

GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION



Environmental
Product
Declaration

EN ISO 14025:2010

EN 15804:2012+A2:2019/AC:2021

GlobalEPD RCP-010

AENOR

STEEL VEHICLE PARAPETS

Publication date: 2026-08-07

Review date: 2026-10-07

Validity date: 2031-08-06

The declared validity is subject to registration and publication at www.aenor.com

Registration number GlobalEPD 010-004 rev1

SIMEPROVI
ASOCIACIÓN ESPAÑOLA DE FABRICANTES
DE SISTEMAS METÁLICOS DE PROTECCIÓN VIAL

ASOCIACIÓN ESPAÑOLA DE FABRICANTES DE
SISTEMAS METÁLICOS DE PROTECCIÓN VIAL.



The holder of this Declaration is responsible for its content, as well as for keeping the supporting documentation that justifies the data and statements included during the period of validity



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AENOR is a founding member of ECO Platform, the European Association of Environmental Product Declaration Verification Programs

GlobalEPD RCP-010

The European Standard EN 15804:2012+A2:2019/AC:2021 serves as the basis for PCR

Independent verification of the declaration and data in accordance with EN ISO 14025:2010

☐ Internal

☒ External

Verification body

AENOR

Product certification body accredited by ENAC with accreditation Nº 1/C-PR468

1. General information

1.1. The organization

SIMEPROVI (Spanish Association of Manufacturers of Steel Road Protection Systems) is a non-profit association whose objectives include promoting, in all areas, the use of restraint systems made from galvanized steel as a highly effective alternative for reducing the consequences of run-off-road vehicle accidents and disseminating technical developments in the sector.

Among other activities, SIMEPROVI is member of various national organizations in the steel and road sectors, actively participates in Spanish and European Technical Standardization Committees, organizes technical seminars and publishes materials to disseminate developments in the sector.

The company members can provide a comprehensive solution for the supply and installation of metal parapets.

This sector Environmental Product Declaration (EPD) has been prepared by SIMEPROVI for the following organizations:

- Auxiliar de Señalizaciones y Balizamientos, S.L (ASEBAL). José María Escuza, 1, 2º Centro - 48013 Bilbao.
- Gonvarri Asturias, S.A. Polígono Industrial de Cancienes, s/n – 33470 Corvera de Asturias
- Industrias Duero S.L. González Dávila, 1 - 28031 Madrid
- METALESA. Ctra. Nacional Xàtiva-Silla, 1, 46740 Carcaixent, Valencia

1.2. Scope of the Declaration

This sector environmental product declaration describes the environmental information relating to the cradle-to-grave life cycle of the production of steel vehicle parapets.

1.3. Life cycle and compliance.

This EPD has been developed and verified in accordance with EN ISO 14025:2010, EN 15804:2012+A2:2019/AC:2021 and GlobalEPD RCP-010.

Table 1-1. Product Category Rule

Title	Steel vehicle restraint systems.
Registration/version	GlobalEPD RCP-010
Issue date	2025-03
Programme operator	AENOR

This EPD includes the life cycle stages indicated in Table 1-2. This EPD is cradle-to-grave.

Table 1-2 System boundaries. Information modules considered

Product stage	A1	Raw material supply	X
	A2	Transport to factory	X
	A3	Manufacturing	X
Construction	A4	Transport to site	X
	A5	Installation / construction	X
Use stage	B1	Use	X
	B2	Maintenance	X
	B3	Repair	X
	B4	Replacement	X
	B5	Refurbishment	X
	B6	Operational energy use	X
	B7	Operational water use	X
End of life	C1	Deconstruction / demolition	X
	C2	Transport	X
	C3	Waste treatment	X
	C4	Disposal	X
	D	Reuse, recovery and/or recycling potential	X
X = Module included in the LCA; ND = Module not declared			

This EPD may not be comparable with those developed under other programmes or according to different reference documents; specifically, it may not be

comparable with declarations not developed and verified in accordance with EN 15804:2012+A2:2019/AC:2021.

Likewise, EPDs may not be comparable if the data source is different (for example, databases), if all relevant information modules are not included, or if they are not based on the same scenarios.

The comparison of construction products must be made based on the same function, applying the same declared unit and at building level (or architectural or civil engineering works level), i.e. including the performance of the product throughout its entire life cycle, as well as the specifications in section 6.7.2 of EN ISO 14025.

