14040, EN 15804 and ITB PCR A.

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production of seating products is the inter-connected line process in a factory located in Sępólno Krajeńskie (Poland). Allocation is done on a product mass basis. The impacts from raw materials extraction and processing are allocated in A1 module of the EPD (including input materials, and energy carriers production, transportation, emissions and wastes resulting from the production of particle boards, cartoon, metals, wood and plastics). Minimum 99% of impacts from line production were inventoried and allocated to products Municipal waste and waste water of factory were allocated to module A3 (mass based). Energy supply was inventoried for whole production process. Emissions in the factory are calculated and were allocated to module A3 (allocation mass based). Energy supply was inventoried for whole factory and 100% was allocated to the product assessed on mass basis. Emissions in the factory are assessed using national KOBiZE emission factors for energy carriers were allocated to module A3. Allocation for steel production impacts is done in accordance with LCI data for Steel products Report compiled by Brian Hughes and William Hare (World Steel Association). Allocation (life cycle) for particle boards and wood is done in accordance to Wood Solution organization recommendations. WoodSolutions is an industry initiative designed to provide independent, non-proprietary information about timber and wood products. For refinery products, allocation is done by mass and net calorific value.

System limits

The life cycle analysis of the declared products covers "Product Stage", A1-A4, C1- C4 and D modules (Cradle to Gate with options) accordance with ISO 14040, EN 15804 and ITB PCR A. All materials and energy consumption inventoried in a factory were included in calculation. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilized thermal energy, internal fuel and electric power consumption, direct production waste, and all available emission measurements. It can be assumed that the total sum of omitted processes does not exceed 1% of all impact categories. Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary

A1 and A2 Modules: Raw materials supply and transport

Particle boards, wood, plastics, steel elements, cartoon boards, ancillary materials and packaging materials are provided by a manufacturer and come from the recognised suppliers. Particleboard production uses wood residues as its main input, these include pulp logs, forest thinnings, log harvesting residues, co-products of sawmilling and post-consumer wood. The board production stage includes growth and harvesting of wood inputs, production of resin and wax, blending of wood particles with resin and wax, pressing of the mixture to create the particleboard substrate, cutting, sanding and – if applied – adding a melamine-impregnated paper layer to the top and bottom surfaces. Data on transport of the different products to the manufacturing plants is declared by a producer. Means of transport include trucks. For calculation purposes European fuel averages are applied. Density of the particle boards is in a range 610-630 kg/m³.

A3: Production

In a factory, the first stage is mechanical processing of boards; cutting, bending, machine tools, frezing. Then the boards go to the application of laminates (if applicable for product type). The next process is the assembly of components, component completion and packaging. The production process mainly uses electricity and, to a small extent, LPG and Diesel.

A4: Transport to construction site

Transport of final product to construction site is taken as the weight average values for transport to customers. The following transport scenario to the place of use was assumed based on the manufacturer's declaration: large vehicle, 75% capacity over an average distance of 800 km. For calculation purposes European fuel averages are applied in module A4.

End of life scenarios (C and D modules)

The end-of-life scenario for all products has been generalized based on actual state of the art. It is assumed that in the end of life stage (C1), no electric energy or fuels is needed to remove products from building, the transport distance for waste to waste processing (C2) is 50 km on > 10t loaded lorry with 50% capacity utilization and fuel consumption of 20 l per 100 km. At the end of life the desks and tables are dismantled and the materials recycled or combusted according to the national treatment practice of industrial waste what is presented in Table 2. When a wood product reaches the end of its useful life, it may either be reused, recycled, landfilled or combusted to produce energy. The reuse, recovery and recycling stage is considered beyond the system boundaries (D). On average, 43% scrap steel is used in the A1 module for steel production. Net scrap is an amount of steel recycled at end-of-life minus scrap input from previous product life cycles. 50% of the wood and wood based boards are intended for energy recovery and 50% for recycling. In recycling, a similar release of CO₂ is assumed to the atmosphere as with energy recovery. Each scenario assumes that rate % of the material is sent to that scenario.

