Environmental Product Declaration

in accordance with EN 15804:2012 + A2:2019 + AC: 2021

Owner of the EPD:	HAZ Metal Deutschland GmbH
Program operator:	PÜZ BAU GmbH
Product:	HAZ anchor channel
EPD number:	50.330.00-EPD-2031-01
Number of pages:	10
Date of issue:	09.09.2026
Validity:	09.09.2031

verified

Allgemeine Information

Owner of the Environmetal Product Declaration HAZ Metal Deutschland GmbH Alfred-Zippe-Straße 1 97877 Wertheim Deutschland	**Program operator:** PÜZ BAU GmbH Beethovenstraße 8 80336 München https://puezbau.de/
Manufacturing plant: HAZ Metal Güzelçay, 31200 İskenderun/Hatay Türkei	**Product: HAZ anchor channel** Does the product contain hazardous substances listed in the „Candidate List of Substances of Very High Concern for Authorisation" (SVHC) in an amount exceeding 0,1 % by mass ☐Yes ☒No
EPD-Type: Cradle to gate, Modulen A1-A3, C1-C4 and Module D, including module A **Deklarierte Einheit:** kg **Referenz-Nutzungsdauer:** 50 Jahre **EF-Version**: 3.1	**Liability:** The owner of the EPD is solely liable for the underlying information and evidence. Liability on the part of PÜZ BAU is excluded. **Comparability:** EPDs of construction products may not be comparable if they do not conform to EN 15804+A2.
Geltungsbereich: Validation and verification programm of PÜZ BAU GmbH (Version: 2025-11)	**Underlying PCR-documents:** The product category rules are consistent with PCR-A: EN 15804:2012+A2:2019 + AC:2021

Intended use of the product:
The anchor channel is intended to be used in cracked and uncracked concrete. The anchor channel is embedded surface-flush in the concrete and shall be secured at their position during installation such that no movement of the channel will occur during the time of laying the reinforcement and placing and compacting the concrete.

☒ **Specific EPD** ☐ **Average EPD** ☐ **Representative EPD**

Independent verification:

The European standard serves as the core PCR

Independent verification of the declaration and information according to EN ISO 14025:2010
☐ internal ☒ external

München, 09.09.2026
Place, Date of issuance, Head of verification body

1 Product

1.1 Product description

The products covered by this Environmental Product Declaration are HAZ METAL Anchor Channels, the HMPR-CE, HMPR-CE-Z series. The following products fall within the scope of this EPD.

HMPR-CE 28/15,	HMPR-CE 38/17,	HMPR-CE 40/25,	HAZ-TU 60/22.
HMPR-CE 40/22P,	HMPR-CE 40/26P,	HMPR-CE 49/30,	
HMPR-CE 50/30P,	HMPR-CE 52/34P,	HMPR-CE 54/33,	
HMPR-CE 72/49,	HMPR-CE-Z 41/22,	HMPR-SHS-38/17,	

These anchor channels are cast-in fastening systems designed to provide secure, adjustable, and reliable connections in concrete structures without the need for post-installation drilling or welding.

The system consists of C-shaped metal channel profiles equipped with anchor bolts. Connections are established using matching T-bolts (hammer-head or hook-head bolts) and locking plates.

- **Profiles:** The channels are manufactured as either cold-rolled profiles for static and quasi-static loads, or hot-rolled profiles for applications requiring dynamic load resistance.
- **Materials:** The channels are produced in hot-dip galvanized steel (e.g., S235JR, S355MC) and highly corrosion-resistant stainless steel (grades 1.4401, 1.4404, and 1.4571).
- **Fillers:** To prevent concrete from penetrating the profile interior during the pouring process, the channels are factory-fitted with removable foam or Styrofoam filling.

HAZ METAL Anchor Channels are utilized across a broad spectrum of construction applications. Typical uses include the secure fastening of curtain wall facades, precast concrete elements, masonry brickwork supports, elevator guide rails, and tunnel or pipeline infrastructure. Additionally, specific variants like the HAZ-TU series are designed for fastening trapezoidal steel sheets to concrete beams.