1.4. Representativeness of the EPD.

The production of the participating companies represents more than 90% of the steel vehicle parapet market in Spain.

1.5. Differences from previous versions of this EPD.

Revision 1 of this EPD is issued to correct the impact indicators for modules A2 and A4. In addition to *Annex - Conversion to linear metre*.



2. The product

2.1. Product identification

This sector EPD applies to steel vehicle parapets manufactured by companies associated with SIMEPROVI.

The function performed by the product system studied is the production of steel vehicle parapets, defined as safety barriers installed on structures such as bridges or retaining walls in order to contain and redirect vehicles that leave the carriageway in an uncontrolled manner, thereby reducing the injurious consequences of this type of accident.

2.2. Product performance

Steel vehicle parapets are safety barriers installed on bridges, retaining walls or similar structures where there is a vertical drop, and may include additional containment and protection for pedestrians or other road users (combined system for vehicles and pedestrians).

Steel vehicle parapets consist of the following components:

- Rails: elements arranged longitudinally, which may have different profiles and thicknesses.
- Posts: elements anchored to the structure, which may have different length, thickness and cross-section. The spacing between posts varies from one parapet to another.
- Auxiliary connection pieces between rails and posts.
- Fasteners (bolts, nuts and washers).
- Elements for anchoring to the structure.

The general installation process for metal parapets comprises the following stages:

- Anchoring the posts to the structure.
- Assembly of the rails and auxiliary pieces on the posts, using the corresponding fasteners.

CPC code: 532.

Steel vehicle parapets are harmonised in accordance with Standard EN 1317-5:2008 + A2 (2012), and bear CE marking.

This EPD also includes systems tested in accordance with the United States standards NCHRP 350 (1993) and MASH (2016).

To assess their impact performance, the full-scale tests defined in Standard UNE EN 1317-2 (2011) are used, obtaining the following parameters, which characterise the parapets:

- Containment level.
- Impact severity.
- Normalized deformation parameters: dynamic deflection, working width and vehicle intrusion

2.3. Product composition

The composition of the parapet included in this study is:

Table 2-1. Average composition

Material	% by weight
Steel from hot-rolled coil or plate	88.83%
Steel from wire rod	3.81%
Zinc	6.00%
Paint	1.36%

During the product life cycle, no hazardous substances listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” are used in a percentage

greater than 0.1% of the product weight. The study includes the primary packaging used for shipping the product (distribution packaging).

Table 2-2 Distribution packaging

Material	kg/declared unit
Wood	2.62E-03
Paper	1.56E-05
Polypropylene	1.65E-04
Polyester	2.99E-04
Polyethylene	3.85E-03
Steel	5.62E-04
PVC	1.98E-08



3. Information on the LCA

3.1. Life cycle assessment

This sector EPD is based on a cradle-to-grave Life Cycle Assessment carried out in accordance with the recommendations and requirements of international standards ISO 14040:2006 and ISO 14044:2006. European Standard EN 15804:2012+A2:2019/AC:2021 and GlobalEPD RCP-010 have been used as the reference Product Category Rule (PCR).

The Life Cycle Assessment Report for the SIMEPROVI Sector EPD for road safety parapets, dated August 2026, was prepared by Abaleo S.L. using Ecoinvent 3.11 (March 2025) and Environmental Footprint 3.1 databases and SimaPro 10.4.0.0 software.

The characterization factors are based on EF 3.1.

3.2. Scope of the study.

The scope of this sector EPD is the cradle-to-grave production of steel vehicle parapets.

The specific data for the production process of the steel vehicle parapets used in the LCA study come from the manufacturers' facilities used to prepare this EPD and correspond to production data for 2024, which is considered a representative year.

The following have not been included in the LCA:

- All equipment with a useful life of more than 3 years.
- The construction of the plant buildings or other capital goods.

- Business travel by personnel or commuting to or from work by personnel.
- Research and development activities.

3.3. Declared unit.

The declared unit is one kilogram (1 kg) of steel vehicle parapet.

3.4. Reference service life.

The Reference Service Life (RSL) of steel vehicle parapets is 50 years.

3.5. Allocation criteria.

In accordance with the criteria of the reference standard, allocation of system inputs and outputs has been applied based on economic values, because the difference between the revenues from the product and the co-products is very high. This allocation criteria has been applied to the plant's general consumption (raw material and energy consumption), emissions, transport and waste.

