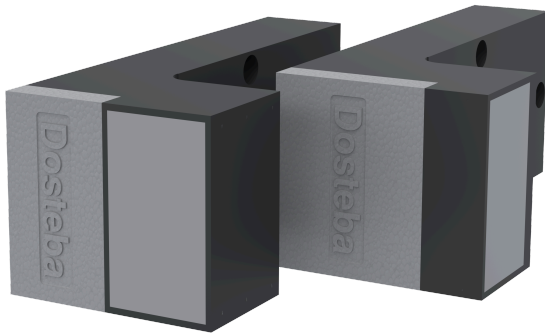


ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804+A2 

Dosteba GmbH Supporting brackets TWL®-ALU-RF /-RL



Dosteba

Owner of the declaration

Dosteba GmbH
Aspenhaustraße 6
72770 Reutlingen
Germany

Product

Supporting brackets TWL®-ALU-RF /-RL

Declared product / Declared unit

1 piece

**This declaration is based on Product
Category Rules**

EN 15804:2012 + A2:2019,
NPCR Part A:2021

Program operator:

EPD Global
Majorstuen P.O. Box 5250
N-0303 Oslo
Norway

Declaration number

NEPD-11817-11817-2

Registration number

NEPD-11817-11817-2

Issue date

23.06.2026

Valid to

22.06.2031

EPD Software

Emidat Platform v1.0.0

General Information

Product

Supporting brackets TWL®-ALU-RF /-RL

Program Operator

EPD Global
Majorstuen P.O. Box 5250
N-0303 Oslo
Norway
Phone: +47 23 08 80 00
Email: post@epd-norge.no

Declaration Number

NEPD-11817-11817-2

This declaration is based on Product Category Rules

EN 15804:2012 + A2:2019,
NPCR Part A:2021

Statements

The owner of the declaration shall be liable for the underlying information and evidence. The Norwegian EPD Foundation shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Declared unit

1 piece

General information on verification of EPD from EPD tools

Independent verification of data, other environmental information and the declaration according to ISO 14025:2011-10, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD Global's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD Global, and iii) the process is reviewed annually by an independent third-party verifier. See Appendix G of EPD Global's General Programme Instructions for further information on EPD tools.

Verification

Independent third-party verification based on the verification of the EPD tool, background data and test-EPD in accordance with EPD Global's procedures and guidelines for verification and approval of EPD tools. Third-party verifier: Rui Wang, IVL Swedish Environmental Research Institute

Owner of the declaration

Dosteba GmbH

Contact person

dosteba@dosteba.de

Phone

+49 7121 30177 10

Email

dosteba@dosteba.de

Manufacturer

Dosteba GmbH
Aspenhaustraße 6
72770 Reutlingen, Germany

Place of production

Wrocław, Poland

Management system

-

Organisation no

DE 268 795 872

Issue date

23.06.2026

Valid to

22.06.2031

Year of study

2025

Comparability

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not seen in a building context. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database (including primary and secondary data).


Development and verification of EPD

The declaration was created using the Emidat EPD tool v1.0, developed by Emidat GmbH which is third-party verified and approved as a Reference Flow Tool with internal review under administration and surveillance by EPD Global under provisions stated in general information on verification of EPD from EPD tools.

Developer of EPD: This Oldani

Reviewer of company-specific input data and EPD:
Marianne Henzen

Approved



Håkon Hauan, The Norwegian EPD Foundation

Product

Product description

The supporting brackets TWL®-ALU-RF /-RL are suitable for use in external thermal insulation composite systems, rear-ventilated facades and internal insulation, to securely fix medium-weight to heavy attachments such as railings, fall protection systems or brackets without creating thermal bridges.

Support brackets are specially designed for corner and edge areas and ensure safe load transfer to the substrate.

