

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:



Stainless Steel Welded Pipe

from

Borşen Boru Sanayi ve Ticaret Anonim Şirketi



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Licensee:	EPD Türkiye
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0028417
Version date:	2026-02-02
Validity date:	2031-02-01

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme:	The International EPD® System	EPD Türkiye
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): Construction products, 2019:14, version 2.0.1. Date: 2025-06-05, UN CPC code: 41287

PCR review was conducted by: *Rob Rouwette (chair), Noa Meron (co-chair)*. The review panel may be contacted via the Secretariat: www.environdec.com/support.

Life Cycle Assessment (LCA)

LCA accountability: Ceren Naz Güleçyüz, Greenlife Consultancy
Kıymet Eda Sakınmaz, Greenlife Consultancy

Third-party Verification

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

Individual EPD verification without a pre-verified LCA/EPD tool

Third-party verifier: Sunil Kumar, SIPL Pvt Ltd

Approved by: 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 published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Borşen Boru Sanayi ve Ticaret Anonim Şirketi

Address: Dudullu Organized Industrial Zone, 3. Cadde No: 20 Y. Dudullu – Ümraniye / İstanbul

Contact: murat.kulac@borsenboru.com

Description of the organisation:

Borşen Boru Sanayi ve Ticaret A.Ş. is a manufacturer of longitudinally welded stainless steel pipes. The company operates integrated production facilities equipped with slitting, pipe forming, TIG and laser welding, heat treatment, surface finishing and quality control processes. Production is carried out in compliance with relevant European and international standards.

Borşen Boru supplies stainless steel welded pipes to domestic and international markets, primarily serving industrial, hygienic, process and construction-related applications. The company's operations are supported by in-house quality control systems, including non-destructive testing and laboratory-based mechanical and chemical testing, to ensure product conformity and traceability.

Product-related or management system-related certifications:

- ISO 9001:2015
- ISO 17025
- ISO 14001:2015
- AD 200 W0
- EN 10217-7:2021
- ASTM A778
- EN 10357:2022
- EN ISO 3834-2
- ISO 45001:2018
- AD 200 HP0
- AD 2000 W2
- ASTM A312

The certificates are publicly available at the company website: <https://www.borsenboru.com/tr-TR/kalite-belgeleri>

PRODUCT INFORMATION

Product name: Stainless Steel Welded Pipe

Product identification: The stainless steel welded pipe product is produced in accordance with high engineering standards using modern manufacturing technologies. The production process includes fully automated TIG and laser welding lines, precision measurement systems ensuring tight dimensional tolerances, and a bright annealing unit. These processes result in pipes with high surface quality, adequate mechanical performance, and durability, in compliance with relevant international standards.



UN CPC code: 41287

Product description: Stainless steel welded pipes manufactured by Borşen Boru Sanayi ve Ticaret A.Ş. are longitudinally welded tubular products designed for use in industrial, hygienic and structural applications. The pipes are produced from stainless steel coils through forming and longitudinal welding processes, followed by sizing, finishing and quality control operations.

The products are manufactured in accordance with relevant European and international standards and are supplied in commonly used austenitic and duplex stainless steel grades. Depending on product requirements, pipes may undergo heat treatment and surface finishing operations to meet specific mechanical, corrosion resistance and surface quality criteria.

Stainless steel welded pipes are typically used in piping systems, process installations and construction-related applications where dimensional accuracy, corrosion resistance and compliance with applicable standards are required.

Name and location of production site(s): Dudullu Organized Industrial Zone, 3. Cadde No: 20 Y. Dudullu – Ümraniye / İstanbul

Technical Specifications:

Technical Data	Specification
Outer Diameter	19-219.1 mm
Wall Thickness	1-5 mm
Tolerance Class	ISO 1127, tolerance class D4/T4
Length Range	3-15 m
Length Tolerance	(-0) / (+5) mm
Welding Methods	TIG (GTAW) welding and laser welding
Heat Treatment	Bright annealing (optional, depending on product specification)
Surface Finish	Brushed surface, typically 180–220 grit; other finishes available upon request
Quality Control and Testing	100% eddy current testing (non-destructive testing); mechanical and chemical tests (e.g. tensile, bending) performed in an in-house laboratory

CONTENT DECLARATION

- The mass (weight) of one unit of a product, as purchased or per declared unit: 1 tonne
- Information on the environmental and hazardous/toxic properties of a substances contained in the product: Products meet the REACH requirement (reporting limit: 0.1% raw material), by default since no SVHC (substance of very high concern) exceeds 0.1%.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Stainless Steel Coil	1000	0	0	0
TOTAL	1000	0	0	0

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

LCA INFORMATION

Declared unit	1 tonne of stainless steel welded pipe
Reference service life	NA
Time representativeness	Data is representative for 2024 production year. Primary production data for the year 2024 was used in the LCA.
Geographical Scope	Türkiye and Global
Database(s) and LCA software used	Ecoinvent 3.10 database and SimaPro software

Description of system boundaries: Cradle to gate (A1-A3) with modules A4-A5, modules C1-C4, and module D.