Table 2. End of life scenarios for the base materials

Parameter	Material recovery	Energy recovery	Disposal	Recycling
Particle Boards	100%	50%	0%	50%
Wood	100%	50%	0%	50%
Carton board	100%	30%	0%	70%
Polymers	100%	30%	70%	0%
Steel	100%	0%	0%	100%
Glass	100%	0%	10%	90%

The energy recovery scenario includes shredding (module C3) and combustion with recovered energy offset against average thermal energy from natural gas (module D) in line with EN 16485:2014.

Recycling scenario - particleboard may be recycled in many different ways – including into new particleboard. This scenario considers shredding into wood chips. Wood waste is chipped (module C3) and assigned credits relative to the avoided production of woodchips from virgin softwood (module D). The sequestered CO₂ and the energy content of the wood are assumed to leave the system boundary at C3 so that future product systems can also claim these without double-counting (EN 16485: 2014).

Electricity at end-of-life (module C) has been modelled using an average Polish electricity mix as the location where the product reaches end-of-life is unknown.

Data collection period

The data for manufacture of the declared products refer to period between 01.01.2020 – 31.12.2020 (1 year). The life cycle assessments were done for Poland as reference area.

Data quality - production

The values determined to calculate A3 originate from verified LCI inventory data. A1 values were prepared considering several specific and generic EPDs for steel elements, plastics and wood based products (particle boards). The background data for the secondary inputs come from the Ecoinvent v.3.8 data base.

Assumptions and estimates

The impacts in A3 module of the representative the desks and tables were aggregated using weighted average. Impacts were inventoried and calculated for all products of the desks and tables. Due to the significant number of product types, the environmental assessment results are presented on 3-selected products representative for a group of seating products. Electricity for production (modules A1-A3) has been modelled as a state-specific split based upon the electricity consumption of the manufacturers who contributed data to this study. All breakdown of forest matter after harvest is modelled as aerobic and therefore carbon neutral as carbon sequestered is released as carbon dioxide. It is assumed that all timber will be replanted (plantation forest) or will regrow.

Calculation rules

LCA was done in accordance with ITB PCR a document. Characterization factors are CML ver. 4.2 based. ITB-LCA algorithms were used for impact calculations. A1 was calculated based on data from the database and specific EPDs (mass important inputs), A3 and A2 are calculated based on the LCI questionnaire provided by the manufacturer. Emission of greenhouse gases was calculated using the IPCC 2013 GWP method with a 100 year horizon. Emission of acidifying substances, Emission of substances to water contributing to oxygen depletion, Emission of gases that contribute to the creation of ground-level ozone, Abiotic depletion, and ozone depletion emissions where all calculated with the CML-IA baseline method

Data bases

The background data for the processes come from the following databases: Ecoinvent v.3.8, specific EPD for a producers, energy KOBiZE/GUS (Polish electricity mix and combustion factors for fuels). Specific (LCI) data quality analysis was a part of the audit. The time related quality of the data used is valid (5 years).

Additional information

The electricity mix represents the average Polish specific electricity supply for final consumers, including electricity own consumption, transmission/distribution losses and electricity imports from neighbouring countries. Reference year is 2020 and carbon impact of electricity mix is 0.25 kg CO₂/MJ.



Particle boards have a certificate of origin FSC and PEFC.

To assure end users that the particleboard has the lowest possible formaldehyde emissions, a formaldehyde testing and labelling program is run by manufacturer.

Life Cycle Assessment (LCA) – Results

Declared unit

The declaration refers to the unit DU – 1 piece of specific product produced by .MDD. The following life cycle modules are included in the declaration (Table 3).