Scrap is generated as a by-product during the manufacture of metal parapets.

3.6. Cut-off criteria.

In accordance with the criteria of the reference standard, the LCA includes the gross weight/volume of all materials used in the manufacturing process, so that at least 99% of the declared unit weight is obtained.

There has been no exclusion of material or energy consumption.

3.7. Other calculation rules and assumptions

Biogenic carbon content

The manufacturer declares that the product studied does not contain materials with biogenic carbon in its composition.

Electricity mix used

To represent the electricity used in manufacturing, the residual electricity mixes of the suppliers of each of the plants participating in the study have been considered, obtained from the annual report of the Spanish National Markets and Competition Commission (CNMC). The GWP (IPCC 2021, 100 years), weighted by production, of the electricity mixes of all companies has a value of 0.172 kgCO₂e/kWh.

In the manufacture of the parapets, the average use of renewable energy, weighted by the production of each plant, is 37.98%.

Use of gas

The manufacture of safety parapets uses natural gas in the thermosetting powder coating stage and also in the galvanizing process, which is one of the partial steel manufacturing operations. Therefore, natural gas represents less than 30% of total energy consumption in stages A1-A3, and its GWP is not declared.

3.8. Representativeness, quality and selection of data.

To model the manufacturing process of the average steel vehicle parapet, production data from the plants for 2024 were used. This year was considered representative of current manufacturing conditions, and a weighted average was calculated based on the production of each plant. Data on material, fuel and energy consumption, distances from suppliers, waste generation

and transport to the waste manager were obtained from these facilities.

Where necessary, the Ecoinvent 3.11 (March 2025) and Environmental Footprint 3.1 databases were used. SimaPro 10.4.0.0 software was used for the inventory data, to model the LCA and to calculate the environmental impact categories required by the reference standard.

The following criteria were applied to select the most representative processes:

- Data representative of the technological development actually applied in the manufacturing processes. Where no information was available, data representative of an average technology were selected.
- Geographical data that are as close as possible and, where applicable, average regionalized data.
- Data that are as up to date as possible.

The parapets are manufactured in Spain, but they are also distributed outside Spain; therefore, the scope of application of this EPD is global.

To assess the quality of the primary data used in the LCA, the semi-quantitative data quality assessment criteria proposed by the European Union in its Product and Organization Environmental Footprint Guide are applied. The results obtained are as follows:

- Very good integrity. Score 1.
- Good methodological suitability and consistency. Score 2.

- Very good temporal representativeness. Score 1.
- Good technological representativeness. Score 2.
- Very good geographical representativeness. Score 1.
- Low data uncertainty. Score 2.

According to the above data, the Data Quality Rating (DQR) has the following

value: $8/6 = 1.33$, which indicates that the data quality is excellent.

To better understand the data quality assessment carried out, it should be noted that the score for each criterion ranges from 1 to 5 (the lower the score, the higher the quality) and that the following table is used to obtain the final score:

Overall data quality score (DQR)	Overall data quality level
≤ 1.6	Excellent quality
1.6 to 2.0	Very good quality
2.0 to 3.0	Good quality
3 to 4.0	Fair quality
> 4	Insufficient quality

4. System boundaries, scenarios and additional technical information.

The product system studied in the Life Cycle Assessment of the steel vehicle parapet is cradle-to-grave. The following production stages have been studied:

Module A1: Raw material production.

This module includes the raw material production process, which considers:

- Extraction of resources and production of raw materials.
- Transport to the raw material treatment/production centers.
- Energy and fuel consumption during raw material production.
- Consumption of other resources, such as water, during raw material production.
- Generation of waste and emissions to air, and discharges to water and soil, during raw material production.

- Generation of the electricity used in the manufacturing process.

Module A2: Transport.

Transport by truck and ship of all materials used in production, from the production sites (suppliers) to the facilities where they are used, has been considered. The raw material transport distances have been provided by plant managers, based on the location of their suppliers.

Module A3: Manufacturing.

At this stage, the consumption of auxiliary materials for production has been considered, as well as the transport and management, up to the treatment site, of the waste generated during this life cycle stage. Transport distances for waste were provided by the plant managers, based on the location of their waste management facilities.



Table 4-1. Life cycle stages and information modules according to EN 15804.

