EPD TURKEY
ENVIRONMENTAL PRODUCT DECLARATIONS

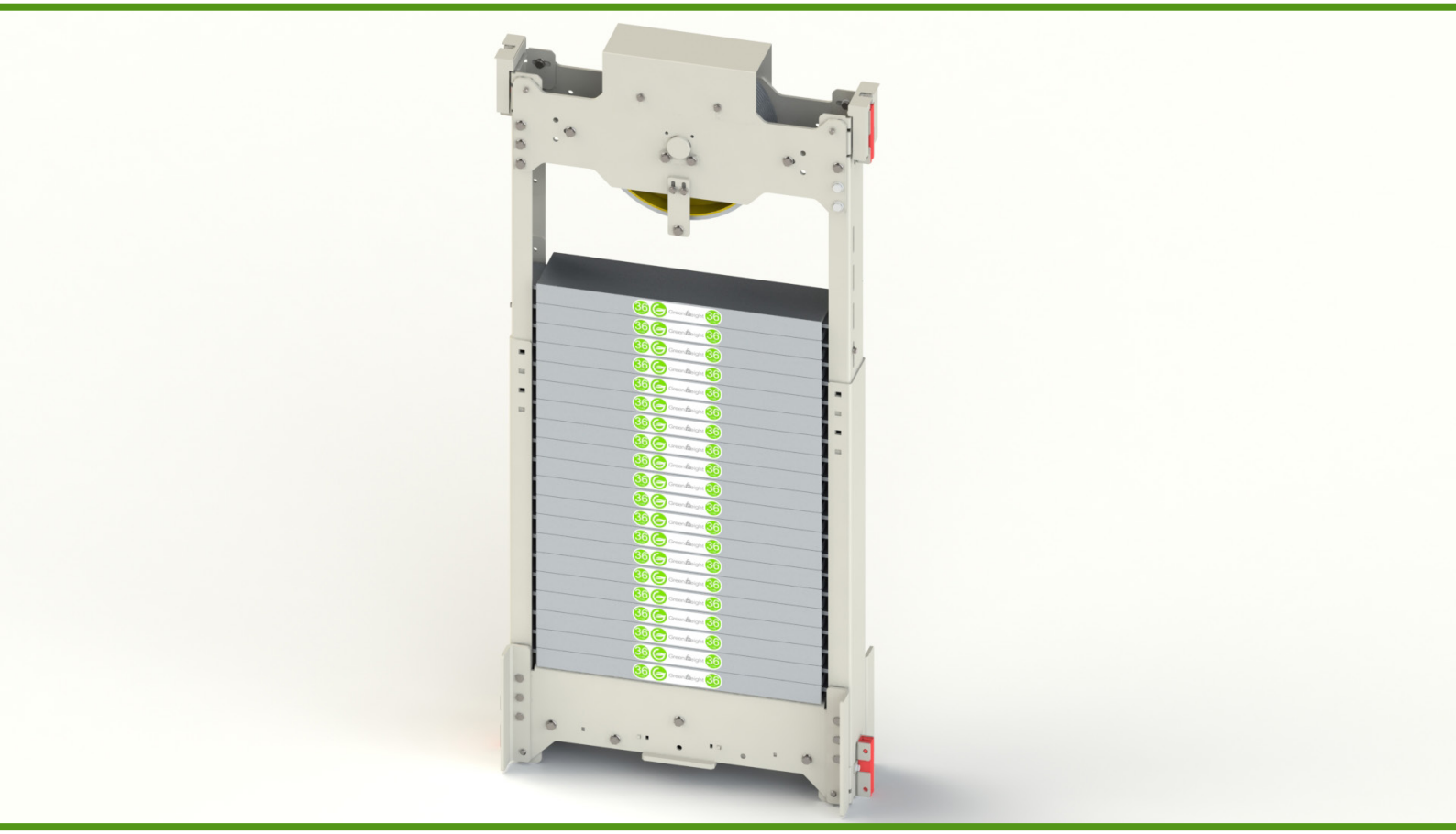
EPD
THE INTERNATIONAL EPD® SYSTEM

Environmental Product Declaration

In accordance with ISO 14025 for:

GreenWeight from Ergin Makina

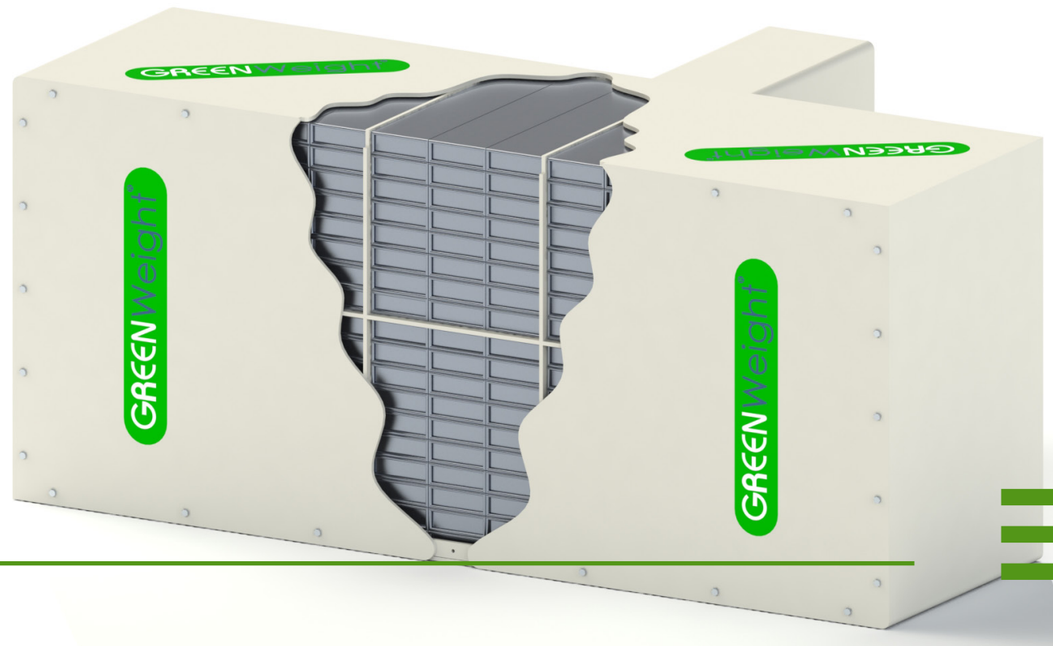
EPD registration number: S-P-4105 **Publication date:** 01.10.2021 **Valid until:** 30.09.2026



GreenWeight

Programme: The International EPD® System, www.environdec.com EPD Turkey, www.epdturkey.org
Programme operator: EPD International AB & EPD Turkey
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

Programme	EPD TURKEY ENVIRONMENTAL PRODUCT DECLARATIONS EPD Turkey, a fully aligned regional programme. www.epdturkey.org	EPD THE INTERNATIONAL EPD® SYSTEM The International EPD® System www.environdec.com
Programme Operator	EPD Turkey: SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kagıthane/Istanbul Turkey	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Geographical Scope	Global	
UN CPC Code	UN CPC 429 (Other fabricated metal products)	
Product Category Rules (PCR)	PCR 2014:10 Fabricated steel products, except construction products, machinery and equipment, Version 2.11	
Independent third-party verification of the declaration and data, according to ISO 14025:2006	EPD process certification ( ) EPD verification (**X**)	
Third party verifier	Professor Vladimír Kocí	
Approved by	The International EPD® System	
Procedure for follow-up of data during EPD validity involves third party verifier	Yes ( ) No (**X**)	
EPD Owner	Ergin Mak. İnş Ltd. Şti.	Organize San. Bölgesi 1, Tümsan Sitesi 7, Blok No 13 Başakşehir-İstanbul



The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs for textile products are primarily intended for use in B2B communication, but their use in B2C communication under certain conditions is not precluded. For EPDs intended for B2C communication, refer to ISO 14025.

About Company

Ergin Makina has been carrying out engineering activities in many fields in Turkey for more than 50 years. The services we have provided are generally steel manufacturing and assembly, mechanical services and our patented counterweight production for elevators, cranes, etc.

Our steel fabrication and assembly activities include design, engineering, procurement, construction management, installation, testing and commissioning for the industrial, commercial and other projects.

Our mechanical service includes piping, pressure vessel manufacturing, vein and actuator maintenance and repair, other mechanical maintenance, repair and commissioning works.