Module B is not included in the EPD. Steel products do not involve operational energy or water use during the use phase, and any potential maintenance or repair activities depend on the specific application. Therefore, Modules B1–B7 are not declared.

Raw Material Supply (A1): Borşen's manufacturing activities begin with stainless steel coil as the primary raw material. The stainless steel coils are supplied by qualified manufacturers and are produced in accordance with relevant European and international standards. This stage includes the extraction and processing of raw materials, alloy production, stainless steel manufacturing, rolling and finishing of coils.

Transportation (A2): Module A2 covers the transportation of stainless steel coils from the suppliers to Borşen's manufacturing facility. This stage includes all transport activities required to deliver the raw material to the production site, based on typical transport distances and modes. Transportation processes are modelled according to standard freight transport assumptions in line with construction product PCR requirements.

Manufacturing (A3): At the manufacturing stage, the impact of electricity usage throughout the production process.

During the manufacturing of stainless steel welded pipe electricity is used as energy sources.

Details of electricity data used in LCA model

Country: Türkiye

Source Type: 100% Grid

Energy Sources: Coal: 62.7%

Oil: 0.7%

Natural gas: 36.6%

Electricity Data: Residual mix is calculated from "Electricity, medium voltage {TR}| market for electricity, medium voltage | Cut-off, S"

Electricity Emission Factor (GWP-GHG result): 0.573 kg CO₂eq/kWh

Product Transportation (A4): Module A4 covers the transportation of finished stainless steel welded pipes from Borşen's production facility to the construction site or customer location. Transport is carried out primarily by road and, where applicable, by sea, using trucks and container ships. The transport model is based on weighted average transport distances of product deliveries completed in 2024.

Construction (A5): Energy requirement for construction and deconstruction assumed to be the same. Therefore, according to the JRC Technical Reports (Gervasio & Dimova, 2018) energy requirement for construction of steel products is assumed to be 0.239. MJ/kg electrical energy.

De-Construction (C1): Covers the sources of energy used in steel deconstruction/demolition and evaluates the environmental impacts associated with energy consumption. According to the JRC Technical Reports (Gervasio & Dimova, 2018) for deconstruction of steel products 0.239 MJ/kg of energy is assumed to be consumed.

Waste Transportation (C2): A transport distance of 100 km by a large truck is assumed for the movement of the product as waste after the end of its use phase.

Waste Processing (C3): According to the World Steel, 85% of steel products assumed to be collected for recycling. Environmental impacts due to the treatment of waste steel were shared in C3 module.

Additional End-of-Life Scenario 1: 100% Recycling

In this alternative end-of-life scenario, 100% of the stainless steel product is assumed to be collected and recycled at the end of its service life. No waste is sent to landfill in this scenario. Environmental impacts are therefore reported only for waste processing for recycling in Module C3, while Module C4 is not applicable.

Disposal (C4): Remaining 15% of waste steel goes to landfill according to the World Steel.

Additional End-of-Life Scenario 2: 100% Landfill

In this alternative end-of-life scenario, 100% of the stainless steel product is assumed to be disposed of in landfill. As no recycling takes place, no waste processing for recycling is modelled in Module C3. Environmental impacts related to disposal are therefore reported only in Module C4.

Reuse-Recovery-Recycling Potential (D): Module D presents the potential environmental benefits and loads associated with the net amount of steel scrap made available for use in future product systems. The module applies the substitution approach in accordance with EN 15804 and PCR 2019:14 (v2.0.1).

The steel recovered at the end-of-life stage (as modelled in Module C3) is assumed to re-enter material recovery processes and substitute primary steel production in subsequent product systems. The net scrap quantity represents the difference between the amount of steel recycled at end-of-life and the scrap input originating from previous life cycles.

Only the net scrap amount is considered in Module D, and the resulting environmental impacts and benefits associated with this substitution are reported in the Module D results table. Detailed calculation steps and modelling assumptions are provided in the underlying LCA report.