Life Cycle Information													Additional information	
A1 a 3			A4 - A5		B1 a 7					C1 a 4				D
Product stage			Construction process stage		Use stage					End-of-life stage				Benefits and loads beyond the system
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Raw material supply	Transport	Manufacturing	Transport	Construction / installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Deconstruction, demolition	Transport	Waste treatment	Disposal	Potential for reuse, recovery and/or recycling

B6. Operational energy useScenario **X****X: Module evaluated****B7. Operational water use**Scenario **X**

Module A4: Transport.

Transport of the finished product from the manufacturing facilities to the customer has been considered, using data for 2024 and distinguishing the means of transport used: truck, ship or train.

Table 4-2 Module A4 parameters

Parameter	Value / declared unit
Litres of diesel:	
- EURO 6 truck (GVW. 15.79 t)	0.0436 l/tkm
- Ship	0.0026 l/tkm
Average distance	
- EURO 6 truck	564.74 km
- Ship	1,508.76 km
Load factor (including empty return)	50 %
Useful capacity factor	The variability of the product formats does not allow a useful capacity factor to be identified.
Direct emissions to the environment. soil and water	-

Module A5: Construction

The material and energy consumption required for installation operations of the steel vehicle parapet on the road has been included.

Table 4-1 Module A5 parameters

Parameter	Value / declared unit
Auxiliary materials for installation	Not required
Water use	-
Use of other resources	-
Energy consumption	0,026 kWh
Material waste on the construction site before waste treatment, generated by product installation	Distribution packaging: wood – 8.74E-02kg paper – 1.54E-05g plastic – 1.80E-05kg metal – 2.57E-06kg
Output materials resulting from waste treatment on the building site (for recycling, recovery or disposal)	to recycling: paper – 1.54E-05kg metal – 2.57E-06kg to landfill: plastic – 1.80E-05kg to incineration: wood – 8.74E-02kg
Direct emissions to the environment, soil and water	-

Modules B1-B7: Use stage

Following the PCR indications, with correct installation and under normal conditions of use, the vehicle parapet does not consume anything during the use stage, does not require maintenance, repair, replacement or refurbishment, and consumes neither water nor energy. In the event of an accident, which is an exceptional situation, the product reaches the end of its life cycle, as a new product must be installed to ensure the impact-performance requirements.

All these life cycle stages therefore have zero impact.

Module C1 – Deconstruction / demolition.

The material and energy consumption required for deinstallation operations of the steel vehicle parapet at the end of their service life is included. Deinstallation operations are estimated to be similar to installation operations.

Module C2: Transport to the waste treatment/recovery site.

It is assumed that, at the end of its service life, the product studied is transported by road over an average distance of 100 km to the waste management point, using 16-32 tonne EURO6 trucks.

Module C3 - Waste treatment, and Module C4 - Waste disposal.

To determine the percentages of recycling and dispatch to landfill and incineration of the products studied, the criteria of Part C

of Annex 2 V2.1 (May 2020) of the Circular Footprint Formula of the European Union Environmental Footprint methodology are applied (COMMISSION RECOMMENDATION (EU) 2021/2279 of 15 December 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations).

Table 4-2 Module C parameters

Parameter	Value / declared unit
Demolition	0.026 kWh
Recovery system, specified by type	0 kg for reuse 950 kg for recycling.
Disposal, specified by type	27.5 kg for final disposal (landfill) 22.5 kg for incineration

Module D: Benefits beyond the system.

Module D includes the reuse and recycling potential expressed as net loads and benefits relating to the recovered secondary material leaving the product system, calculating the material substitution effects only for the resulting net output flow from the product stage.

To represent this module, data relating to the steel consumption of the participating companies have been considered, resulting in 88.45% of the steel used coming from blast furnace production and the remaining 11.55% from electric arc furnace production.

