Environmental
Product Declaration

Environmental product declaration is in accordance with ISO 14025
and EN 15804:2012+A2:2019

betopanplus®

Programme:
The International EPD® System
www.environdec.com

Programme Operator:
EPD International AB

EPD Registration Number
S-P-06752

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2027-10-25

Geoprahical Scope:
Global

TEPE BETOPAN

EPD® THE INTERNATIONAL EPD® SYSTEM

TURKEY EPD® ENVIRONMENTAL PRODUCT DECLARATIONS

ECO PLATFORM EPD VERIFIED

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

TURKEY EPD®

Programme Operator:

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Product Category Rules:

CEN Standard EN 15804:2012+A2:2019, Product Category Rules (PCR): Construction Products 2019:14, version 1.2.4

UN CPC code: 3752 Boards, Blocks, and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders.

PCR Review was Conducted by:

The Technical Committee of the International EDP System. Review Chair: Martin Erlandsson, IVL Swedish Environmental Research Institute.

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

☐ EPD process certification ☒ EPD verification

Third Party Verifier:

Third party verifier: Prof. Vladimír Koci
Approved by: The International EPD® System Technical Committee, supported by the Secretariat

In case of recognised individual verifiers:
Approved by: The International EPD® System

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

☐ Yes ☒ No

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 EN 15804. For further information about comparability, see EN 15804:A2 and ISO 14025

TEPE BETOPAN®

About the Manufacturer Company:

Foundations of Bilkent Holding were established by Prof.Dr. İhsan Doğramacı in 1968 to operate in construction sector.

TEPE BETOPAN YAPI MALZEMELERİ SAN. TİC. A.Ş., operating under the roof of Bilkent Holding, has established first cemented particle board factory in Bilkent, Ankara in Turkey in year 1984 and by starting with production of its registered brand Betopan® it has realized its first export in 1987.

The factory was revised in 1999 by using modern technology systems and the capacity was doubled. With the purchase of the other cement bonded particle board factory established in Arhavi in 2001, the company became the only related corporation in Turkey, and one of the few manufacturers in the world with its capacity of 60,000 m^3 Betopanplus® product, both surfaces of which are reinforced with natural minerals, with a very low relative humidity movement, and high strength joined the company's product range in 2001 as a result of R&D activities carried out within the company.

In the years to follow, wooden-textured Yalıpan® and stone-textured Taşonit® products with Betopanplus® features were offered to the market.In 2008, the production line in Arhavi was moved to the Ankara-Bilkent Facilities and all production was combined at one point.

The company expanded its product range with new surface textured products in middle of year 2011, upon the growing demand and interest in the exterior panels and cladding system.

Considering it as a principle to produce nature friendly, natural products with its information accumulation, Tepe Betopan A.Ş. started the production of tepePAN brand fiber reinforced cement board (Fibercement Board) in 2014 by establishing its second factory with an annual capacity of 50,000 m3 in Ankara ASO 2nd OSB Facilities, which has LEED Gold Certificate.