Cut-off Rule: All the related data have been collected through detailed data sheets from the manufacturer which is the owner of the EPDs. Data that is send by the manufacturer is analysed and modelled. All data related to inputs and outputs for processes are included. In situations where there are data gaps, generic data (Ecoinvent 3.10) is used. The cut-off criteria were set to allow the omission of individual input flows that account for less than 1% of the total, provide that the cumulative contribution does not exceed 5%.

The data that is omitted from the LCA modelling is as follows;

- Employees' commuting to the workplace
- Infrastructure and machinery (Machinery refers to capital goods)
- Impacts due to the maintenance of the machinery
- Waste produced during the production.
- Ancillary material use (There is not an ancillary material use)

It is assumed that these factors have insignificant impact.

Allocations: Borşen produces only one product type, namely stainless steel welded pipe. Therefore, in this LCA study, multiple output allocation has not been applied.

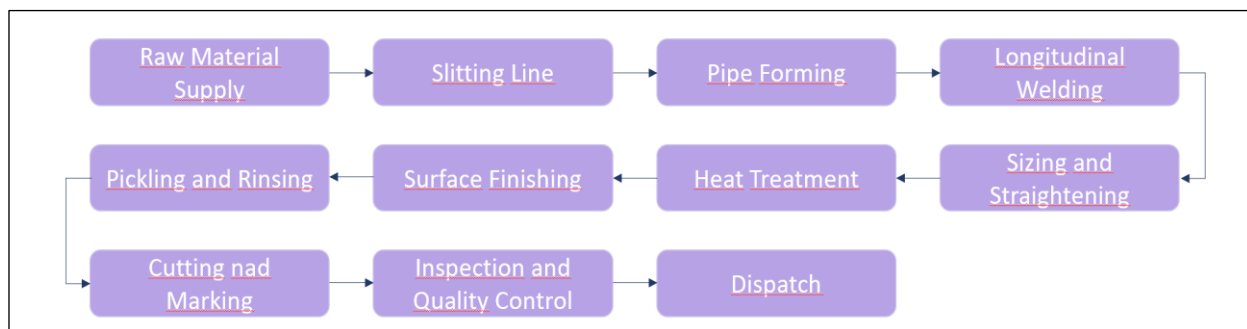
Characterization Factor EN 15804 method based on EF 3.1 normalization and weight values, published in July 2022.

Process flow diagram: The manufacturing of stainless steel welded pipes at Borşen Boru Sanayi ve Ticaret A.Ş. starts with stainless steel coils, which are processed on the slitting line. The coils are uncoiled, slit into the required strip widths and recoiled, ensuring suitability of the material for subsequent pipe forming operations.

The slit strips are then fed into dedicated pipe production lines, where they are gradually formed into a tubular shape by forming rollers. Longitudinal welding is performed using either laser welding or TIG (GTAW) welding, depending on the product specification. After welding, the pipes pass through sizing and straightening units to achieve the required outer diameter, roundness and straightness in accordance with applicable standards.

Where required, pipes undergo bright annealing heat treatment under controlled atmosphere conditions to improve corrosion resistance, surface cleanliness and metallurgical homogeneity. Surface finishing operations such as brushing are applied depending on product and application requirements. For selected products, chemical surface treatment is carried out in pickling tanks followed by multiple rinsing stages; process water is managed via a reverse osmosis system and waste streams are collected and handled in accordance with applicable regulations.

The final production stages include cutting the pipes to specified lengths, marking for traceability and packaging. Quality control is applied throughout the manufacturing process and includes 100% eddy current non-destructive testing as well as mechanical and chemical tests performed in an in-house laboratory to verify compliance with relevant standards.



Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Raw Material Supply	EPD	EPD-IES-0017255	2022	Primary data, Secondary data	34%
Generation of electricity used in manufacturing of product	Database	Ecoinvent v3.10	2024	Primary data	9.5%
Transport of raw material to manufacturing site	Database	Ecoinvent v3.10	2024	Primary data	5.5%
Other processes	Database	Ecoinvent v3.10	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					49%

Data Collection Period	Data collection period is 2024
Sites Used	Manufacturing site: Dudullu – Ümraniye – İstanbul/ Türkiye
Geography	Production in Türkiye. Distribution, use and end-of-life are global.
Technology	Representative of current industrial production technology
Averaging	Data represent 100% of the production volume for the reference year.
LCI/LCA Database	Ecoinvent v.3.10
EPD Used	Supplier-specific EPD (EPD-IES-0017255)
Data Quality Scheme	Data quality was assessed according to EN 15804 :2012+A2:2019, Annex E, Table E.2
Use of fair data with more than 30% of a core impact	Fair-quality data were used; no fair-quality data contribute more than 30% to any core environmental impact category.
Use of Poor relevant data	Poor-quality relevant data were used; their contribution to overall impacts is low and not significant.
Use of very poor relevant data	No very poor-quality relevant data were used.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