The system boundaries studied in the Life Cycle Assessment are shown below in the attached diagram:

PRODUCT STAGE. MODULES A1-A3

Materials production:

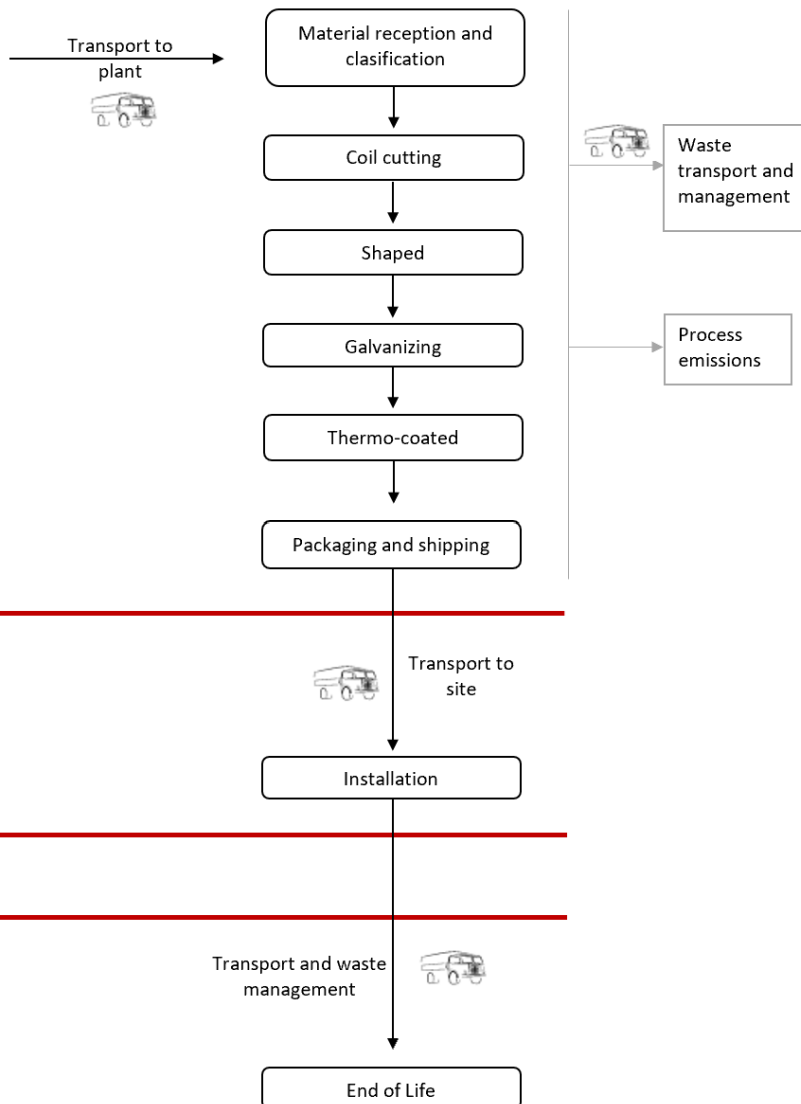
Steel coils and sheets, steel wire rod, welding gases, zinc, maintenance products.

Packaging production:

Strap, steel, wood, PP and PE

Energy production

Electricity, natural gas



5. Declaration of the environmental parameters of the LCA and LCI.

The different environmental parameters obtained from the Life Cycle Assessment (LCA) to produce 1 kilogram of the product under study are provided below.

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

Mandatory environmental indicators according to EN 15804 (EF 3.1 reference package)