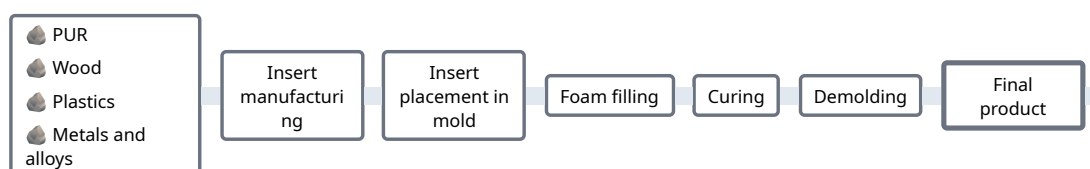
They are suitable for pre-installation in insulation made of expanded polystyrene (EPS) and rock wool (SW) and offer impressive load-bearing capacity and dimensional stability, ensuring easy installation and a long service life.

No packaging was included for the modeled product.

Application description

The supporting brackets TWL®-ALU-RF /-RL are suitable for use in external thermal insulation composite systems, rear-ventilated facades and internal insulation, to securely fix medium-weight to heavy attachments such as railings, fall protection systems or brackets without creating thermal bridges.

Production process



Product specification

Name of ingredient	Share of total weight	Country of origin
Metals and alloys	10 - 30 %	Various
PUR	70 - 90 %	Germany
Plastics	0 - 2 %	Various
Wood	2 - 10 %	Switzerland