GreenWeight is basically an environmentally friendly counterweight solution for elevators and cranes. Our patented technology reduces CO2 emissions compared to conventional methods.

All our commercial activities are carried out with the highest quality materials and the best labor available in today's market. We use advanced simulation and CAE software for our products to reach optimum design and quality. We have over 35 experienced employees with a wide range of skills and abilities that enable us to meet any challenge in the field.

Ergin Makina's R&D department is in close contact with universities and laboratories. In addition to our professional engineers and experienced designers, we also receive regular consultancy services from Istanbul Technical University. Our R&D projects are supported by The Scientific and Technological Research Council of Turkey (TÜBİTAK).

Ergin Makine always offers its services based on the principles of customer satisfaction and trust. Ergin Makina reveals its vision of being a regional leader especially in the sectors it serves. As a result of this, our aim is creating a reputable brands on a world scale.

Certificated

ISO 9001:2015

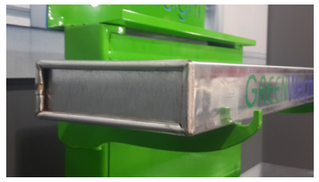
ISO 14001:2015

Product Information

Balancing Weight (Counterweight) is a component that provides the traction force between the elevator drive pulley and the suspension ropes and consists of a series of weights to balance the weight of the cabin.

Elevator counterweight is a mechanical system that provides the balance and stability of the elevator car by applying counterforce. Its purpose is to make lifting the load more efficient, saving energy and exerting less reaction on the lifting machine. The ratio of the load in the cabin is usually taken as 50% of the rated load.

Two types of elevator filler weights are produced, with and without handles. The cross-sectional areas of the filler weights are 50x150 mm and production can be made from 250 mm to 980 mm in length.



Without handle

With handle

Technical specifications and dimension of filler weight without handle :

Dimensions			Weight (+/- 1 kg)	Density (g/cm³)
Length (+/- 5 mm)	Width (+/- 3 mm)	Thickness (+/- 3 mm)		
570 mm	150 mm	50 mm	29.5 kg	6.8-7.0
670 mm			34.5 kg	
870 mm			44.5 kg	

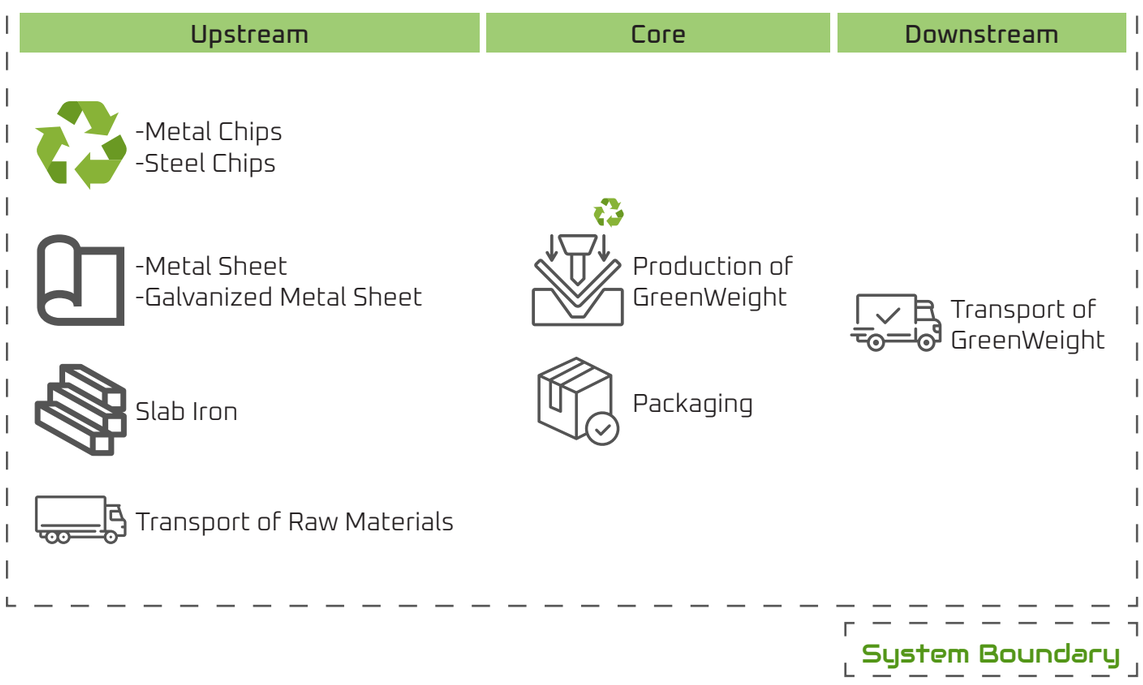
Technical specifications and dimension of filler weight with handle :