Steel vehicle parapet Declared unit: 1 kilogram																		
Parameter	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	2.81E+00	1.82E-01	3.35E-01	3,33E+00	9.44E-02	1.10E-02	0	0	0	0	0	0	0	8.91E-03	1.50E-02	4.81E-03	2.66E-04	-1.06E+00
GWP-fossil	2.81E+00	1.82E-01	3.36E-01	3,33E+00	9.44E-02	8.92E-03	0	0	0	0	0	0	0	8.90E-03	1.50E-02	4.79E-03	2.66E-04	-1.06E+00
GWP-biogenic	5.94E-03	6.51E-06	-1.29E-03	4,66E-03	3.38E-06	2.13E-03	0	0	0	0	0	0	0	5.03E-07	5.21E-07	7.47E-06	3.19E-07	-1.17E-04
GWP-luluc	2.26E-03	3.33E-06	4.56E-04	2,72E-03	1.74E-06	4.36E-07	0	0	0	0	0	0	0	4.36E-07	2.37E-07	9.66E-06	8.49E-09	-1.58E-04
ODP	1.89E-08	3.94E-09	8.99E-09	3,19E-08	2.03E-09	1.34E-10	0	0	0	0	0	0	0	1.34E-10	3.41E-10	7.29E-11	5.37E-12	-2.49E-09
AP	1.24E-02	9.27E-04	1.22E-03	1,45E-02	5.16E-04	4.47E-05	0	0	0	0	0	0	0	4.46E-05	1.86E-05	3.02E-05	1.96E-06	-3.57E-03
EP-freshwater	1.72E-04	1.17E-07	1.42E-05	1,87E-04	6.08E-08	1.02E-08	0	0	0	0	0	0	0	1.01E-08	9.26E-09	3.18E-07	9.00E-10	-3.41E-05
EP-marine	2.57E-03	2.33E-04	3.01E-04	3,10E-03	1.26E-04	2.05E-05	0	0	0	0	0	0	0	2.04E-05	4.18E-06	9.07E-06	9.04E-07	-7.41E-04
EP-terrestrial	2.78E-02	2.58E-03	3.11E-03	3,35E-02	1.40E-03	2.25E-04	0	0	0	0	0	0	0	2.24E-04	4.56E-05	9.99E-05	9.92E-06	-8.62E-03
POCP	9.78E-03	9.48E-04	1.02E-03	1,17E-02	5.05E-04	7.30E-05	0	0	0	0	0	0	0	7.29E-05	3.65E-05	3.03E-05	3.03E-06	-2.94E-03
ADP-minerals &metals ²	9.02E-05	4.36E-09	5.67E-05	1,47E-04	2.23E-09	3.10E-10	0	0	0	0	0	0	0	3.09E-10	3.91E-10	2.67E-10	8.82E-12	-1.46E-07
ADP-fossil ²	3.32E+01	2.40E+00	3.96E+00	3,95E+01	1.24E+00	1.16E-01	0	0	0	0	0	0	0	1.15E-01	1.99E-01	9.64E-02	3.52E-03	-1.05E+01
WDP ²	1.21E+00	8.12E-04	1.72E-01	1,39E+00	4.18E-04	9.96E-05	0	0	0	0	0	0	0	9.85E-05	6.55E-05	7.58E-04	4.33E-06	-4.58E-02

GWP - total (kg CO₂ eq): Global warming potential; GWP - fossil (kg CO₂ eq): Global warming potential of fossil fuels; GWP - biogenic (kg CO₂ eq): Global warming potential of biogenic fuels; GWP - luluc (kg CO₂ eq): Global warming potential of land use and land-use change; ODP (kg CFC-11 eq): Stratospheric ozone depletion potential; AP (mol H⁺ eq): Acidification potential, cumulative surplus; EP-freshwater (kg P eq): Eutrophication potential, fraction of nutrients reaching the final freshwater compartment; EP-marine (kg N eq): Eutrophication potential, fraction of nutrients reaching the final marine compartment; EP-terrestrial (mol N eq): Eutrophication potential, cumulative surplus; POCP (kg NMVOC eq): Tropospheric ozone formation potential; ADP-minerals&metals (kg Sb eq): Abiotic resource depletion potential for non-fossil resources; APD-fossil (MJ, v.c.n): Abiotic resource depletion potential for fossil resources; WDP (m3): Water deprivation potential (user), weighted water deprivation consumption.

Additional environmental indicators

Steel vehicle parapet Declared unit: 1 kilogram																		
Parameter	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG*	2.81E+00	1.82E-01	3.38E-01	3,33E+00	9.44E-02	8.92E-03	0	0	0	0	0	0	0	8.91E-03	1.50E-02	4.81E-03	2.66E-04	-1.06E+00
PM	2.45E-07	1.04E-08	6.41E-09	2,62E-07	5.17E-09	8.77E-10	0	0	0	0	0	0	0	8.76E-10	8.98E-10	4.66E-10	7.27E-11	-1.06E-07
IRP ¹	7.33E-02	2.25E-04	1.70E-02	9,06E-02	1.16E-04	1.15E-05	0	0	0	0	0	0	0	1.14E-05	1.91E-05	6.73E-04	3.74E-07	-2.10E-03
ETP-fw ²	3.69E+01	8.77E-02	1.73E+01	5,43E+01	4.40E-02	3.51E-03	0	0	0	0	0	0	0	3.42E-03	7.18E-03	6.68E-03	5.16E-03	-3.25E+00
HTP-c ²	4.34E-09	1.31E-11	6.08E-10	4,96E-09	6.96E-12	8.14E-12	0	0	0	0	0	0	0	8.13E-12	9.27E-13	4.26E-13	3.65E-13	-1.36E-09
HTP-nc ²	5.92E-08	1.10E-09	1.20E-08	7,23E-08	5.68E-10	2.10E-11	0	0	0	0	0	0	0	1.96E-11	1.00E-10	1.80E-11	1.48E-12	-2.20E-09
SQP ²	5.46E+00	3.06E-03	1.38E+00	6,84E+00	1.58E-03	2.50E-04	0	0	0	0	0	0	0	2.36E-04	2.53E-04	8.65E-03	3.42E-03	-1.20E+00