Technical data

	Unit	Value
Mass	kg	2.012
Density of foam	kg / m ³	450

Market

Poland

Recipients

B2B

LCA: Calculation rules

Declared unit

1 piece

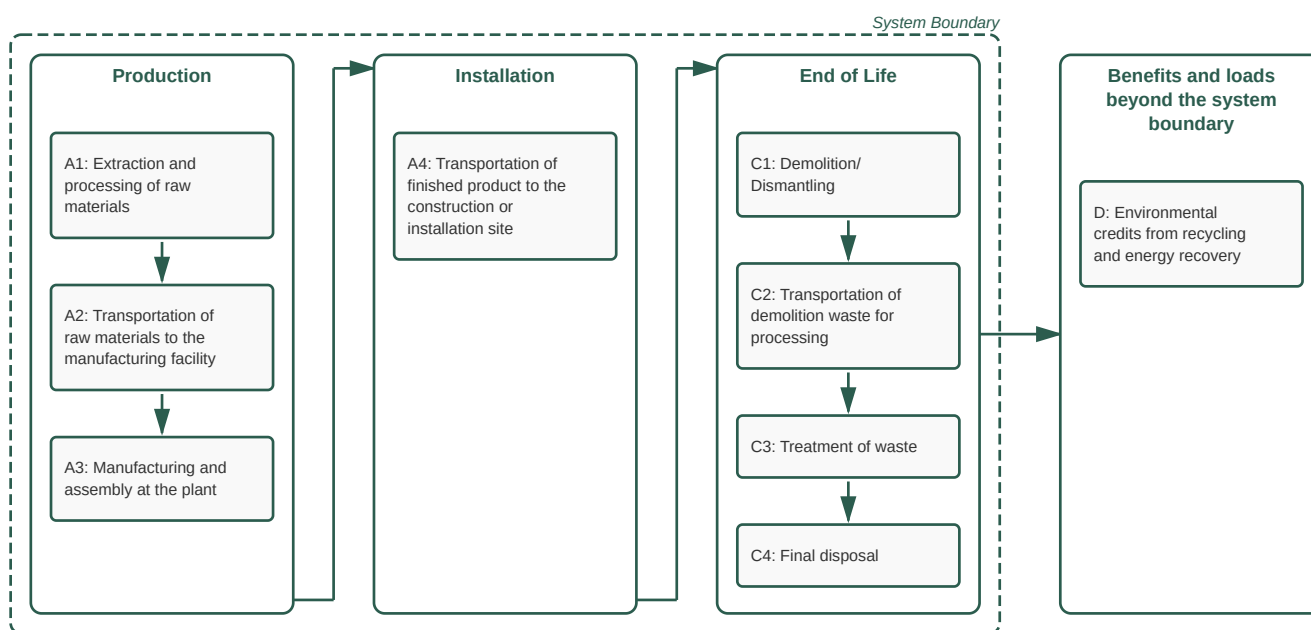
Product lifetime

Not declared

Reference service life

Not declared

System boundary



Data quality

The foreground data are based on extensive and detailed data collection at the production site of the manufacturer, covering key processes such as raw material sourcing, formulation, and manufacturing. These foreground data are fully linked with corresponding datasets from the background database (ecoinvent 3.10) or with EN15804+A2-compliant EPDs, ensuring consistency, reliability, and maintaining alignment with the latest industry standards.

The following EN15804+A2-compliant EPDs are used as datasets in this EPD:

Element	Year
Wood	2021

The overall data representativeness is rated as good with an overall score of 4.00/5, in accordance with EN 15804+A2 Annex E guidance on data quality assessment, considering geographical, technical, and temporal representativeness.

The following table discloses all processes or activities assessed with very poor or poor data representativeness according to EN 15804+A2, as well as those assessed as fair that contribute more than 30 % to any core impact indicator in A1–A3:

Element	Minimal Representativeness	Source	Year
Recycling	Very poor	ecoinvent 3.10	2023
Metals and alloys	Poor	ecoinvent 3.10	2023
Packaging	Poor	ecoinvent 3.10	2023
PUR	Fair	ecoinvent 3.10	2023

System boundaries (X=included, MND=module not declared)

	Production			Installation		Use stage							End-of-Life				Next product system
	Raw material supply	Transport	Manufacturing	Transport	Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Demolition	Transport	Waste Processing	Disposal	Benefits and loads beyond the system boundary
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Geography			PL	PL	MND	MND	MND	MND	MND	MND	MND	MND	PL	PL	PL	PL	PL

For the geographies modeled in A1 and A2, refer to *Product specification*.

Type of EPD: Cradle to gate with options, modules A4, C1-C4 + D

Stage of Material Production and Construction

- Module A1: Extraction and processing of raw materials
- Module A2: Transportation of raw materials to the manufacturing facility
- Module A3: Manufacturing and assembly at the plant
- Module A4: Transportation of finished product to the construction or installation site

Disposal Stage

- Module C1: Demolition/Dismantling
- Module C2: Transportation of demolition waste for processing
- Module C3: Treatment of waste
- Module C4: Final disposal

Credits and burdens outside the system boundaries

- Module D: Environmental credits from recycling and energy recovery

Cut-off criteria

No cut-offs were applied.

Allocation

Foreground inventory data (energy and fuels, ancillary materials, emissions and waste) was collected at the production process level. Mass-based allocation was applied to allocate the total output of the production process in 2025 to the reference product.

Key assumptions and estimates

Production process flows are allocated to the reference product, as described under allocation. The mass-based allocation assumes a uniform distribution of production impacts across co-products. Foreground inventory data is checked for consistency of production process, to ensure the validity of the allocated results.

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport to the building site (A4)	Value	Unit
Location of the production site	Poland	
Location of the installation site	Poland	
Transported mass	2.01	kg
Transport modality: Truck	transport, freight, lorry >32 metric ton, EURO6	-
Distance	300.00	km
Energy demand	1.58	MJ / t*km
Energy demand (km)	3.18e-03	MJ / km
Capacity utilization	53.30	%

Transport of the product and its packaging from the production site to the installation site. Transport distances are based on external sources such as reported market averages, standards or PCRs. Vehicle type, fuel consumption and capacity utilization assumptions stem from the underlying background transport datasets and are stated below.