The products are manufactured in an ISO 9001 and ISO 14001 certified facility. The anchor channels are designed in compliance with CEN/TS 1992-4-3 standards and have been granted European Technical Assessments (ETA-17/0549 and ETA-20/0698), along with the corresponding CE marking and DIBt approvals.

1.2 Manufacturing process

Incoming steel coil is checked on arrival against the delivery documentation and inspected for conformity before being released to stock for production; non-conforming material is segregated, labelled, and returned to the supplier.

Following order intake and production planning, manufacturing proceeds along two parallel lines. In the anchor (stud) line, steel is cut to length and the heads are formed on a bolt press. In parallel, the channel profile line slits the steel strip, cold-roll-forms it into the channel profile, and cuts it to length. The two components are then brought together: stud holes are punched and the profile is marked, and the studs are joined to the channel by riveting or by welding, depending on the product variant. Where specified, the assembled channel is subsequently hot-dip galvanized; stainless steel variants are supplied without additional coating. Dimensional checks and extensive testing are carried out at defined points during this process.

After forming, the product is cleaned and deburred, then undergoes final inspection against the technical drawing and the final inspection plan, including recording of measurement results. Conforming product is labelled and transferred to stock; non-conforming product is subject to a documented non-conformity, rework/repair, or scrap procedure.

Prior to packaging, completion of any required surface treatment and quality control release are verified. The product is packaged according to customer requirements using appropriate packaging materials (e.g., strapping, stretch film, pallets), labelled, and given a final packaging check before transfer to shipment.

1.3 Technical data and specification

Technical data	Indication
Characteristic resistance for tension under static and quasi-static loading	See Annex CI to C3, ETA-20/0698, EAD 330008-03-0601
Characteristic resistance for shear under static and quasi-static loading	See Annex C4 to C5, ETA-20/0698, EAD 330008-03-0601
Characteristic resistance under combined static and quasi-static tension and shear loading	See Annex C6, ETA-20/0698, EAD 330008-03-0601
Durability	See annex A3, ETA-20/0698, EAD 330008-03-0601
Reaction to fire	The anchor channels are made from steel classified as class AI in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364.
Further characteristics	See ETA-17/0549, EAD 330008-03-0601, Edition 06/2021

Production is subject to factory production control (FPC) by the plant and to external surveillance by a certification body.

Zertifikatsnummer	Grundlage/Norm
2936-CPR-008	ETA 20/0698; EAD 330008-03-0601
2873-CPR-860-2-1	ETA-17/0549; EAD 330008-02-0601
Reg.-Nr. 2025-16	DIBt Approval Z-21.4-1921

1.4 Components of the product

The main components of the product are described in table below.

Components	Mass content (M.-%)
Galvanized steel	78
Stainless steel	20
PE foam	2

1.5 Packaging material

The product is packaged in wooden crates for transport to the sites of use. Referenced to the declared unit, the amount of biogenic carbon in the packaging is 0.019 kg C. This amount is not reported in GWP-total, as the release of this biogenic carbon is not modelled.

2 LCA calculation rule

2.1 Declared unit

Declared unit	Mass conversion
1 kg	-

2.2 Averaging rule

The amount of stainless steel was averaged through the annual consumption, as stainless steel was not used for all batches. A great percentage of the delivered products are made of galvanized steel.

Energy consumption was averaged through the annual records across all products manufactured at the plant.

2.3 Material loss

The material loss during the manufacturing process amounts to 5 %

2.4 Use of secondary materials and fuel

Negligible

2.5 System boundary

Table 1: Life cycle stages of a product according to EN 15804

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C 2	C3	C4	D
Raw materials production	Transport to factory	Manufacturing	Transport to side	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/Demolition	Transport of waste	Waste treatment	Landfill	Potential net benefits from reuse, recycling and/or energy recovery beyond the system boundary
X	X	X										X	X	X	X	X