GWP-GHG: Global warming potential excluding biogenic carbon; PM (disease incidence): Potential for disease incidence due to particulate matter emissions; IRP (kBq U235 eq): Human exposure potential relative to U235; ETP-fw (CTUe): Comparative unit toxic potential for ecosystems - freshwater; HTP-c (CTUh): Comparative unit toxic potential for ecosystems - carcinogenic effects; HTP-nc (CTUh): Comparative unit toxic potential for ecosystems - non-carcinogenic effects; SQP (Pt): Soil quality potential index.

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, from the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The ionizing radiation potential of the ground, due to radon or from some construction materials, is not measured with this parameter either.

Notice 2: The results of this indicator of environmental impact should be used with caution, since the uncertainties of the results are high and the experience with this parameter is limited.

**This indicator accounts for all greenhouse gases except for the absorption and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, the indicator is identical to the total GWP, except that the conversion factor for biogenic CO₂ is set to zero.*

Use of resources

Steel vehicle parapet Declared unit: 1 kilogram																		
Parameter	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	3.18E+00	5.73E-03	5.73E-01	3,76E+00	2.96E-03	4.77E-02	0	0	0	0	0	0	0	3.17E-04	4.90E-04	1.65E-02	1.18E-05	-1.07E-01
PERM*	0	0	4.74E-02	4,74E-02	0	-4.74E-02	0	0	0	0	0	0	0	0	0	0	0	0
PERT	3.18E+00	5.73E-03	6.20E-01	3,81E+00	2.96E-03	3.18E-04	0	0	0	0	0	0	0	3.17E-04	4.90E-04	1.65E-02	1.18E-05	-1.07E-01
PENRE	3.32E+01	2.40E+00	3.79E+00	3,94E+01	1.24E+00	2.91E-01	0	0	0	0	0	0	0	1.15E-01	1.99E-01	9.64E-02	3.52E-03	-1.05E+01
PENRM*	0	0	1.76E-01	1,76E-01	0	-1.76E-01	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	3.32E+01	2.40E+00	3.96E+00	3,95E+01	1.24E+00	1.16E-01	0	0	0	0	0	0	0	1.15E-01	1.99E-01	9.64E-02	3.52E-03	-1.05E+01
SM	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	3.49E-02	4.63E-05	5.18E-03	4,01E-02	2.39E-05	3.75E-06	0	0	0	0	0	0	0	3.69E-06	3.86E-06	4.54E-05	1.67E-07	-1.85E-03

PERE (MJ, v.c.n.): Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM (MJ, v.c.n.): Use of renewable primary energy used as raw materials; PERT (MJ, v.c.n.): Total use of renewable primary energy; PENRE (MJ, v.c.n.): Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials; PENRM (MJ, v.c.n.): Use of non-renewable primary energy used as raw materials; PENRT (MJ, v.c.n.): Total use of non-renewable primary energy; SM (kg): Use of secondary materials; RSF (MJ, v.c.n.): Use of renewable secondary fuels; NRSF (MJ, v.c.n.): Use of non-renewable secondary fuels; FW (m3): Net use of running water resources.

* The energy used as raw material was declared according to option B of PCR 2019:14.

Waste categories

Steel vehicle parapet Declared unit: 1 kilogram																		
Parameter	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	6.07E-04	1.55E-05	3.40E-04	9,63E-04	7.97E-06	7.92E-07	0	0	0	0	0	0	0	7.90E-07	1.33E-06	2.88E-07	2.30E-08	-1.22E-04
NHWD	1.46E-01	7.64E-05	1.22E-02	1,58E-01	3.93E-05	3.25E-05	0	0	0	0	0	0	0	4.34E-06	6.71E-06	4.95E-05	4.23E-02	-1.36E-02
RWD	5.03E-05	1.39E-07	1.18E-05	6,22E-05	7.18E-08	6.59E-09	0	0	0	0	0	0	0	6.56E-09	1.20E-08	5.53E-07	2.34E-10	-1.25E-06

HWD (kg): Residuos peligrosos eliminados; **NHWD (kg):** Residuos no peligrosos eliminados; **RWD (kg):** Residuos radiactivos eliminados.