Demolition (C1)	Value	Unit
Energy consumption for demolition	0.07	MJ / kg

Transport to the waste facility (C2)	Value	Unit
Mass to landfill	0.08	kg
Mass to recycling	0.83	kg
Mass to incineration	1.11	kg
Distance to landfill	50.00	km
Distance to recycling	50.00	km
Distance to incineration	50.00	km
Truck: Activity	transport, freight, lorry >32 metric ton, EURO6	-
Truck: Capacity utilization	53.30	%
Truck: Distance	50.00	km
Truck: Energy demand	1.58	MJ / t*km
Truck: Energy demand (km)	3.18e-03	MJ / km

Module C2 includes the impact of transportation of material after deconstruction, during the End-of-Life stage.

Waste processing (C3)	Value	Unit
Material for incineration	1.11	kg
Material for recycling	0.83	kg

Disposal (C4)	Value	Unit
Material for landfill	0.08	kg

Reuse, recovery and/or recycling potentials (D)	Value	Unit
Amount of secondary material that the system takes in	0	kg
Installation: Material eligible for recycling/reuse credits	0	kg
End-of-life: Material eligible for recycling/reuse credits	0.83	kg
Substitution of plastics	0.39	kg
Substitution of metals	0.41	kg
Substitution of wood	0.03	kg
Production: Exported energy eligible for credits	0.13	MJ
End-of-life: Exported energy eligible for credits	12.63	MJ
Substitution of electricity production, grid mix	4.32	MJ
Substitution of heat production from natural gas	8.44	MJ

Calculation of loads and benefits per EN 15804+A2. Materials that entered the product system as secondary materials in A1 do not yield credits in module D.

LCA: Results

The following results are based on the market-based electricity approach applied to the foreground system (A3). Further details on electricity data are provided in the Additional Requirements section.

Core environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-total	kg CO ₂ -eq.	1.05e+01	6.26e-02	1.41e-02	1.04e-02	2.74e+00	1.17e-03	-3.33e+00
GWP-fossil	kg CO ₂ -eq.	1.07e+01	6.25e-02	1.41e-02	1.04e-02	2.64e+00	5.89e-04	-3.31e+00
GWP-biogenic	kg CO ₂ -eq.	-3.19e-01	3.14e-05	1.41e-06	5.23e-06	9.61e-02	5.80e-04	-9.52e-03
GWP-luluc	kg CO ₂ -eq.	8.99e-02	2.22e-05	1.23e-06	3.70e-06	2.19e-04	2.22e-07	-9.46e-04
ODP	kg CFC-11-Eq	3.05e-07	1.30e-09	2.16e-10	2.17e-10	2.49e-09	1.78e-11	-7.72e-08
AP	mol H ⁺ -Eq	6.31e-02	1.48e-04	1.27e-04	2.46e-05	1.05e-03	5.35e-06	-1.31e-02
EP-freshwater	kg P-Eq	4.15e-03	4.40e-06	4.11e-07	7.33e-07	7.34e-05	5.28e-07	-1.74e-03
EP-marine	kg N-Eq	1.15e-02	3.87e-05	5.91e-05	6.45e-06	4.34e-04	1.73e-06	-2.34e-03
EP-terrestrial	mol N-Eq	1.11e-01	4.19e-04	6.47e-04	6.98e-05	3.59e-03	1.74e-05	-2.30e-02
POCP	kg NMVOC-Eq	4.29e-02	2.56e-04	1.93e-04	4.27e-05	9.57e-04	6.31e-06	-1.10e-02
ADPE	kg Sb-Eq	1.36e-04	1.79e-07	5.06e-09	2.98e-08	1.39e-06	1.05e-09	-8.69e-06
ADPF	MJ, net calorific value	2.03e+02	9.38e-01	1.85e-01	1.56e-01	2.17e+00	1.41e-02	-5.79e+01
WDP	m ³ world Eq deprived	4.35e+00	4.71e-03	4.52e-04	7.86e-04	2.14e-01	6.18e-05	-6.45e-01