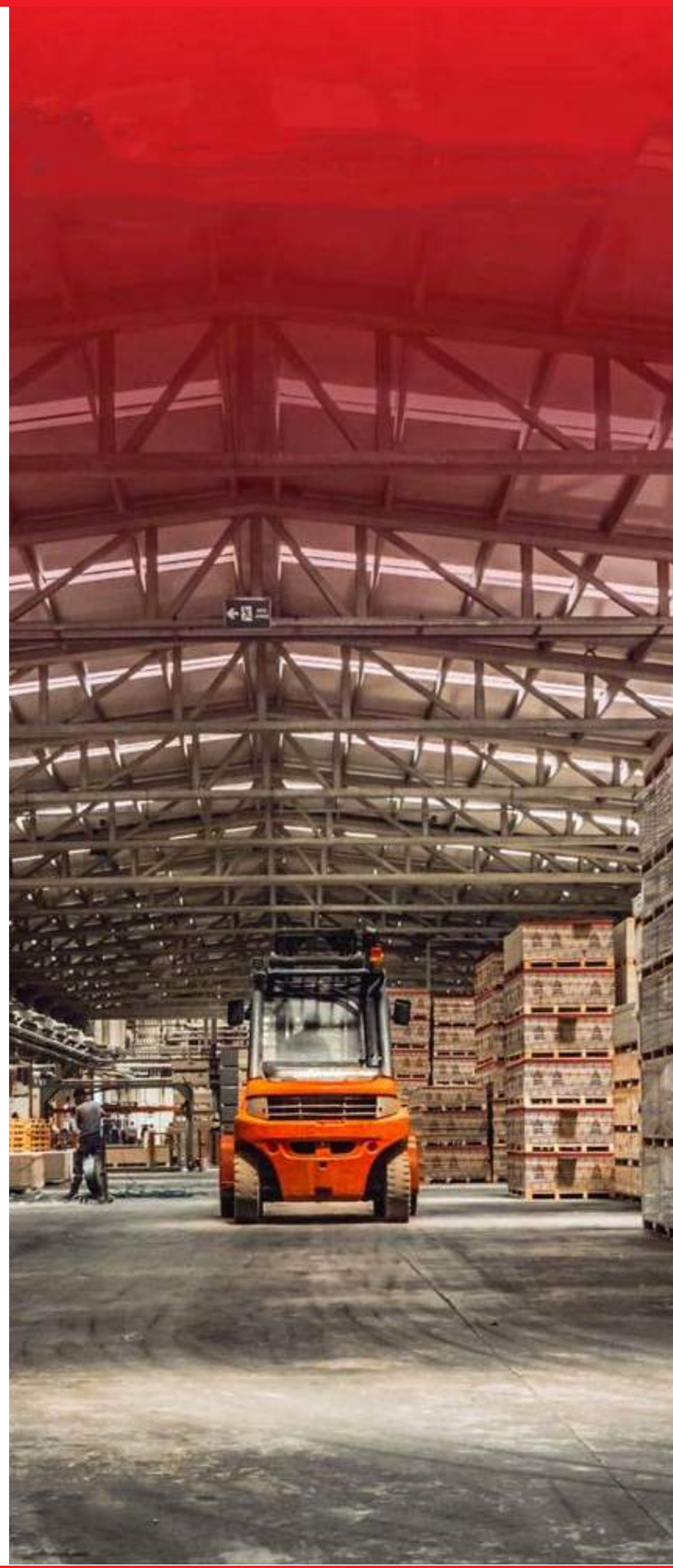
In year 2017 starting with wood textured tepePAN Wood, stone textured tepePAN Stone branded products, the company introduced fiber-reinforced cemented board products in different decorative textures to the market. Producing Turkey's first building board, Tepe Betopan manufactured the first self-colored fiber cement board in our country, Tepe Unique Pro, in 2019.