Table 3. System boundaries (life stage modules included) in a product environmental assessment

Environmental assessment information (MA – Module assessed, MNA – Module not assessed, INA – Indicator Not Assessed)																	
Product stage			Construction process		Use stage								End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
MA	MA	MA	MA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MA	MA	MA	MA	MA	

Note: In order to convert the results contained in the tables for piece of furniture to different products, the values given in the tables 4-6 should be divided by this furniture mass and multiplied with mass of considered/selected product (within a group of products)

Table 4. Environmental product characteristic – 1 completed product SAVA (20.2 kg)

Environmental impacts: (DU) 1 product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO ₂	3.49E+01	1.79E+00	6.55E+00	1.68E+00	0.00E+00	1.05E-01	4.35E+00	1.21E-01	-1.33E+01
Depletion potential of the stratospheric ozone layer	kg CFC 11	2.06E-05	0.00E+00	6.22E-08	0.00E+00	0.00E+00	0.00E+00	1.67E-07	4.87E-10	-1.01E-08
Acidification potential of soil and water	kg SO ₂	2.71E-01	1.38E-02	1.49E-02	1.29E-02	0.00E+00	8.05E-04	7.22E-03	1.88E-04	-1.96E-02
Formation potential of tropospheric ozone	kg Ethene	5.22E-02	9.25E-04	2.62E-02	8.67E-04	0.00E+00	5.42E-05	1.23E-03	2.55E-05	-5.17E-03
Eutrophication potential	kg (PO ₄) ³⁻	2.80E-02	2.43E-03	6.38E-04	2.28E-03	0.00E+00	1.43E-04	2.41E-03	3.20E-05	-2.06E-03
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb	8.17E-02	0.00E+00	4.15E-02	0.00E+00	0.00E+00	0.00E+00	3.48E-05	1.03E-07	-4.30E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	7.32E+02	2.45E+01	4.37E+01	2.29E+01	0.00E+00	1.43E+00	3.05E+01	8.01E-01	-9.69E+01
Environmental aspects: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1.01E+02	1.34E+01	2.49E+00	1.26E+01	0.00E+00	7.88E-01	6.32E+00	5.55E-02	4.36E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	8.55E+02	2.57E+01	5.55E+01	2.41E+01	0.00E+00	1.50E+00	3.06E+00	8.02E-01	-9.69E+01
Use of secondary material	kg	1.39E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E+01	0.00E+00	5.20E-01
Use of renewable secondary fuels	MJ	2.62E-01	1.28E+00	0.00E+00	1.20E+00	0.00E+00	7.52E-02	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	1.32E+02	0.00E+00	1.24E-04	0.00E+00	0.00E+00	0.00E+00	2.03E-06	0.00E+00	0.00E+00
Net use of fresh water	m ³	3.89E+01	2.62E-04	1.21E-01	2.45E-04	0.00E+00	1.53E-05	1.16E-04	7.56E-06	1.45E-04
Other environmental information describing waste categories: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5.18E-01	9.41E-07	3.23E-03	8.82E-07	0.00E+00	5.51E-08	4.40E-05	1.30E-07	-2.97E-02
Non-hazardous waste disposed	kg	1.04E+01	1.12E-03	3.23E-01	1.05E-03	0.00E+00	6.54E-05	4.05E+00	4.10E-01	-2.59E-02
Radioactive waste disposed	kg	6.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-04	5.16E-06	-5.42E-03
Components for re-use	kg	1.33E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.28E-01	0.00E+00	6.08E+00	0.00E+00	0.00E+00	0.00E+00	1.85E+01	0.00E+00	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 5. Environmental product characteristic – 1 completed product UFP4K (14,3 kg)