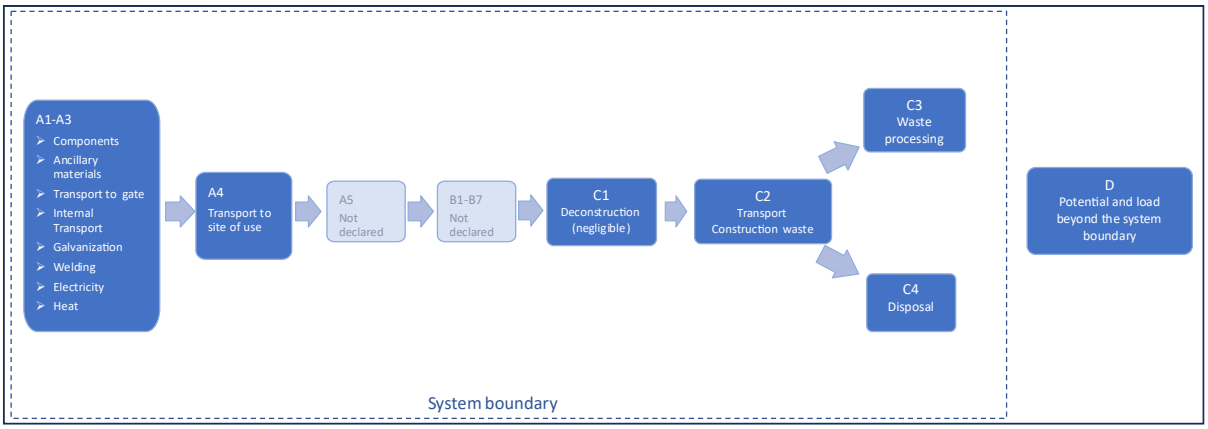

Abbildung 1: Flow chart

2.6 Energy mix

The Energy mix of Turkey was used for the calculation

2.7 Estimation and assumption

Due to the lack of data, the European emission standard for the transport of raw materials is assumed to be EURO 4.

The average transport distance to sites in Germany from Wertheim is estimated to be 200 km.

2.8 Cut-off criteria

All inputs and outputs of a unit process for which data exist are included in the calculation. Data gaps, if applicable, are closed using conservative assumptions based on average or generic data.

Where a unit process is affected by insufficient data or by an unavoidable data gap, the cut-off applied to that process does not exceed 1% of its renewable and non-renewable primary energy use and 1% of its total mass. The cumulative sum of all flows excluded on this basis does not exceed 5% of the total energy use and total mass per life cycle stage.

2.9 Allocation rules

The processes considered within the system boundary of this study each deliver a single product with no co-products, secondary products or other outputs of economic value. Since no shared inputs or outputs required partitioning between multiple products or functions, allocation did not need to be applied.

2.10 Data quality

In accordance with EN 15804, Annex E, the data quality can be assessed as good.

2.11 Review period

The review period is 2025.

3 Scenarios and further Information

3.1 Module A4

Information	Wert	Einheit
Fuel type and fuel consumption of the vehicle or vehicle type used for transportation (e.g. long-haul truck, ship, etc.)	lorry >32 metric ton, EURO 4	-
Transport distance	3616	km

3.2 Module C1-C4

Module C1 – Deconstruction:

Module C1 is considered negligible.

Module C2 – Transport

Parameter	Wert	km
Distance to waste processing facility	30	km
Distance to landfill	50	km

Module C3 – Waste processing und Module C4 – Landfill:

Bezeichnung	Wert	Einheit
Separately collected waste (collection method).		kg
Collection of mixed construction waste (collection method)	1,00	kg
For reuse (recovery method)		kg
For recycling (recovery method)	0,95	kg
For energy recovery (recovery method)		kg
Disposal: product or material to landfill	0,05	kg
Assumption of the scenario development, e.g. for the transport		-

3.3 Module D

No net benefits of the recycling of steel scrap are considered.

The processed scrap is fed into the electric arc furnace route, where it is remelted into secondary steel, thereby substituting primary steel production accordingly. A recycling rate of 100 percent is applied for structural steel recovered from deconstruction.