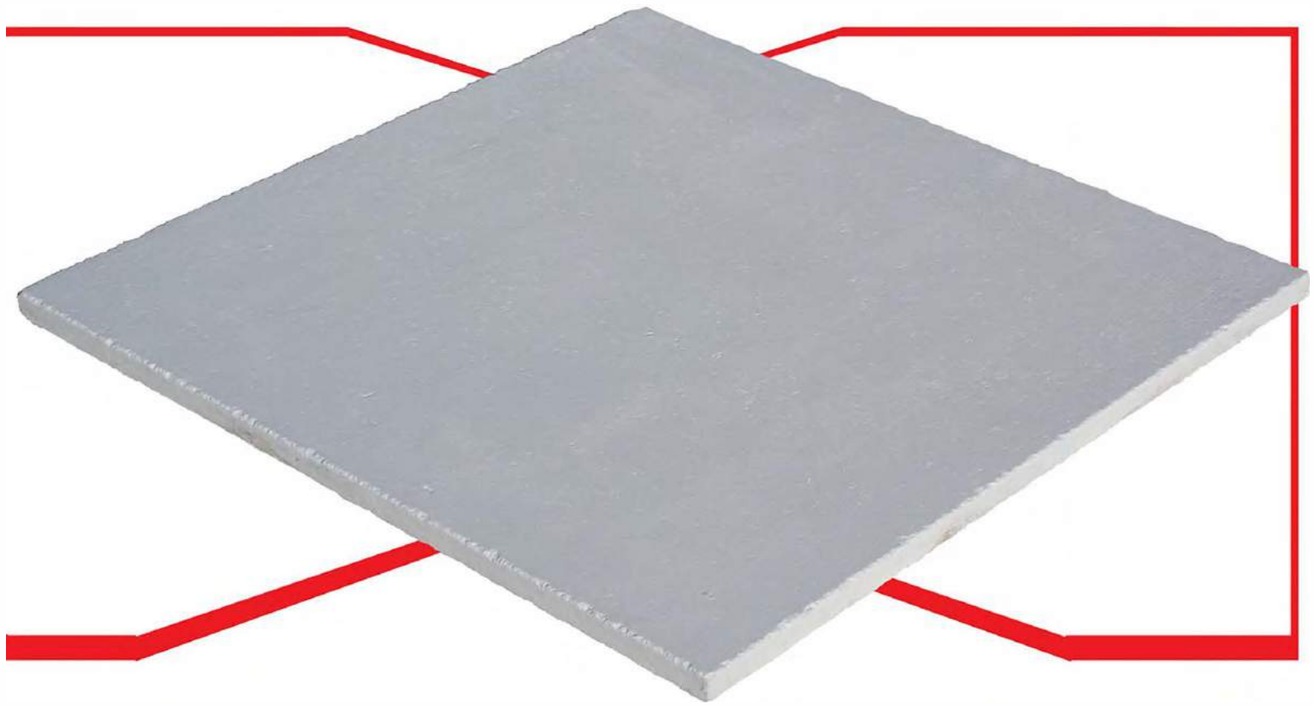
Our company, which is epitomic for the sector in every sense with its social responsibility projects, respect for the environment, importance to business ethics and quality policies, was included in the TURQUALITY® – Brand Program in 2014 in order to ensure the continuity of its development in the international competitive environment and to contribute to the positive "Made in Turkey" image abroad. Our company was accepted to the Turquality support program in 2020.

Following the press investment commissioned in 2021, tepePAN Pro, with its high strength feature, has joined the product range. In the same year, Tepe Betopan became one of the 4 Turkish partners participating in the Iceberg Project within the scope of EU Horizon 2020, where world-class science, the development of advanced research skills, and the access of researchers to the best infrastructures are supported.

Tepe Betopan, which brought the new generation under roofing sheet under the brand of tepePAN Roof to the sector in 2021, continues its quality journey with the surface calibration, water-repellent application, and furnace investments made in the tepePAN factory in 2021 in line with the goal of "Always forward, to the best", which our founder also pointed out.

Our company, a member of İMSAD - Building Materials Manufacturers Association, is one of the few manufacturers in the world, exporting to more than 50 countries on 5 continents, producing both cement-bonded particleboard and fiber cement board.





Product Composition

Raw Materials	Content, %
Portland Cement	45-55
Aggregate	8-15
Wood Chips	25-35
Chemical Admixtures	2.5-5.5

About the Betopanplus®

Betopanplus; They are smooth surfaced, unpatterned cemented particle boards, which are a physical mixture of chipboard, cement and chemical additives that are harmless to health, armored with natural minerals on both surfaces. It has a middle layer consisting of cement and wood mixture. In this way, a board was created, which has a much lower changes due to relative humidity, is as resistant to external factors as a quality concrete and can be applied to all paints that can be applied on a concrete surface. The areas where Betopanplus provides advantages, its dimensions and usage areas are given below. In addition, there are a few other products with the same characteristics and production method as Betopanplus®, but with a difference in pattern. These products are Yalıpan®, Taşonit®, Monolin®, Fugalin®, Frapan®, Tuğpan® and Tuğlapan®.