Dimensions			Weight (+/- 1 kg)	Density (g/cm³)
Length (+/- 5 mm)	Width (+/- 3 mm)	Thickness (+/- 3 mm)		
670 mm	150 mm	50 mm	30.5 kg	6.8-7.0
770 mm			35.5 kg	
970 mm			45.5 kg	

The lenght of the filler weight could be customized from 250 mm to 980 mm.

LCA Information

Functional Unit	1 tonne of counterweight for elevators.
Time Representativeness	2021
Database(s) and LCA Software Used	Ecoinvent 3.6, TLCID (Turkish Lifecycle Inventory Database) and SimaPro 9.1
System Boundaries	Craddle to Gate - Production of raw materials - Transport of raw materials - Production - Trnasport of product
Allocation	No allocation performed
Cut-Off Rules	No cut-off rule was applied within the LCA study underlying this EPD.



System Description

Upstream

Main raw materials of GreenWeight are metal scraps sawdust, steel scrap, metal sheet, galvanized metal sheet and slab iron.

Metal chips sawdust and steel scrap are main materials used in GreenWeight that makes the product more sustainable against its alternatives. Only collection of these scraps and their transport is relevant for the upstream. GreenWeight is produced in an industrial zone and all the scraps used supplied from the same industrial zone. So, the second point makes GreenWeight a more sustainable product is the fact that the transport of scrap is rather minimal. In fact, this distance is assumed to be 8 km in this assessment.

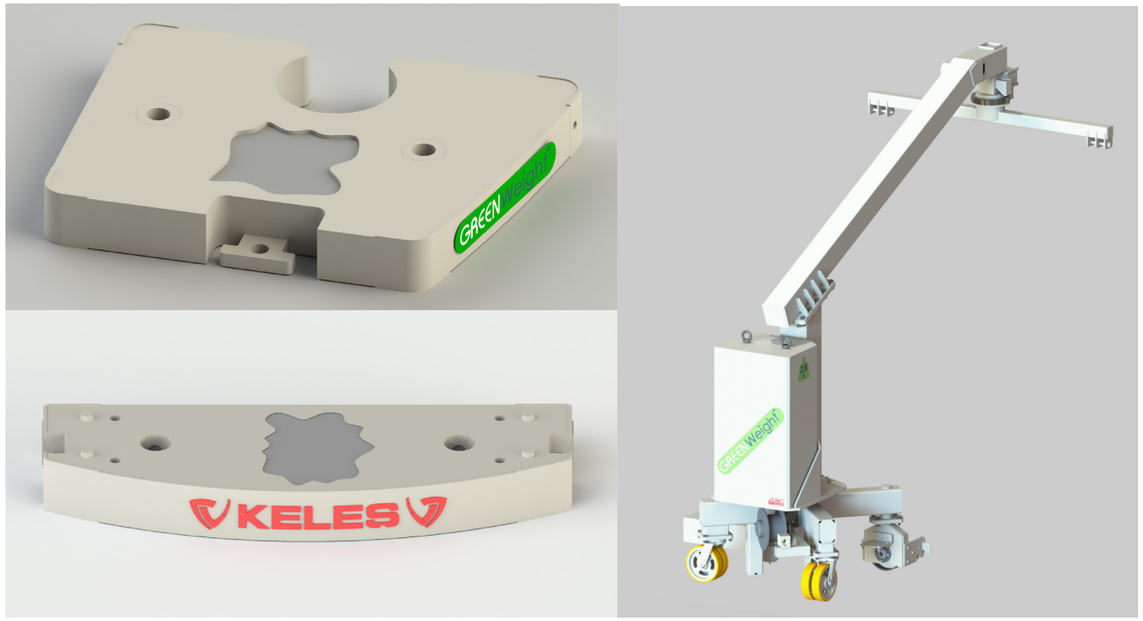
Core

At core process, all the raw materiels assembled and covered with galvanized metal sheet. During the production of GreenWeight, no waste occures and not any heating source is required during forming process. Only electrical energy is utilized owing to the production technology which were developed by Ergin Makina.

