



LAMINATE FLOORING

ENVIRONMENTAL PRODUCT DECLARATION

accordance with ISO 14025 and EN 15804:2012+A2:2019

This EPD covers multiple products, based on the worst-case results of the product group

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PCR 2019:14 Construction products, version 1.3.3., Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works, c-PCR-006 Wood and wood-based products for use in construction (EN 16485)

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification EPD verification

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA

Approved by: The International EPD® System **LCA Accountability:** Metsims Sustainability Consulting

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

About Company

Maintaining its uninterrupted production for half a century in the wood-based panel industry, Kastamonu Entegre is a global-scale company engaged in production in 6 countries, with investments in Romania, Bulgaria, Bosnia and Herzegovina, Russia, Italy and Turkey. In the USA, it has a company that carries out wood chip supply and logistics processes.

Kastamonu Entegre has become the world's sixth largest company in the wood-based panel industry with its overseas investments extending more than 20 years, and has been among the top four manufacturers in Europe. It is one of the four largest manufacturers in the world with each of its main product groups; namely MDF, chipboard, laminate flooring, and door skin. It undertakes 6% of the world laminate flooring production alone. Not only the Turkey's industry leader with its 30% market share, Kastamonu Entegre, at the same time is by far the leader of the industry with its imports each year to 100 countries in six continents extending from China to America and Australia to Canada.

With its turnover of 1.3 billion dollars and its strength, knowledge and experience in production, it provides employment to more than 6 thousand people in its domestic and foreign production facilities as well as its offices. In its production facilities with a total of 6 million m³/year wood-based panel production capacity, where it caters the requirements of furniture, decoration and construction industries with its MDF and particle board, laminate flooring, worktop and door skin products, it produces a volume that contributes to the formation of living spaces of 4 500 homes

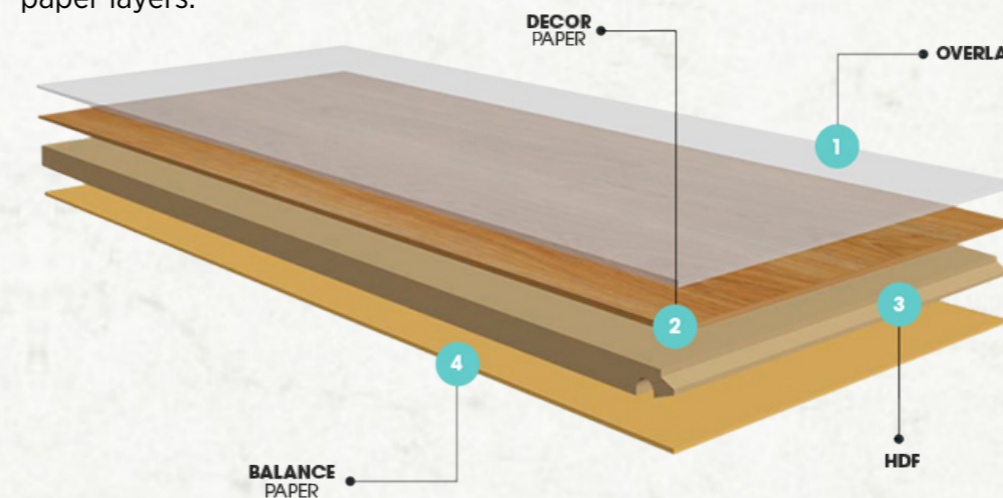
every day. Proud bearer of "The Biggest Turkish Investor of Italy" title, Kastamonu Entegre also happens to be the largest MDF producer and exporter of Russia.

Responding to the demands of its customers, Kastamonu Entegre can produce FSC, CARB2 / EPA Certified products and at E1, E0.5 (1/2), E0, F4Start quality by obtaining wood raw materials from 100% sustainable and renewable sources. In addition, E1 quality production is carried out in all its facilities. "Floorpan" and "Artfloor" are the first Turkish laminate flooring brands that have "Blue Angel" certificate, which shows that environmentally friendly materials are used in production and that the products do not contain any hazardous substances for human health. Acting with the mission of preserving natural balance and contributing to the society, the company is one of the three companies that prepared the sustainability report in the industry. It carries out studies on product and process development, efficiency increase, efficient resource utilization and advanced material technologies in its R&D center in Istanbul, which it has set up to develop technologies of the future.