Areas of Application

- In exterior cladding,
- In areas such as interiors, shops, galleries, showcases, studios (for decorative purposes),
- In the construction of site perimeter fences,
- In electrical transformers,
- Behind ceramic and plaster (as backer board),
- By processing motifs in CNC (for decorative purposes),
- In fire doors and escape corridors,
- In the construction of fire-fighting walls,
- As carrier floor and flooring element in mezzanine floors,
- As a sheathing board on roofs,
- In prefabricated buildings,
- As board for mezzanine floor,
- As a protection board from impacts, the surfaces on which it is placed,
- As board for raised floor,
- On the walls of elevator shafts and fire escapes,
- On the walls and floors of the wet working areas,
- In animal shelters, floors and walls,
- In greenhouse cultivation,
- In the fire insulation of steel building elements,
- In surface coatings of steel construction elements,
- In the production of insulated press wall panel,
- On the soffit and fascia of the building,
- For decorative purposes in elevator jambs and building entrances,
- As a jamb accessory on door and window sides.

Properties

- Thickness: 10/12/14/16/18/20/24/30 mm
- Width: 1250 mm
- Length: 2500/2800/3000 mm
- Special cuts can be made in the required dimensions in width and length.

TEPE BETOPAN

About the Betopanplus®

Advantages

- Offer different architectural and constructive solutions by scene and structural characteristics in buildings,
- An ideal building plate with wide application area for prefabricated and steel buildings,
- Can be used as a finishing material by painting, coating, wall papers, does not required plastering,
- Does not require maintenance,
- Can be painted repeatedly and can be used only by painting,
- Higher paint adherence,
- Building and facade board that can be given decorative textures on its surface,
- Contribute energy efficiency of buildings,
- Is applied by mechanical installation in the principle of ventilated facade system,
- Has standard and decorative accessories as "jamb, head-jamb, inner-outer corner, string banding",
- Can be easily used due to lightweight and long lasting in renovation projects,
- Easy to install, cut, drill and modification,
- Light weight and easy to carry,
- Protect the building from different weather conditions,
- Resistant to severe climatic conditions such as sun, frost, and seasonal changes,
- Resistant to coastal conditions,
- Resistant to moisture and water,
- Has very limited capillarity,
- Resistant to changes to the ambient humidity,
- Have very low water absorption and swelling rate in water,
- Resistant to impact,
- Contribute to heat and acoustic insulations,
- Has advanced inflammability, does not contribute to fire,
- Having a higher fire class (A2 Fire Class) than Betopan product,
- Does not emit toxic gas emissions during fire,
- Resistant to biological wastes,
- Insect-proof, non-putrescible, no moulding.
- Natural and harmless to health,
- Environment friendly, asbestos free,
- Odourless and does not release harmful gas.

Essential Characteristics	Technical Specifications Betopanplus Branded Surfaces Without Chip, Cement Bonded Particle Boards (TS EN 634/1-2)	Harmonized Technical Standards (TS EN 13986+A1) TS EN 634/1-2
Unit Volume Weight	1450 ± 50 kg / m^3	TS EN 323
Bending Strength	≥ 9 N / mm2	TS EN 310
Bending Elasticity Modules	≥ 4500 N/ mm2 (Class 1)	TS EN 310
Internal adhesion Internal adhesion after the Wear Test	≥0,5 N/ mm2 ≥0,3 N/ mm2	TS EN 319 TS EN 321
Compressive Strength (Parallel to the Surface)	≥15 N/ mm2	TS EN 789
Swelling Thickness *After Waiting in the Water for 24 Hours	≤% 1.5	TS EN 317 TS EN 321
Swelling Thickness *After Wear Test	≤% 1,5	TS EN 317 TS EN 321
Material Moisture	% 9 ± 3	TS EN 322
Tolerances: *Thickness	08-10 mm ± 0,7 mm 12-14 mm ± 1,0 mm 16-18 mm ± 1,2 mm >18 ± 1,5 mm	TS EN 324-1
*Height and Width *Edge Smoothness *Verticality of the Corners	Length: ± 5 mm Width: ± 5 mm ≤1,5 mm / m ≤2 mm / m	TS EN 324-1 TS EN 324-2
Screw Holding Force	102 N/mm	TS EN 320
Thermal Conductivity (λ)	0,19 W / mK	TS EN 12664
Reaction to Fire (European Class)	A2, s1, d0	TS EN 13501-1+A1
Formaldehyde Release	E1	TS EN 13986+A1
Pentachlorophenol Content (PCP)	PCP≤5 ppm	TS EN 13986+A1
Sound Absorption: Sound Insulation (R)	Rw (C;Ctr)= 33,1(-2;-3) db	TS EN 13986+A1 (Betopan) TS EN ISO 717 (Betopan plus)
Water Vapor Permeability (μ): *10 mm thickness *18 mm thickness	Dry Plate = 50 Wet Plate = 30 Dry Plate = 50 Wet Plate = 30	TS EN 13986+A1
pH	11-13	