For the packaging, reused pallets and steel packing strip are used.

Downstream

GreenWeight products are transported to the end-users by truck. Average distance for the transportation of end product was was taken as 89 km based on the data collected from the Company for 2020.



Environmental Performance

Potential Environmental Impact

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	253	84.1	15.5	352
	Biogenic	kg CO_2 eq.	0.16	0.15	4.29 x10^{-3}	0.31
	Land use and transformation	kg CO_2 eq.	0.12	0.45	5.45 x10^{-3}	0.58
	Total	kg CO_2 eq.	253	84.7	15.5	353
Depletion potential of the stratospheric ozone layer (ODP)		kg CFC-11 eq	17.5 x10^{-6}	2.82 x10^{-6}	2.77 x10^{-6}	23.1 x10^{-6}
Acidification potential (AP)		kg SO_2 eq.	5.43	0.42	54.4 x10^{-3}	5.91
Eutrophication potential (EP)		kg PO_4^{3-} eq	1.13	0.26	11.9 x10^{-3}	1.40
Photochemical oxidant formation potential (POFP)		kg NMVOC	1.24	0.21	59.6 x10^{-3}	1.51
Abiotic depletion potential – Elements		kg Sb eq	7.35 x10^{-3}	21.3 x10^{-6}	61.7 x10^{-6}	7.44 x10^{-3}
Abiotic depletion potential – Fossil resources		MJ, net calorific value	2 740	963	230	3 933
Water scarcity potential		m^3 eq	92.3	25.1	1.22	119

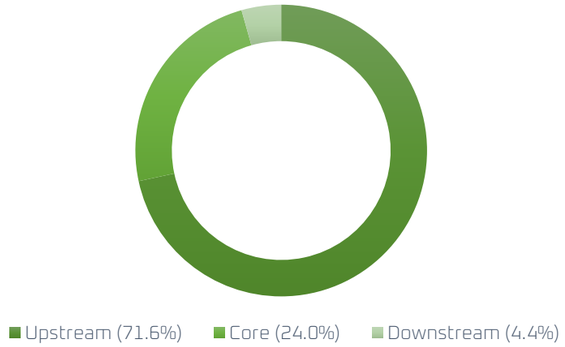
Global Warming Potential was calculated using IPCC 2013 method with a timeframe of 100 years. Eutrophication, Abiotic Depletion Fossil Fuels and Abiotic Depletion Elements were calculated with CML 2001 baseline method. Acidification was calculated using fate not included version in CML 2001 non-baseline method. Photochemical Oxidant Formation potential was calculated with POFP, LOTOS-EUROS as applied in ReCiPe 2008. Water Scarcity was calculated with AWARE method.

Use of Resources

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	44	31.1	1.26	76.4
	Used as raw materials	MJ, net calorific value	0	0	0	0
	Total	MJ, net calorific value	44	31.1	1.26	76.4
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	2 870	983	234	4 087
	Used as raw materials	MJ, net calorific value	0	0	0	0
	Total	MJ, net calorific value	2 870	983	234	4 087
Secondary material		kg	0	0	0	0
Renewable secondary fuels		MJ, net calorific value	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0
Net use of fresh water		m^3	1.69	0.34	39.2 x10^{-3}	2.06

Energy calculations were obtained using Cumulative Energy Demand (LHV) v 1.00, which is present in SimaPro's latest version. Net freshwater used was calculated from the life cycle inventory results.

Global Warming Potential

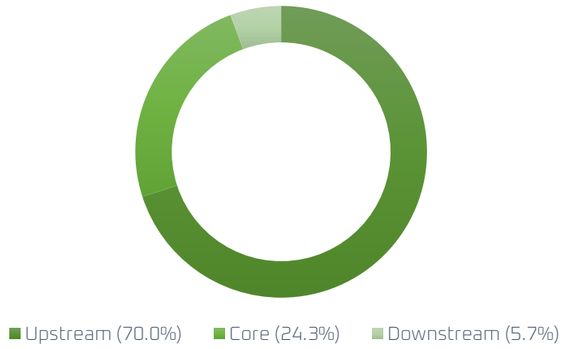


- 71.6% of GWP comes from upstream (raw material production and transport)