Environmental impacts: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO ₂	2.51E+01	1.28E+00	4.68E+00	1.20E+00	0.00E+00	7.50E-02	3.10E+00	8.63E-02	-9.48E+00
Depletion potential of the stratospheric ozone layer	kg CFC 11	1.47E-05	0.00E+00	4.45E-08	0.00E+00	0.00E+00	0.00E+00	1.19E-07	3.49E-10	-7.19E-09
Acidification potential of soil and water	kg SO ₂	1.97E-01	9.83E-03	1.06E-02	9.21E-03	0.00E+00	5.76E-04	5.13E-03	1.34E-04	-1.40E-02
Formation potential of tropospheric ozone	kg Ethene	3.84E-02	6.62E-04	1.88E-02	6.20E-04	0.00E+00	3.87E-05	8.73E-04	1.82E-05	-3.68E-03
Eutrophication potential	kg (PO ₄) ³⁻	2.02E-02	1.74E-03	4.57E-04	1.63E-03	0.00E+00	1.02E-04	1.71E-03	2.29E-05	-1.46E-03
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb	5.82E-02	0.00E+00	2.97E-02	0.00E+00	0.00E+00	0.00E+00	2.47E-05	7.34E-08	-3.06E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	5.25E+02	1.75E+01	3.12E+01	1.64E+01	0.00E+00	1.02E+00	2.17E+01	5.72E-01	-6.91E+01
Environmental aspects: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	7.42E+01	9.62E+00	1.78E+00	9.01E+00	0.00E+00	5.63E-01	4.51E+00	3.97E-02	3.11E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	6.13E+02	1.84E+01	3.97E+01	1.72E+01	0.00E+00	1.08E+00	2.18E+01	5.73E-01	-6.91E+01
Use of secondary material	kg	9.92E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E+01	0.00E+00	3.72E-01
Use of renewable secondary fuels	MJ	1.87E-01	9.18E-01	0.00E+00	8.60E-01	0.00E+00	5.38E-02	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	9.44E+01	0.00E+00	8.84E-05	0.00E+00	0.00E+00	0.00E+00	1.45E-06	0.00E+00	0.00E+00
Net use of fresh water	m ³	2.79E+01	1.87E-04	8.64E-02	1.75E-04	0.00E+00	1.10E-05	8.27E-05	5.40E-06	1.04E-04
Other environmental information describing waste categories: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.88E-01	6.73E-07	2.31E-03	6.31E-07	0.00E+00	3.94E-08	3.13E-05	9.32E-08	-2.11E-02
Non-hazardous waste disposed	kg	7.74E+00	7.99E-04	2.31E-01	7.49E-04	0.00E+00	4.68E-05	3.96E+00	2.93E-01	-1.84E-02
Radioactive waste disposed	kg	4.61E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.39E-05	3.69E-06	-3.86E-03
Components for re-use	kg	9.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	9.15E-02	0.00E+00	4.34E+00	0.00E+00	0.00E+00	0.00E+00	1.48E+01	0.00E+00	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 6. Environmental product characteristic – 1 completed product BPN1 (10,1 kg)

Environmental impacts: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Global warming potential	kg CO ₂	1.77E+01	9.04E-01	3.31E+00	8.47E-01	0.00E+00	5.30E-02	2.17E+00	6.10E-02	-6.70E+00
Depletion potential of the stratospheric ozone layer	kg CFC 11	1.04E-05	0.00E+00	3.14E-08	0.00E+00	0.00E+00	0.00E+00	8.35E-08	2.46E-10	-5.08E-09
Acidification potential of soil and water	kg SO ₂	1.37E-01	6.95E-03	7.50E-03	6.51E-03	0.00E+00	4.07E-04	3.61E-03	9.47E-05	-9.90E-03
Formation potential of tropospheric ozone	kg Ethene	2.65E-02	4.67E-04	1.33E-02	4.38E-04	0.00E+00	2.74E-05	6.14E-04	1.29E-05	-2.60E-03
Eutrophication potential	kg (PO ₄) ³⁻	1.42E-02	1.23E-03	3.22E-04	1.15E-03	0.00E+00	7.20E-05	1.20E-03	1.62E-05	-1.04E-03
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb	4.12E-02	0.00E+00	2.10E-02	0.00E+00	0.00E+00	0.00E+00	1.74E-05	5.19E-08	-2.17E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	3.70E+02	1.23E+01	2.20E+01	1.16E+01	0.00E+00	7.23E-01	1.53E+01	4.04E-01	-4.88E+01
Environmental aspects: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	5.15E+01	6.79E+00	1.26E+00	6.36E+00	0.00E+00	3.98E-01	3.16E+00	2.80E-02	2.21E+00
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	4.32E+02	1.30E+01	2.80E+01	1.21E+01	0.00E+00	7.59E-01	1.55E+01	4.05E-01	-4.89E+01
Use of secondary material	kg	7.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E+01	0.00E+00	2.60E-01
Use of renewable secondary fuels	MJ	1.32E-01	6.48E-01	0.00E+00	6.07E-01	0.00E+00	3.80E-02	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	6.68E+01	0.00E+00	6.24E-05	0.00E+00	0.00E+00	0.00E+00	1.01E-06	0.00E+00	0.00E+00
Net use of fresh water	m ³	1.96E+01	1.32E-04	6.10E-02	1.24E-04	0.00E+00	7.74E-06	5.86E-05	3.82E-06	7.27E-05
Other environmental information describing waste categories: (DU) 1 Product										
Indicator	Unit	A1	A2	A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.64E-01	4.75E-07	1.63E-03	4.45E-07	0.00E+00	2.78E-08	2.20E-05	6.58E-08	-1.49E-02
Non-hazardous waste disposed	kg	5.28E+00	5.64E-04	1.63E-01	5.29E-04	0.00E+00	3.30E-05	2.97E+00	2.07E-01	-1.32E-02
Radioactive waste disposed	kg	3.26E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.62E-05	2.61E-06	-2.74E-03
Components for re-use	kg	6.73E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#ARG!	0.00E+00	0.00E+00
Materials for recycling	kg	6.46E-02	0.00E+00	3.07E+00	0.00E+00	0.00E+00	0.00E+00	9.76E+00	0.00E+00	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Verification