TEPE BETOPAN

03 LCA INFORMATION & SYSTEM BOUNDARIES

Declared Unit: 1 m3 of Betopanplus® cement-bonded particle board (equals to 1450 ± 50 kg / m3)

Time Representativeness: 2021

Database and LCA Software: Ecoinvent 3.8 and The Sima The SimaPro 9.3.0.3

System Boundaries: Cradle to gate with modules C1-C4, D and additional modules of A4-A5 (A1-A5+C+D)

Inventory: The inventory for the LCA study is based on the 2021 production figures for Betopanplus® by Tepe Betopan AŞ. production plant in Ankara, Türkiye. This EPD's system boundary is cradle to gate with modules C1-C4, D and additional modules of A4-A5 (A1-A5+C+D).

Allocations: Allocations were done based on weighted averages of the raw materials when more than one source and /or transport option was used, such as highway plus sea shipment.

Packaging: Products are delivered to end-users with packaging includes stretch nylon, interlining and wood pallet. The packaging of the final product is included in the LCA.

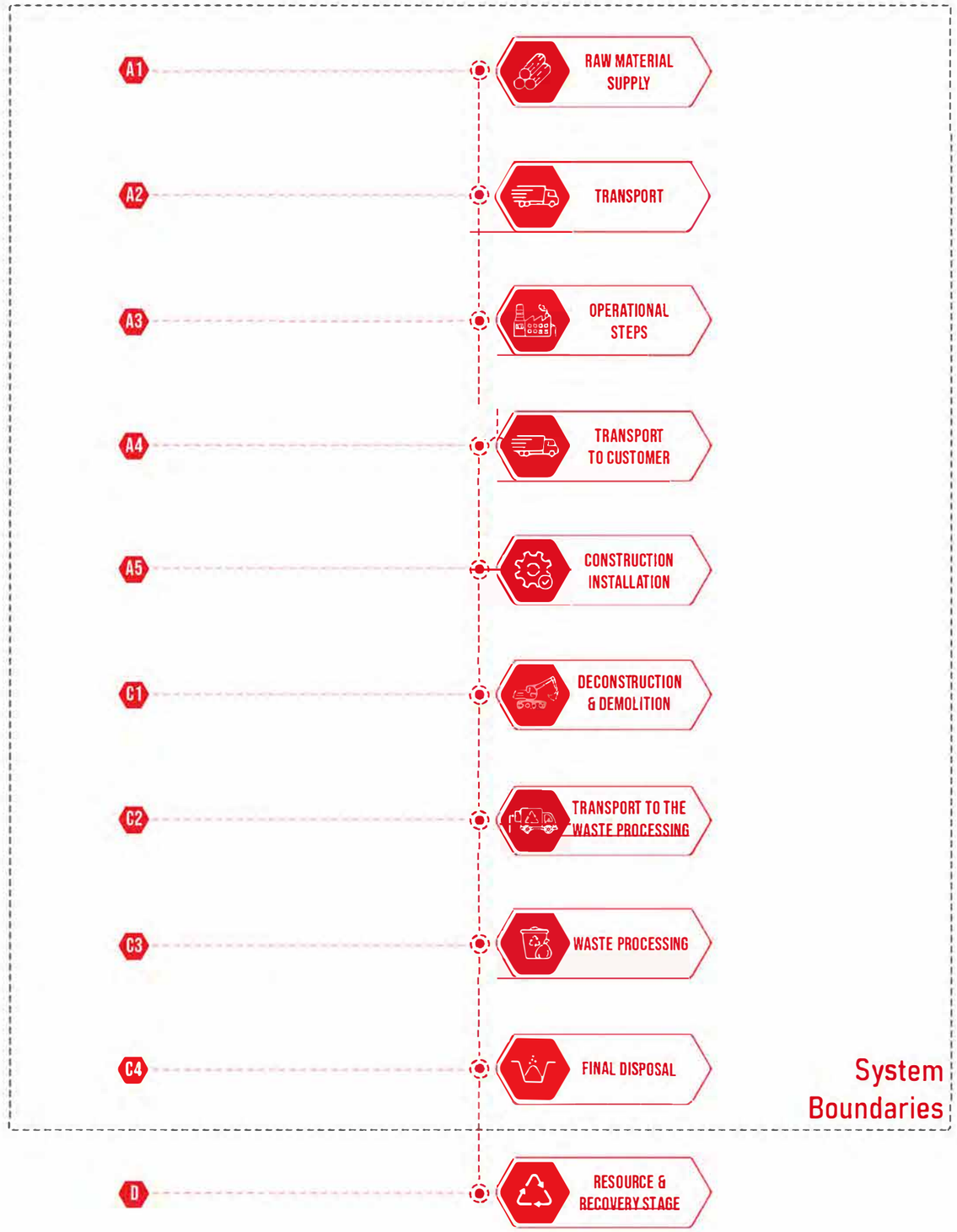
Cut-off Criteria: 1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