The company has certifications such as ISO 9001 Quality Management, ISO 45001 Occupational Health and Safety Management, ISO 14001 Environmental Management, ISO 50001 Energy Management, and also the Turquality Certificate. Production is made in conformity with the TSE and European Norms (EN).

About Product

ARTFLOOR, FLOORPAN and STEPCLICK are used for floor covering. The impregnation of the paper layers used in the production of laminate flooring is done by machines equipped with the latest technology. In the course of the impregnation process, the chemicals providing glossiness and resistance to erosion, scratching, UV rays exposure, humidity are administered to the paper layers.



Material Composition, 1 m²

Product Component	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Wood Chips	85-90	0	0,494
Resin	15-20	0	0
Other Chemicals	0-5	0	0
Total	100	0	

The average weights of product is 5.95-10.95 kg/m². This EPD prepared for 12 mm floorings. The reference product is 12 mm flooring and LCA results are given for 12 mm as a representative product. The EPD covers 7-12 mm KEAS floorings.

The UN CPC code of the product is 3143.


Typical Material Composition, 1 m²

Raw Material	Weight, %
Wood Chips	88-95
UMF Glue	7-10
Other Chemicals	0-1

Wood chips type can be varied and mainly sourced from pine, beech, and oak trees.



Laminate Flooring Technical Specifications (8-12 mm)

Technical Data	Unit	Value	Test Standard	
Thickness	mm	7-12	EN 13329	
Width	mm	195-302	EN 13329	
Lenght	mm	1202-1206	EN 13329	
Surface	Country- Vintage / stone / Authentic / Dynamic Timberland/Impact/M.C./Sky			
European Standard			EN 13329	
Package Details: Piece, m ² , kg	8-12 piece / 1 package			
Pallet Details: Piece, m ² , kg	44-60 package / 1 pallet			
Class	-	33	EN 13329	
Abrasion Resistance	-	AC5	ISO 14338 Procedure A	
Thickness Swelling	%	≤15	ISO 24336	
Resistance to Impact	Small Ball	N	≥70	EN 17368
	Large Ball	mm	≥750	EN 13329
Warranty Domestic/Commercial	Years	25/15	-	
Resistance to Staining	-	Min. 5 (group 1 and 2) Min. 4 (group 3)	EN 438-2	
Surface Soundness	N/mm ²	≥1.25	EN 13329	
Look Strength	Lenght	kN/m	f10.2 ≥ 1	ISO 24334
	Width	kN/m	fs0.2 ≥ 2	ISO 24334
Effect of castor chair ^a	"20.000 Cycles"	No Damage	EN ISO 4918	
Effect of a Furniture Leg	-	No Damage	EN ISO 16581	
Opening between elements. (0)	mm	≤0.20	EN 13329	
Height difference between elements, (h)	mm	≤0.15	EN 13329	
Moisture Content	%	4-10	EN 322	
Fire Resistance	Class	Cfl S1	EN 9239-1	
Formaldehyde Emission	mg/m ² h	≤3.5 (E1)	EN 12460-3	

Note: The technical specifications provided apply to the entire product range. However, they may vary depending on the thickness.

As Kastamonu Entegre, we adopt an ethical, transparent, equitable and accountable management approach in the awareness of our environmental, economic and social contributions and impacts.

We engage in activities that strengthen our corporate structure, and we take sustainable development-based growth as the basis, in line with our target of becoming a global brand.

In determining our strategies, we always consider the expectations and opinions of our stakeholders and create a strong bond by ensuring their satisfaction. We conduct practices with an employee-oriented perspective that takes into account their expectations and needs, thereby creating an efficient and peaceful working environment.

Besides ensuring the health and safety of all our employees, we also contribute to their training and development activities.

Pursuant to our responsible purchasing approach, we perform our raw material supply processes based on sustainable forest management. We support initiatives related to this model and contribute positively to their development.

Our innovation and R&D processes enable us to develop and manufacture products that create high quality, environmentally friendly and healthy living spaces using state-of-the-art technology.

We respect human rights and encourage equal opportunity.

We pay regard to energy and water efficiency; we implement renewable and innovative energy projects accordingly.

We contribute to the welfare of the local community by creating employment and economic value in our geographic locations.