The process of verification of this EPD was in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was ISO 14040, EN 15804 and ITB PCR A	
Independent verification corresponding to ISO 14025 (subclause 8.1.3.)	
<input checked="" type="checkbox"/> external	<input type="checkbox"/> internal
External verification of EPD: Ph.D. Eng. Halina Prejzner LCA, LCI audit and input data verification: Ph.D. Eng. Michał Piasecki. m.piasecki@itb.pl Verification of LCA: Ph.D. Eng. Justyna Tomaszewska. j.tomaszewska@itb.pl	

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with ISO 14040/EN 15804/ISO 21930.

Normative references

- PN-EN 16485:2014-06 Drewno okrągłe i tarcica - Środowiskowe deklaracje wyrobu - Reguły kategorii wyrobu dla drewna i wyrobów drewnopochodnych stosowanych w budownictwie
- EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- ITB PCR A General Product Category Rules for Construction Products
- NSF International (2015). BIFMA PCR for Office Furniture Workspace Products : UNCPC 3814
- <https://www.woodsolutions.com.au/>
- Intergovernmental Panel on Climate Change. (2013) IPCC Fifth Assessment Report.
- ISO 14040:2006 Environmental management – Life cycle assessment–Principles and framework.
- LCI DATA FOR STEEL PRODUCTS at https://www.worldsteel.org/en/dam/jcr:04f8a180-1406-4f5c-93ca-70f1ba7de5d4/LCI%2520study_2018%2520data%2520release.pdf
- ISO 14025:2006. Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works Core rules for environmental product declarations of construction products and services
- PN-EN ISO 14040:2009/A1:2021-03 Zarządzanie środowiskowe -- Ocena cyklu życia - Zasady i struktura
- European Life Cycle Database. ELCD 3.2. <http://epca.jrc.ec.europa.eu/ELCD3/index.xhtml?stock=default>
- Ecoinvent Database. <http://www.ecoinvent.org/database/>.
- KOBiZE Wskaźniki emisyjności CO₂, SO₂, NO_x, CO i pyłu całkowitego dla energii elektrycznej, 2020



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Thermal Physics, Acoustics and Environment Department

02-656 Warsaw, Ksawerów 21

CERTIFICATE No 353/2022
of TYPE III ENVIRONMENTAL DECLARATION

Product:

Seatings

Manufacturer:

.mdd sp. z o.o.

ul. Koronowska 22, 89-400 Sępólno Krajeńskie, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15805

Sustainability of construction works.

Environmental product declarations.

Core rules for the product category of construction products.


This certificate, issued for the first time on 4th August 2022 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department


Agnieszka Winkler-Skalna, PhD



Deputy Director
for Research and Innovation


Krzysztof Kuczyński, PhD

Warsaw, August 2022