Assumptions: Raw materials, transport, production and, packaging materials data are collected from the production plant. According to customer demand, properties such as paint, pattern etc. can be added to the product groups. These are not included in the LCA study as they vary according to incoming demands from the customers.

Geographical Scope: The geographical scope of this EPD is global.

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. According to the PCR, all energy calculations were obtained using Cumulative Energy Demand (CED) methodology, while freshwater use is calculated with selected inventory flows in SimaPro. There are no co-product allocations within the LCA study underlying this EPD.

REACH: No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt /wt).



More Information

A1-Raw Material Supply

Production of cement-bonded particle boards materials which are cement, wood chips, aggregate and chemical admixtures are locally sourced. The term "raw material supply" refers to the extraction and pretreatment of raw materials prior to production.

A2-Transport

For the delivery of raw materials and other materials to the plant as well as the internal transportation of materials, transportation is important. Based on the information provided by the manufacturer for 2021, the transportation distances and routes are calculated.

A3-Manufacturing

Data for the LCA is based on Tepe Betopan A.Ş's manufacture for the January to December 2021 time period in order to be representative of their operations.

A4-Transport to Customer

Products are transported globally. For the transport to the customers, weighted average approach is considered. Based on the information provided by the manufacturer for 2021, the transportation distances and routes are calculated.

A5-Construction Installation

For the purpose of installing the boards and screwing them in place, energy must be taken into account in terms of equipment use and fuel supply. According to research done by the Athena Institute 4, the unit energy required to construct and install the concrete frame is assumed to be 0.070 MJ/kg[1].

C1-Deconstruction & Demolition

Energy is required to consider in terms of use of equipment and supply of fuel for the descrewing and demolition of the boards. Unit energy for the demolition and deconstruction of the concrete frame to be reycled is taken as 0.070 MJ/kg based on a study conducted by the Athena Institute[1]

C2-Transport

A distance of 100 km is assumed for the transport of deconstucted waste materials to the landfill sites. A distance of 100 km is assumed for the transport of waste that goes to be recycled, therefore goes to the pouring sites. In all scenarios, the longest distance (worst case scenario) is considered.

C3-Waste Processing

For the wastes going to the landfill sites, there is no need for waste processing. However, for the wastes that go to the recycling process and used as inert filling materials. There is currently no applied shredding and crushing processes for the C&D wastes. They can be directly used as inert filling materials. Therefore for C3, no energy consumption is considered.

C4-Final Disposal

For the Tepe Betopan A.Ş.'s production of cement-bonded particle board wastes, 75% of landfilling final disposal method is assumed. 25% of the board wastes can be used as inert filler material.

D-Resource & Recovery Stage

According to a study about construction waste process 25% of the cement-bonded particle board wastes is assumed as using for inert filler purposes; therefore, their benefits are included to the resource& recovery stage[2], Also recycling of packaging materials are considered in terms of environmental impacts,

[1]Gervasio, H., Dimova, S., & Pinto, A. (2018). Benchmarking the life-cycle environmental performance of buildings. Sustainability, 10(5), 1454.