X: Declared Module, MND: Module Not Declared

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling- potential
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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Share of primary data	49%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL PERFORMANCE

Impact category indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1.97E+03	8.86E+01	3.86E+01	3.86E+01	1.92E+01	8.91E+01	1.14E+02	-3.24E+01
GWP-fossil	kg CO ₂ eq.	1.93E+03	8.85E+01	3.77E+01	3.77E+01	1.92E+01	5.23E+01	7.76E+00	-3.24E+01
GWP-biogenic	kg CO ₂ eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	kg CO ₂ eq.	3.32E+00	3.35E-02	4.03E-01	4.03E-01	7.78E-03	1.16E-01	2.18E-03	-1.90E-01
ODP	kg CFC 11 eq.	2.29E-02	1.41E-06	2.25E-07	2.25E-07	2.84E-07	6.27E-07	5.23E-08	-1.94E-02
AP	mol H ⁺ eq.	1.89E+01	2.89E-01	2.46E-01	2.46E-01	4.39E-02	3.47E-01	2.62E-02	-1.26E+01
EP-freshwater	kg P eq.	3.60E-01	6.40E-03	3.79E-02	3.79E-02	1.52E-03	1.12E-02	1.16E-02	-1.46E-01
EP-marine	kg N eq.	5.54E+00	7.93E-02	4.34E-02	4.34E-02	1.02E-02	1.37E-01	2.19E-01	-3.91E+00
EP-terrestrial	mol N eq.	5.78E+01	8.63E-01	3.97E-01	3.97E-01	1.10E-01	1.22E+00	8.13E-02	-4.07E+01
POCP	kg NMVOC eq.	7.74E+01	3.93E-01	1.18E-01	1.18E-01	6.15E-02	3.90E-01	5.14E-02	-6.35E+01
ADP-minerals&metals*	kg Sb eq.	4.06E-02	2.20E-04	4.21E-05	4.21E-05	6.26E-05	4.41E-04	5.38E-06	-3.42E-02
ADP-fossil*	MJ	8.03E+03	1.31E+03	4.17E+02	4.17E+02	2.69E+02	6.21E+02	4.92E+01	-1.13E+03
WDP*	m ³	3.90E+01	6.12E+00	1.92E+01	1.92E+01	1.23E+00	5.01E+00	-2.49E+01	-3.31E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1.94E+03	8.86E+01	3.81E+01	3.81E+01	1.92E+01	5.24E +01	7.76E+00	-3.26E+01

Resource use indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.58E+02	1.52E+01	1.75E+02	1.75E+02	3.44E+00	2.69E+01	1.48E+00	-1.42E+00
PERM	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
PERT	MJ	8.58E+02	1.52E+01	1.75E+02	1.75E+02	3.44E+00	2.69E+01	1.48E+00	-1.42E+00
PENRE	MJ	8.03E+03	1.31E+03	4.17E+02	4.17E+02	2.69E+02	6.21E+02	4.92E+01	-3.99E+03
PENRM	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
PENRT	MJ	8.03E+03	1.31E+03	4.17E+02	4.17E+02	2.69E+02	6.21E+02	4.92E+01	-3.99E+03
SM	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
RSF	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
NRSF	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
FW	m ³	3.96E+01	6.14E+00	1.94E+01	1.94E+01	1.23E+00	5.07E+00	-2.49E+01	-3.36E+01
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								

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.

Waste indicators

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.83E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E-03	3.06E-04	0.00E+00
Non-hazardous waste disposed	kg	3.50E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E+01	1.54E+02	-2.82E+02
Radioactive waste disposed	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

Output flow indicators (optional)

PARAMETER	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for reuse	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
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.50E+02	0.00E+00	0.00E+00
Materials for energy recovery	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
Exported energy, electricity	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
Exported energy, thermal	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