GWP-total: Global Warming Potential - total , **GWP-fossil:** Global warming potential - fossil , **GWP-biogenic:** Global Warming Potential - biogenic , **GWP-luluc:** Global Warming Potential - luluc , **ODP:** Depletion potential of the stratospheric ozone layer , **AP:** Acidification potential, Accumulated Exceedance , **EP-freshwater:** Eutrophication potential - freshwater , **EP-marine:** Eutrophication potential - marine , **EP-terrestrial:** Eutrophication potential - terrestrial , **POCP:** Photochemical Ozone Creation Potential , **ADPE:** Abiotic depletion potential - non-fossil resources , **ADPF:** Abiotic depletion potential - fossil resources , **WDP:** Water (user) deprivation potential

Additional indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PM	disease incidence	ND	6.09e-09	3.62e-09	1.01e-09	7.70e-09	9.69e-11	-8.40e-08
IRP	kBq U235-Eq	ND	1.14e-03	8.26e-05	1.90e-04	4.22e-02	1.39e-05	-9.73e-02
ETP-fw	CTUe	ND	2.22e-01	2.62e-02	3.71e-02	5.72e+00	6.09e-03	-6.05e+01
HTP-c	CTUh	ND	4.00e-10	5.52e-11	6.67e-11	9.37e-10	3.01e-12	-2.09e-07
HTP-nc	CTUh	ND	6.19e-10	2.50e-11	1.03e-10	9.39e-09	9.67e-12	-2.90e-08
SQP	dimensionless	ND	9.44e-01	1.29e-02	1.57e-01	1.16e+00	3.11e-02	-6.54e+00

PM: Potential incidence of disease due to PM emissions , **IRP:** Potential Human exposure efficiency relative to U235 , **ETP-fw:** Potential Comparative Toxic Unit for ecosystems , **HTP-c:** Potential Comparative Toxic Unit for humans - cancer effects , **HTP-nc:** Potential Comparative Toxic Unit for humans - non-cancer effects , **SQP:** Potential Soil quality index . **IRP:** 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. **ETP-fw, HTP-c, HTP-nc** and **SQP:** The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with these indicators.

Use of resources

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	1.88e+01	1.49e-02	1.13e-03	2.48e-03	4.38e-01	2.12e-04	-1.88e+00
PERM	MJ	1.35e-01	0.00e+00	0.00e+00	0.00e+00	-1.42e-02	0.00e+00	-3.12e-01
PERT	MJ	1.89e+01	1.49e-02	1.13e-03	2.48e-03	4.24e-01	2.12e-04	-2.20e+00
PENRE	MJ	1.54e+02	9.38e-01	1.85e-01	1.56e-01	2.17e+00	1.41e-02	-4.14e+01
PENRM	MJ	4.95e+01	0.00e+00	0.00e+00	0.00e+00	-4.54e+01	0.00e+00	-1.65e+01
PENRT	MJ	2.04e+02	9.38e-01	1.85e-01	1.56e-01	-4.32e+01	1.41e-02	-5.79e+01
SM	kg	4.21e-04	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	8.29e-01
RSF	MJ	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
FW	m ³	1.88e-01	1.36e-04	1.20e-05	2.27e-05	4.23e-03	-7.83e-05	-4.21e-02

PERE: Primary energy resources - renewable: use as energy carrier , **PERM:** Primary energy resources - renewable: used as raw materials , **PERT:** Primary energy resources - renewable: total , **PENRE:** Primary energy resources - non-renewable: use as energy carrier , **PENRM:** Primary energy resources - non-renewable: used as raw materials , **PENRT:** Primary energy resources - non-renewable: total , **SM:** Use of secondary material , **RSF:** Renewable secondary fuels , **NRSF:** Non-renewable secondary fuels , **FW:** Net use of fresh water

Waste flows

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
NHWD	kg	4.26e-02	0.00e+00	0.00e+00	0.00e+00	1.11e+00	7.61e-02	0.00e+00
RWD	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00