[2]Istanbul Metropolitan Municipality: 2018, Management Plan for Debris that May Occur in a Potentially Destructive Istanbul Earthquake: https://8luvomezzzsk.merlincan.net/wp-content/uploaas/2022/01/ENKAZ-YONETIM-PLANI-RAPOR.paf

	Product Stage		Construction Process Stage			Use Stage							End of Life Stage				Recovery Stage
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction Demolition	Transport	Waste Proccessing	Disposal	Reuse-Recovery-Recycling
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific Data	>99%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	Not Relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

* X: Declared, ND: Not Declared.

Pre-consumer recycled materials, Weight (%)	Additives, Weight-kg	Renewable Material, Weight (%)	Post-consumer recycled materials, Weight (%)	Biogenic carbon, Weight (kg)
0	264	30.11%	25	2127

Product	Weight (kg)	Weight (%)	Biogenic carbon, Weight (kg)
Stretch Nylon	0.417	1	-
Interlining	0.459	1	-
Pallet (wood)	37.5	98	88

Potential Environmental Impact – Mandatory Indicators According to EN 15804

Results per functional or declared unit												
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-Fossil	kg CO_2 eq.	7.81E+02	4.31E+01	1.06E+02	9.29E+02	1.97E+02	1.12E+00	1.12E+00	2.44E+01	0	2.21E+02	-2.38E+02
GWP-Biogenic	kg CO_2 eq.	-7.97E+02	3.81E-02	-1.52E+01	-8.12E+02	1.70E-01	2.71E-03	2.71E-03	2.11E-02	0	1.00E+03	1.99E+02
GWP-Luluc	kg CO_2 eq.	7.33E-01	1.72E-02	7.19E-01	1.47E+00	7.86E-02	3.67E-04	3.67E-04	9.77E-03	0	1.92E-02	-3.65E-01
GWP-Total	kg CO_2 eq.	-1.57E+01	4.32E+01	9.11E+01	1.19E+02	1.97E+02	1.13E+00	1.13E+00	2.45E+01	0	1.22E+03	-3.89E+01
ODP	kg CFC 11 eq.	2.89E-05	1.08E-05	4.14E-06	4.39E-05	4.56E-05	1.93E-06	1.93E-06	5.66E-06	0	4.66E-06	-1.28E-05
AP	mol H^+ eq.	2.18E+00	1.28E-01	6.75E-01	2.98E+00	5.58E-01	1.38E-02	1.38E-02	6.94E-02	0	3.63E-01	-7.58E-01
*EP-Freshwater	kg P eq.	1.47E-02	3.09E-04	1.10E-02	2.60E-02	1.40E-03	1.05E-05	1.05E-05	1.74E-04	0	2.15E-03	-6.47E-03
EP-Freshwater	kg PO_4^{3-} eq.	2.42E-01	1.32E-02	6.79E-02	3.23E-01	1.19E-03	1.19E-03	1.19E-03	7.24E-03	0	3.40E-01	-3.28E-01
EP-Marine	kg N eq.	5.09E-01	2.49E-02	9.60E-02	6.30E-01	1.11E-01	1.69E-03	1.69E-03	1.38E-02	0	5.57E-01	-1.60E-01
EP-Terrestrial	mol N eq.	6.07E+00	2.77E-01	1.07E+00	7.42E+00	1.24E+00	1.87E-02	1.87E-02	1.54E-01	0	1.62E+00	-1.88E+00
POCP	kg NMVOC eq.	1.66E+00	1.07E-01	3.07E-01	2.07E+00	4.75E-01	7.70E-03	7.70E-03	5.91E-02	0	5.03E-01	-5.27E-01
ADPE	kg Sb eq.	2.71E-03	1.52E-04	1.77E-04	3.03E-03	6.97E-04	1.52E-06	1.52E-06	8.66E-05	0	8.96E-05	-7.72E-04
ADPF	MJ	3.68E+03	7.04E+02	1.27E+03	5.66E+03	2.98E+03	1.16E+02	1.16E+02	3.70E+02	0	3.98E+02	-1.51E+03
WDP	m^3 depriv	7.61E+01	1.97E+00	6.83E+01	1.46E+02	9.07E+00	1.82E-02	1.82E-02	1.13E+00	0	2.33E+01	-3.59E+01
PM	disease Inc.	1.23E-05	3.45E-06	3.18E-06	1.90E-05	1.58E-05	7.29E-08	7.29E-08	1.96E-06	0	3.71E-06	-5.17E-06
IR	kBq U-235 eq.	1.68E+01	3.05E+00	9.33E-01	2.08E+01	1.29E+01	5.04E-01	5.04E-01	1.61E+00	0	1.32E+00	-5.67E+00
ETP-FW	CTUe	7.04E+03	5.37E+02	1.16E+03	8.73E+03	2.34E+03	6.15E+01	6.15E+01	9.35E-09	0	2.89E-07	-5.97E-08
HTTP-C	CTUh	5.65E-07	1.92E-07	1.65E-08	7.73E-07	7.52E-08	5.02E-10	5.02E-10	9.35E-09	0	2.89E-07	-5.97E-08
HTTP-NC	CTUh	6.92E-06	5.18E-07	9.39E-07	8.38E-06	2.36E-06	1.37E-08	1.37E-08	2.94E-07	0	5.45E-06	-2.15E-06
SQP	Pt	4.10E+04	4.57E+02	1.55E+03	4.30E+04	2.08E+03	1.46E+01	1.46E+01	2.58E+02	0	7.06E+02	-1.05E+04
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, A4: Transport to Customer, A5: Construction& Installation C1: De-Construction& Demolition, C2: Waste Transport, C3: Waste Processing, C4: Final Disposal, D: Resource& Recovery Stage											
Disclosure 1	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents. occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil. from radon and from some construction materials is also not measured by this indicator.											
Disclosure 2	The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.											
Disclosure 3*	EP-freshwater: This indicator has been calculated as "kg P eq"as required in the characterization model. (EUTREND model. Struijs et al. 2009b. as implemented in ReCiPe; http://epica.jrc.ec.europa.eu/LCDN/developerEF. xhtml)											