KASTAMONU ENTEGRE Sustainability Policy

LCA Information

Declared Unit	1 m ² of Flooring with an average weight 10.95 kg/m ²
Time Representativeness	2022
Database(s) and LCA Software Used	Ecoinvent 3.8, SimaPro 9.5

The inventory for the LCA study is based on the 2022 production figures for flooring products by Kastamonu Entegre production plants in Kastamonu, Adana and Russia.

This EPD's system boundary is cradle to gate. The system boundary covers A1 - A3 product stages, C1 - C4 end of life and D stages.

	Product Stage			Constrction Process Stage		Use Stage						End of Life Stage			Benefits and Loads		
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction, demolition	Transport		Waste Processing	Disposal
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	GLO														
Spesific Data	16%																
Variation-Products	>%10																
Variation-Sites	<%10																

System Boundary



A1: Raw Material Supply
Kastamonu Entegre's productions start from wood. The company supplies its raw materials necessary from suitable forests. Raw material supply includes raw material extraction/preparation and pre-treatment processes before production.



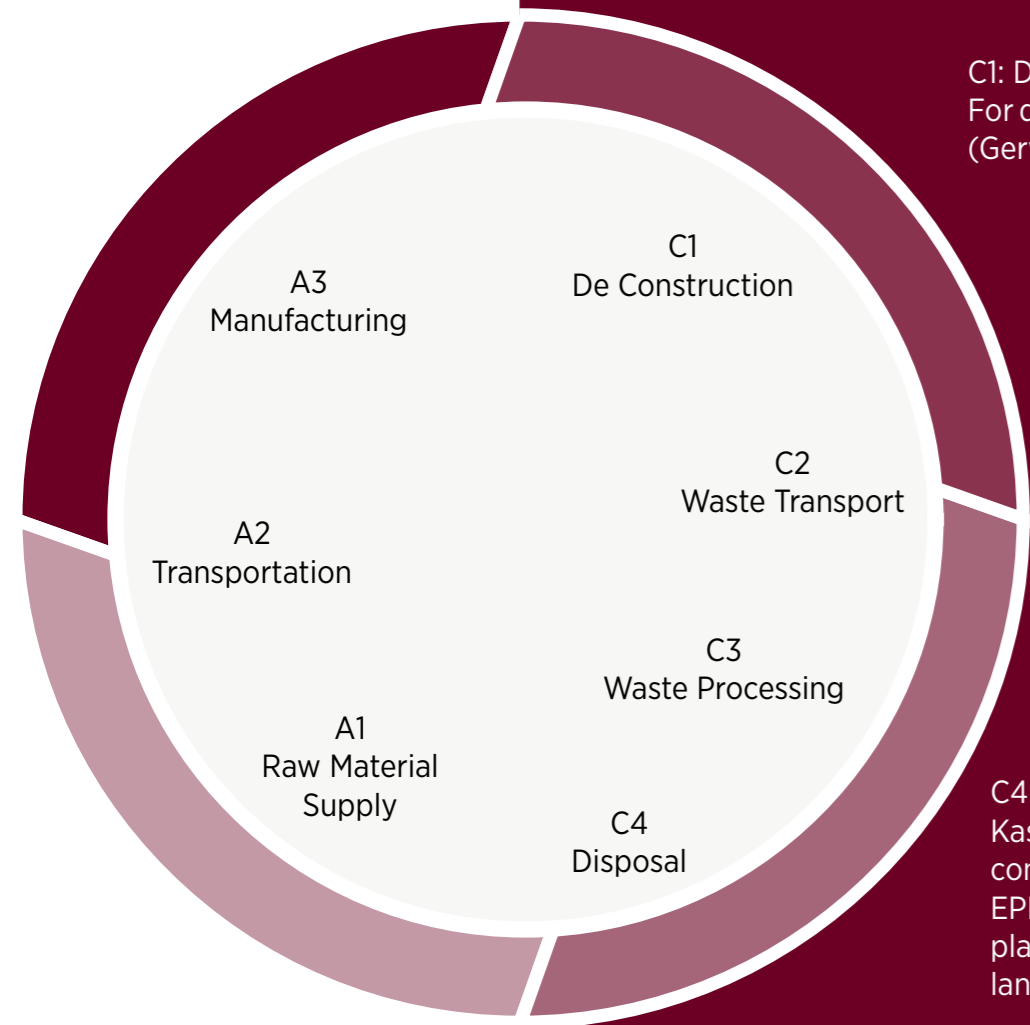
A2: Transportation
Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. Transport of raw materials to production sites is taken as the weight average values for transport from raw materials supplier in 2022.