HWD: Hazardous waste disposed , **NHWD:** Non hazardous waste disposed , **RWD:** Radioactive waste disposed

Output flows

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
CRU	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
MFR	kg	2.84e-02	0.00e+00	0.00e+00	0.00e+00	8.29e-01	0.00e+00	0.00e+00
MER	kg	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00	0.00e+00
EEE	MJ	4.15e-02	0.00e+00	0.00e+00	0.00e+00	4.28e+00	0.00e+00	0.00e+00
EET	MJ	8.50e-02	0.00e+00	0.00e+00	0.00e+00	8.35e+00	0.00e+00	0.00e+00

CRU: Components for re-use , **MFR:** Materials for recycling , **MER:** Materials for energy recovery , **EEE:** Exported electrical energy , **EET:** Exported thermal energy

Name	Value	Unit
Biogenic carbon content in product	2.64e-02	kg C
Biogenic carbon content in accompanying packaging	0.00e+00	kg C

Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

Electricity consumption in the manufacturing phase is composed from the sources below. This EPD follows the market-based approach.

Approach	Electricity	Quantity [kWh]	Emission Factor [kg CO ₂ e/kWh]
market-based	ecoinvent: electricity, medium voltage, residual mix (PL)	1.54	1.11
(location-based)	(ecoinvent: market for electricity, medium voltage (PL))	(1.54)	(0.91)

Rows marked with () are provided for reference and not used in the assessment.

Dangerous substances

The product contains no hazardous substances given by the REACH Candidate List or the Norwegian Priority List.

Additional environmental information

Secondary content

The product contains 0 % secondary material. Secondary material includes recycled, recovered and by-product content.







Additional environmental impact indicators required in NPCR Part A for construction products

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-IOBC	kg CO ₂ -eq.	1.08e+01	6.25e-02	1.41e-02	1.04e-02	2.66e+00	6.13e-04	-3.30e+00

GWP-IOBC: Global Warming Potential - Instantaneous oxidation of biogenic carbon

Bibliography

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EN 15804:2012+A2:2019	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
EN 15942:2022-04	Sustainability of construction works - Environmental product declarations - Communication format business-to-business
ISO 14025:2011-10	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14040:2021-02	Environmental management - Life cycle assessment - Principles and framework
ISO 14044:2021-02	Environmental management - Life cycle assessment - Requirements and guidelines
EF 3.1	Environmental Footprint (EF) Life Cycle Impact Assessment method - Characterisation Factors version 3.1, European Commission, Joint Research Centre (JRC)
ecoinvent 3.10	ecoinvent, Zurich, Switzerland, database version 3.10
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 Powered by EPD-Norway	Program Operator	Phone	+47 23 08 80 00
	EPD Global P.O. Box 5250 Majorstuen, N-0303 Oslo Norway	Email	post@epd-norge.no
		Web	www.epd-global.no
 Powered by EPD-Norway	Publisher	Phone	+47 23 08 80 00
	EPD Global P.O. Box 5250 Majorstuen, N-0303 Oslo Norway	Email	post@epd-norge.no
		Web	www.epd-global.no
	Owner of the declaration	Phone	+49 7121 30177 10
	Dosteba GmbH Aspenhaustraße 6, 72770 Reutlingen Germany	Email	dosteba@dosteba.de
		Web	www.dosteba.de
	Author of the life cycle assessment	Phone	+49 7121 30177 10
	Dosteba GmbH Aspenhaustraße 6, 72770 Reutlingen Germany	Email	dosteba@dosteba.de
		Web	www.dosteba.de
	ECO Platform ECO Portal	Web	www.eco-platform.org
		Web	ECO Portal
	Developer of EPD generator	Phone	+49 176 56 96 77 91
	Emidat GmbH Sandstraße 33, 80335 München Germany	Email	epd@emidat.com
		Web	www.emidat.com