Output flows

Steel vehicle parapet Declared unit: 1 kilogram																		
Parameter	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0,00E+00	0	0
MFR	0	0	8.10E-04	8,10E-04	0	9.10E-04	0	0	0	0	0	0	0	0	0	9.50E-01	0	0
MER	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0,00E+00	0	0
EEE	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0,00E+00	0	0
EET	0	0	0	0,00E+00	0	0	0	0	0	0	0	0	0	0	0	0,00E+00	0	0

CRU (kg): Components for reuse; MFR (kg): Materials for recycling; MER (kg): Materials for energy recovery; EEE (MJ): Electrical energy exported; EET (MJ): Thermal energy exported

Biogenic carbon content

Steel vehicle parapet kgC/ud declarada	
Producto	0
Embalaje	1.16E-03

6. Additional environmental information.

6.1. Other indicators.

The production of steel vehicle parapets by the companies associated with SIMEPROVI generates scrap metal as a byproduct.

	Parapets manufacturing kg/declared unit
Scrap	3.12E-02

	Galvanizing kg/declared unit
Scrap	7.88E+00
Dross	6.11E+00
Ashes	1.03E+01

6.2. Emissions to indoor air.

Steel vehicle parapets do not generate significant emissions to indoor air during their service life.

6.3. Emissions to solid and water.

Steel vehicle parapets do not generate significant emissions to the ground or water during their service life.

Annex - Conversion to linear metre

Conversion coefficient from the declared unit to the linear metre according to the mass per metre of the parapet.

Steel vehicle parapets <i>Declared unit: 1 kilogram</i>											
Parameter	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total (kg CO ₂ eq)	2,81E+00	1,82E-01	3,35E-01	9,44E-02	1,10E-02	0,00E+00	8,91E-03	1,50E-02	4,81E-03	2,66E-04	-1,06E+00

The following example illustrates how to calculate the environmental parameter data from the EPD, expressed in the tables above to produce 1 kilogram of steel vehicle parapet (declared unit), in linear meter increments. To do this, simply multiply all the data in the tables above by the weight of one linear meter of fencing.

The table below shows the data per linear meter for a weight of 72 kilograms per linear meter: the data in each cell of the table above has been multiplied by 72 kg; for example, in cell A1, $2,81E+00 \times 72 = 2,03E+02$.

Steel vehicle parapets <i>Results for 1 linear meter</i>											
Parameter	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total (kg CO ₂ eq)	2,03E+02	1,31E+01	2,41E+01	6,80E+00	7,95E-01	0,00E+00	6,41E-01	1,08E+00	3,46E-01	1,91E-02	-7,65E+01

References

[1] EN 15804:2012+A2:2020/ AC:2021. Sustainability of construction Works. Environmental product declarations. Core rules for the product category of contruction.

[2] General Programme Instructions of GlobalEPD 3rd revision. AENOR. October 2023.

[3] Reglas de Categoría de Producto “Sistemas metálicos de contención de vehículos” RCP-010-AENOR GlobalEPD. Septiembre de 2024.

[4] EN ISO 14025:2010 Environmental labels and declarations Tpye III engironmental delcarations. Principles and procedures (ISO 14025:2006).

[5] EN ISO 14040:2006/A1:2021. Environmental management. Life cycle assessment. Principles and framework. Amendment 1. (ISO 14040:2006/ Amd 1:2020).

[6] EN ISO 14044:2006/A2:2021. Environmental management. Life cycle assessment. Requirements and guidelines. Amendment 2. (ISO 14044:2006/Amd 2:2020).

[7] I Life Cycle Assessment Report for sector Environmental Product Declaration for galvanized steel metal containment systems for highways of SIMEPROVI, prepared by Abaleo S.L., september 2026. Version 4.

[8] Environmental impact assessment databases and methodologies applied using SimaPro 10.4.0.0.

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