Climate Impact

Impact Category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq	7.67E+02	4.20E+01	1.01E+02	9.10E+02	1.92E+02	1.03E+00	1.03E+00	2.38E+01	0	3.23E+02	-9.30E+02
Disclosure 1	This indicator includes all greenhouse gases included in the GWP total, but excludes biogenic carbon dioxide uptake, emissions and biogenic carbon stored in the product.											
Acronyms	GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology which excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicato											

Use of Resources

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	0	0	0	0	0	0	0	0	0	0	0
PERM	MJ	0	0	9551.36	9551.36	0	0	0	0	0	0	0
PERT	MJ	0	0	9551.36	9551.36	0	0	0	0	0	0	0
PENRE	MJ	3682.10	703.66	1270.23	5655.99	2980.85	116.31	116.31	370.34	0	397.52	-1506.18
PENRM	MJ	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	3682.10	703.66	1270.23	5655.99	2980.85	116.31	116.31	370.34	0	397.52	-1506.18
SM	kg	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	76.12	1.97	68.27	146.37	9.07	0.02	0.02	1.13	0	23.27	-35.91
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water											

Waste Output & Flows

Results per functional or declared unit												
Indicator	Unit	A1	A2	A3	Tot. A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0.73	0.73	0	0	0	0	0	0	0
NHWD	kg	0	0	0.005	0.005	0	0	0	0	0	1116.0	-1116.0
RWD	kg	0	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0	372.00
MFR	kg	0	0	33.3	33.3	0	0	0	0	0	0	38.376
MER	kg	0	0	157	157	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	1411.8	1411.8	0	0	0	0	0	0	0
Acronyms	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											

Information on Biogenic Carbon Content

Results per functional or declared unit		
Biogenic Carbon Content	**Unit**	**Quantity**
Biogenic Carbon Content In Product	kg C	2127
Biogenic Carbon Content In Packaging	kg C	88

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

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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.

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SimaPro

SimaPro LCA Software. Pré Consultants. the Netherlands.

www.pre-sustainability.com

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