A3: Manufacturing
Kastamonu Entegre's manufacturing flows are given as below respectively. Some process can be vary according to production plant.

- | | |
|--------------------------|------------------------|
| 1 - Debarking logs | 7 - Pressing |
| 2 - Chipping | 8 - Cutting & trimming |
| 3 - Refining wood fibres | 9 - Cooling |
| 4 - Gluing fibres | 10 - Sanding |
| 5 - Drying fibres | 11 - Quality control |
| 6 - Mat formation | 12 - Storage |





C1: Deconstruction and Demolition
 For deconstruction stage, 0.323 MJ electricity use per kg of material was assumed (Gervasio et al., 2018)

C2: Waste Transport
 A distance of 200 km is assumed for the transport of the deconstructed material to the disposal area.

C3: Waste Processing
 If the wastes are going to landfill or incineration, there is no need for any waste process.

C4: Disposal
 Kastamonu Entegre's products may dispose with any disposal scenario after construction and demolition as their final fate and modelled as such for this EPD. It is assumed that 75% of the wastes used as raw material for incineration plants due to their high calorific value and 25% of the wastes send to the landfill site.

D Stage (Benefits and Load)
 For benefits and loads beyond, a calorific value of 18.6 MJ per kg of flooring products was assumed (Günther et al., 2012) to calculate the amount of avoided electricity production from heat. In this stage, the production efficiency of the plant which electricity generation from incineration is assumed as %20.



More Information

Production Plants and Allocations

Kastamonu Entegre has production facilities for wood-based products in Turkey, Italy, Russia, Romania, and Bulgaria. Raw material contents are modeled for each product and each factory. Water consumption, energy consumption and raw material transportation were weighted according to 2019 production figures.

In addition, hazardous and non-hazardous waste amounts were also allocated from the 2019 total waste generation.

Packaging

Products by Kastamonu Entegre is delivered en users in film plastic packaging, corrugated board, or composite packaging. The packaging of the final product is included in the LCA.

Cut-Off Criteria

%1 cut-off applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

REACH

The product contains formaldehyde which is a substance of very high concern (SVHC) and is subject to authorization under the REACH Regulation. For details, test results are provided in the additional information section and table of technical specifications.

LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR.

There are no co-product allocations within the LCA study underlying this EPD.

The SimaPro 9.1 LCA software and the Ecoinvent 3.6 LCA database were used to calculate the environmental impacts. The regional energy datasets were used for all energy calculations.

Raw materials, energy and water consumption, waste and material and product transport data is collected from Kastamonu Entegre. All primary data collected from Kastamonu Entegre is for the period year of 2019.

Geographical Scope

The geographical scope of this EPD is global. The assumptions of the end of life (C modules) and benefit (D module) stages can be referred to as the global.