RESULTS FOR ADDITIONAL END-OF-LIFE SCENARIO 1: 100% RECYCLING

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1.97E+03	8.86E+01	3.86E+01	3.86E+01	1.92E+01	1.05E+02	0.00E+00	-2.16E+02
GWP-fossil	kg CO ₂ eq.	1.93E+03	8.85E+01	3.77E+01	3.77E+01	1.92E+01	6.17E+01	0.00E+00	-2.16E+02
GWP-biogenic	kg CO ₂ eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	kg CO ₂ eq.	3.32E+00	3.35E-02	4.03E-01	4.03E-01	7.78E-03	1.46E-01	0.00E+00	-1.26E+00
ODP	kg CFC 11 eq.	2.29E-02	1.41E-06	2.25E-07	2.25E-07	2.84E-07	7.11E-07	0.00E+00	-2.29E-02
AP	mol H ⁺ eq.	1.89E+01	2.89E-01	2.46E-01	2.46E-01	4.39E-02	4.11E-01	0.00E+00	-1.48E+01
EP-freshwater	kg P eq.	3.60E-01	6.40E-03	3.79E-02	3.79E-02	1.52E-03	1.46E-02	0.00E+00	-1.57E-01
EP-marine	kg N eq.	5.54E+00	7.93E-02	4.34E-02	4.34E-02	1.02E-02	1.61E-01	0.00E+00	-4.53E+00
EP-terrestrial	mol N eq.	5.78E+01	8.63E-01	3.97E-01	3.97E-01	1.10E-01	1.44E+00	0.00E+00	-4.71E+01
POCP	kg NMVOC eq.	7.74E+01	3.93E-01	1.18E-01	1.18E-01	6.15E-02	4.62E-01	0.00E+00	-7.44E+01
ADP-minerals&metals*	kg Sb eq.	4.06E-02	2.20E-04	4.21E-05	4.21E-05	6.26E-05	5.28E-04	0.00E+00	-3.86E-02
ADP-fossil*	MJ	8.03E+03	1.31E+03	4.17E+02	4.17E+02	2.69E+02	7.34E+02	0.00E+00	-4.69E+03
WDP*	m ³	3.90E+01	6.12E+00	1.92E+01	1.92E+01	1.23E+00	5.68E+00	0.00E+00	-3.89E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

RESULTS FOR ADDITIONAL END-OF-LIFE SCENARIO 2: 100% LANDFILL

Results per functional or declared unit								
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4
GWP-total	kg CO ₂ eq.	1.97E+03	8.86E+01	3.86E+01	3.86E+01	1.92E+01	0.00E+00	2.90E+00
GWP-fossil	kg CO ₂ eq.	1.93E+03	8.85E+01	3.77E+01	3.77E+01	1.92E+01	0.00E+00	2.90E+00
GWP-biogenic	kg CO ₂ eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	kg CO ₂ eq.	3.32E+00	3.35E-02	4.03E-01	4.03E-01	7.78E-03	0.00E+00	3.16E-04
ODP	kg CFC 11 eq.	2.29E-02	1.41E-06	2.25E-07	2.25E-07	2.84E-07	0.00E+00	3.79E-02
AP	mol H ⁺ eq.	1.89E+01	2.89E-01	2.46E-01	2.46E-01	4.39E-02	0.00E+00	2.53E-02
EP-freshwater	kg P eq.	3.60E-01	6.40E-03	3.79E-02	3.79E-02	1.52E-03	0.00E+00	1.44E-04
EP-marine	kg N eq.	5.54E+00	7.93E-02	4.34E-02	4.34E-02	1.02E-02	0.00E+00	1.14E-02
EP-terrestrial	mol N eq.	5.78E+01	8.63E-01	3.97E-01	3.97E-01	1.10E-01	0.00E+00	1.25E-01
POCP	kg NMVOC eq.	7.74E+01	3.93E-01	1.18E-01	1.18E-01	6.15E-02	0.00E+00	3.79E-02
ADP-minerals&metals*	kg Sb eq.	4.06E-02	2.20E-04	4.21E-05	4.21E-05	6.26E-05	0.00E+00	1.06E-06
ADP-fossil*	MJ	8.03E+03	1.31E+03	4.17E+02	4.17E+02	2.69E+02	0.00E+00	3.69E+01
WDP*	m ³	3.90E+04	6.12E+00	1.92E+01	1.92E+01	1.23E+00	0.00E+00	8.20E-02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

ABBREVIATIONS

Abbreviation	Definition
ADP	Abiotic Depletion Potential
AP	Acidification Potential
Borşen	Borşen Boru Sanayi ve Ticaret A.Ş.
EN	European Norm (Standard)
EF	Environmental Footprint
EP	Eutrophication Potential
Eq	Equivalent
GPI	General Programme Instructions
GHG	Greenhouse Gases
GWP	Global Warming Potential
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
GRI	Global Reporting Initiative
LCA	Life Cycle Assessment
ND	Not Declared
ODP	Ozone Layer Depletion
PCR	Product Category Rules
POCP	Photochemical Oxidant Creation Potential
SVHC	Substances of Very High Concern
WDP	Water Deprivation Potential

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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. www.environdec.com

VERSION HISTORY

Original Version of the EPD, 2026-02-02