4 LCA-Ergebnis

Core indicators for the environmental impacts (ND = not declared)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	2,43E+00	3,59E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,16E-03	5,99E-02	3,13E-04	2,46E-02
GWP-fossil	kg CO_2 eq.	2,46E+00	3,59E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,16E-03	5,99E-02	3,13E-04	2,48E-02
GWP-biogenic	kg CO_2 eq.	2,94E-02	1,94E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,76E-06	9,78E-06	1,02E-07	-2,92E-04
GWP-luluc	kg CO_2 eq.	7,82E-03	1,26E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,15E-06	6,05E-06	1,77E-07	3,34E-05
ODP	kg CFC-11 eq.	5,01E-08	8,19E-09	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,44E-11	9,20E-10	9,14E-12	3,57E-10
AP	mol H+ eq.	1,49E-02	1,44E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,44E-06	5,35E-04	2,16E-06	2,71E-04
EP-freshwater	kg P eq.	1,85E-03	2,57E-05	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,33E-07	1,92E-06	2,76E-08	1,50E-05
EP-marine	kg N eq.	2,95E-03	5,52E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,07E-06	2,51E-04	8,54E-07	6,37E-05
EP-terrestrial	Mol N eq.	3,10E-02	6,01E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,23E-05	2,74E-03	9,29E-06	7,14E-04
POCP	kg NMVOC eq.	9,42E-03	2,29E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,32E-05	8,22E-04	3,36E-06	2,14E-04
ADPE [2)]	kg Sb eq.	1,53E-04	1,05E-06	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,51E-09	2,22E-08	4,77E-10	1,52E-06
ADPF [2)]	MJ	2,92E+01	5,25E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,77E-02	7,76E-01	7,64E-03	3,31E-01
WDP [2)]	m^3 world eq deprived	1,05E+00	3,03E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,75E-04	1,95E-03	3,36E-04	5,75E-03

GWP-total: Global warming potential, total	GWP-fossil: Global warming potential, fossil
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 of land and water
EP-freshwater: Eutrophication potential, fresh water	EP-marine: Eutrophication potential, marine
EP-terrestrial: Eutrophication potential, terrestrial	ADPE: Abiotic depletion potential for non-fossil resources
POCP: troposphärisches Ozonbildungspotenzial (en: Photochemical Ozone Creation Potential)	WDP: Water (user) deprivation potential
ADPF: Abiotic depletion potential for fossil resources	

Additional indicators for the environmental impacts (ND = not declared)

Indikator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1,58E-07	3,71E-08	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,13E-10	1,53E-08	5,06E-11	3,83E-09
IRP[1)]	kBq U235 eq.	1,39E-01	5,65E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,13E-05	3,25E-04	4,41E-06	2,33E-03
ETP-fw[2)]	CTUe	5,40E+01	7,06E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,41E-03	7,88E-02	9,54E-04	1,85E-01
HTP-c[2)]	CTUh	3,46E-09	5,69E-11	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,04E-13	5,75E-12	5,48E-14	1,92E-11
HTP-nc[2)]	CTUh	5,59E-08	3,27E-09	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,95E-11	1,02E-10	1,33E-12	1,33E-09
SQP[2)]	-	1,53E+01	5,31E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,82E-02	5,38E-02	1,51E-02	5,91E-01

1) This impact category deals mainly with the possible impact of low dose ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents or occupational exposure, nor does it consider the disposal of radioactive waste in underground facilities. Potential ionising radiation from the soil, from radon, and from some building materials is also not measured by this indicator.

2) The results of this environmental impact indicator shall be used with care due to significant uncertainties or limited experience with the indicator.

Legend

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 (cancerogenic)
HTP-nc: Potential comparative Toxic Unit for humans (not cancerogenic)	SQP: Potential soil quality index

Indicators to describe the resource use (ND = not declared)

Indikator	Einheit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	6,85E+00	8,17E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,41E-04	4,87E-03	7,12E-05	5,43E-02
PERM	MJ	7,76E-01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,63E+00	8,17E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,41E-04	4,87E-03	7,12E-05	5,43E-02
PENRE	MJ	2,97E+01	5,25E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,77E-02	7,76E-01	7,64E-03	3,31E-01
PENRM	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,97E+01	5,25E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,77E-02	7,76E-01	7,64E-03	3,31E-01
SM	kg	1,14E+00	4,78E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,33E-05	4,42E-04	3,27E-06	9,52E-01
RSF	MJ	6,89E-02	1,01E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,14E-06	4,49E-05	5,73E-07	6,56E-04
NRSF	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	4,04E-02	6,94E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,30E-06	4,67E-05	7,89E-06	1,32E-04