- 24.0% of GWP comes from core processes (core production processes)

- 4.4% of GWP comes from downstream (trnasport of end product)

Energy Resource Use

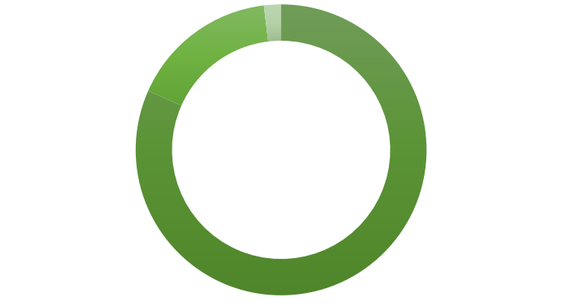


- 70.0% of primary energy used at upstream (raw material production and transport)

- 24.3% of primary energy used at core processes (core production processes)

- 5.7% of primary energy used at downstream (trnasport of end product)

Net Use of Fresh Water



- 81.6% of water used at upstream (raw material production and transport)

- 16.5% of water used at core processes (core production processes)

- 1.9% of water used at downstream (trnasport of end product)

Waste Production and Output Flows

Waste Production

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	0	0	0	0	0
Non-hazardous waste disposed	0	0	0	0	0
Radioactive waste disposed	0	0	0	0	0

Hazardous and Non-Hazardous waste amounts are allocated from yearly total waste amounts.

Output Flows

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	0	0
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Output flow amounts are allocated from yearly total waste amounts.

Other Information

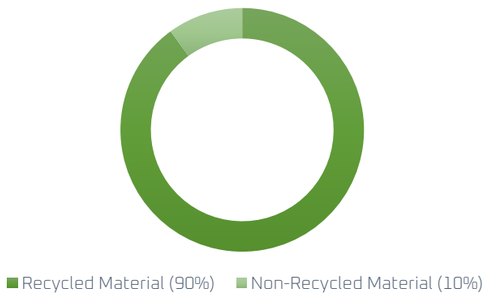
Toxicity Impacts

Parameter	Unit	Upstream	Core	Downstream	Total
Human toxicity, cancer	cases	65.3×10^{-6}	6.36×10^{-6}	0.52×10^{-6}	72.1×10^{-6}
Human toxicity, non-cancer	cases	70×10^{-6}	15×10^{-6}	2.25×10^{-6}	87.2×10^{-6}
Freshwater ecotoxicity	PAF.m3.day	1.38×10^{-6}	0.69×10^{-6}	27.8×10^{-3}	2.11×10^{-6}

Toxicity impacts were calculated using USEtox v 2.02 recommended + interim.

Materials in GreenWeight

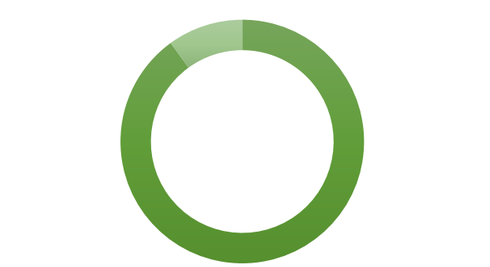
Recycled Content



- GreenWeight is produced from 90% ferrous recycled materials.

- GreenWeight contains only 10% virgin ferrous material.

Disposal



- GreenWeight is recycled by 90% at disposal stage.

- Only 10% ferrous materials go to landfills.

References

GPI

General Programme Instructions of the International EPD® System. Version 3.0.

EN ISO 9001

Quality Management Systems - Requirements

EN ISO 14001

Environmental Management Systems - Requirements

ISO 45001

Occupational Health & Safety Management System - Requirements

ISO 14020:2000

Environmental Labels and Declarations — General principles

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)

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

Contact Information

	TURKEY EPD® ENVIRONMENTAL PRODUCT DECLARATIONS	EPD® THE INTERNATIONAL EPD® SYSTEM
Programme	EPD registered through fully aligned regional programme. EPD Turkey www.epdturkey.org	The International EPD® System www.environdec.com
Programme Operator	EPD Turkey SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15, 34415 Kagıthane / Istanbul, Turkey www.epdturkey.org info@epdturkey.org	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com
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GreenWeight

www.greenweight.com.tr