LCA Results

Environmental Impacts for 1 m² of Flooring

Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
GWP - Fossil	kg CO ₂ eq	9,48E+00	5,40E-01	2,27E-01	0,00E+00	8,66E-02	-5,83E+00
GWP - Biogenic	kg CO ₂ eq	-1,54E+01	1,34E-03	4,12E-05	0,00E+00	1,56E+01	-3,89E-03
GWP - Luluc	kg CO ₂ eq	1,59E-02	5,77E-03	7,78E-05	0,00E+00	2,15E-05	-7,86E-03
GWP - Total	kg CO ₂ eq	-5,94E+00	5,47E-01	2,27E-01	0,00E+00	1,56E+01	-5,84E+00
ODP	kg CFC-11 eq	2,38E-07	3,22E-09	4,57E-09	0,00E+00	1,43E-09	-3,46E-08
AP	mol H ⁺ eq	5,17E-02	3,52E-03	7,34E-04	0,00E+00	9,20E-04	-2,82E-02
EP - Freshwater (P)	kg P eq	2,21E-03	5,43E-04	1,55E-05	0,00E+00	3,91E-05	-2,51E-03
EP - Marine	kg N eq	1,03E-02	6,22E-04	2,49E-04	0,00E+00	1,05E-03	-5,69E-03
EP - Terrestrial	mol N eq	1,53E-01	5,69E-03	2,71E-03	0,00E+00	4,65E-03	-5,73E-02
POCP	kg NMVOC	4,01E-02	1,69E-03	1,20E-03	0,00E+00	1,25E-03	-1,70E-02
ADPE	kg Sb eq	8,23E-05	6,03E-07	6,14E-07	0,00E+00	1,51E-07	-2,05E-06
ADPF	MJ	3,25E+01	3,87E+00	2,71E-01	0,00E+00	1,54E-01	-5,19E+01
WDP	m ³ depriv.	1,10E+01	2,75E-01	1,57E-02	0,00E+00	-2,59E-01	-9,14E-01
PM	disease inc.	7,30E-07	1,57E-08	2,26E-08	0,00E+00	1,16E-08	-2,54E-07
IR	kBq U-235 eq	2,62E-01	4,40E-03	4,00E-03	0,00E+00	1,47E-03	-8,02E-01
HTTP - C	CTUh	8,31E-08	6,20E-10	1,40E-09	0,00E+00	1,39E-09	-5,94E-09
HTTP - NC	CTUh	8,17E-08	3,49E-09	2,12E-09	0,00E+00	8,61E-09	-2,97E-08
SQP	Pt	1,30E+03	7,42E-01	3,31E+00	0,00E+00	1,13E+00	-1,11E+01

Acronyms
 GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.

Legend
 A1: Raw Material Supply, A2: Transport, A3: Manufacturing, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.

Results per functional or declared unit

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	9,53E+00	5,47E-01	2,28E-01	0,00E+00	1,83E-01	-5,86E+00

Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017.

¹This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Resource Use for 1 m ² of Flooring							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,00E+02	2,52E+00	5,25E-02	0,00E+00	1,06E+02	-9,18E+00
PERM	MJ	1,06E+02	0,00E+00	0,00E+00	0,00E+00	-1,06E+02	0,00E+00
PERT	MJ	2,06E+02	2,52E+00	5,25E-02	0,00E+00	2,53E-02	-9,18E+00
PENRE	MJ	7,37E+00	3,87E+00	2,71E-01	0,00E+00	2,53E+01	-5,19E+01
PENRM	MJ	2,52E+01	0,00E+00	0,00E+00	0,00E+00	-2,52E+01	0,00E+00
PENRT	MJ	3,25E+01	3,87E+00	2,71E-01	0,00E+00	1,53E-01	-5,19E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	4,91E-02	2,20E-03	6,00E-04	0,00E+00	1,68E-03	-2,40E-02

Waste & Output Flows for 1 m ² of Flooring							
Impact Category	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,00E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NHWD	kg	4,90E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RWD	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	8,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE (Electrical)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE (Thermal)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding resources used as raw materials, PENRM: Use of non-renewable primary energy resources used as raw materials, PENRT: Total use of non-renewable primary energy, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water, HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.

Additional Informations

For more information about Kastamonu Entegre and its products



Scan or Click!

With all technical details and 3D images, Kastamonu Entegre products are available on your mobile phone or tablet. Download IDS 3D (Interior Design Studio 3D) application and experience reality.



VOC Emissions

Testing Laboratory: RISE Research Institutes of Sweden AB

Test Reference: For updated test reference ID, it is recommended to contact the relevant sales executive.

Emission measurements according to SS-EN ISO 16000-9:2006 (Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method) after 28 days regarding volatile organic compounds (VOC and VVOC/SVOC), carcinogenic substances (VOC-substances, EU Regulation No 1272/2008 Annex VI, cat 1A and 1B) formaldehyde and acetaldehyde (ISO 16000-3:2011). Evaluation according to EN 16516:2017 (EU-LCI values).



References

/GPI/ General Programme Instructions of the International EPD® System. Version 4.0

/ISO 9001/ Quality management systems – Requirements

/ISO 14001/ Environment Management System- Requirements

/ISO 14020:2000/ Environmental labels and declarations — General principles

/EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

/ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

/PCR for construction products and construction services, The International EPD System, 2019:14 Version 1.3.3 Stockholm, Sweden: IVL Swedish Environmental Research Institute.

/The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com


/Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com



/Metsims/ www.metsims.com



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