Legende:

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
PENRT: Total use of non-renewable primary energy resources	PERNM: Use of non-renewable primary energy resources used as raw materials
RSF: Use of renewable secondary fuels	SM: Use of secondary material
FW: Use of net fresh water	NRSF: Use of non-renewable secondary fuels

Indicator to describe the waste categories (ND = not declared)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4,78E+00	2,97E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-04	2,53E-03	2,49E-05	4,37E-02
Non-hazardous waste disposed	kg	8,10E+00	6,16E-01	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,59E-03	1,26E-02	5,02E-02	8,78E-02
Radioactive waste disposed	kg	3,37E-05	1,36E-06	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,24E-08	7,63E-08	1,04E-09	5,85E-07

Indicator to describe the output flow (ND = not declared)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,46E-01	4,19E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,80E-05	9,50E-01	2,91E-06	1,42E-03
Materials for energy recovery	kg	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported electrical energy	MJ	2,12E-02	8,44E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,66E-06	3,62E-05	4,64E-07	4,19E-04
Exported thermal energy	MJ	1,23E-01	9,16E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,32E-06	1,72E-05	2,62E-07	6,57E-05

Information about biogenic carbon content

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
biogenic carbon content in product[1)]	kg C	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Biogenic carbon content in packaging material[2)]	kg C	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

1) If the mass of the biogenic carbon content in product is less then 5 % of the product mass, the declaration of the biogenic carbon content can be omitted.

2) If the mas of the biogenic carbon content in the packaging material is less then 5 % of the mass of the packaging material, the declaration of the biogenic carbon content in the packaging material can be omitted.

5 LCA-Interpretation

The life cycle assessment results for the declared product show that the manufacturing stage A1-A3 causes the largest share of the environmental impacts. For the indicator GWP-total, approximately 85,2 % of the total result across all declared modules falls on A1-A3. The main drivers in A1 to A3 are stainless steel, accounting for 36,5 % of the total, structural steel, accounting for 18,6 %, and the production of electricity, accounting for 16,7 %.

The transport to the construction site, module A4, contributes 0,359 kg CO_2 eq., equivalent to 12,6 % of the total result. This makes A4 the fourth largest single contribution across the entire life cycle, exceeded only by stainless steel, structural steel and the production of electricity in A1-A3, and it is roughly 5,7 times larger than the combined result of the disposal phase C1 to C4. The result depends directly on the very long transport distance from Turkey to Germany assumed for this module.

The environmental impacts of the disposal phase C1 to C4 are dominated by module C3, where the treatment of steel scrap is the main cause.

Module D shows a value of 0,0246 kg CO_2 eq., which represents a net additional burden rather than a credit. This burden results solely from the processing of steel scrap for recycling, since no substitution credits for recycled steel are accounted for.

6 Literaturhinweise

DIN EN 15804:2022-03	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
DIN EN 16757: 2023-03	Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements.
DIN EN ISO 14025:2011-10	Environmental Iabels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006).
EPD	Hot Rolled Steel Coil from Tosçelik, valid until 25.10.2027
Ecoinvent v3.12	ecoinvent database v3.12, 2025
ETA-20/0698, EAD 330008-03-0601	HAZ HMPR-Z 41/22 anchor channel and HZS 41/22 channel bolts
ETA-17/0549, EAD 330008-03-0601, Edition 06/2021	HAZ METAL - Anchor Channel HMPR
Z-21.4-1921, DIBt	HAZ-TU Trapezblechbefestigungsschiene in Betonbauteilen zur Befestigung von Stahltrapezprofilen HAZ-TU trapezoidal-sheet fastening rail for embedment in concrete members to fix trapezoidal steel profiles