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A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

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Environmental Product Declaration

Butterfly valves: wafer type FL(w), LUG(w) type and double flanged FG(w), BBNV(w) and FFNV(w) type.

EN ISO 14025:2010

EN 15804:2012 + A2:2019

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

Date of first issue: 2026-03-26

Expiry date: 2031-03-25

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

Registration code: GlobalEPD EN15804-213

SIGEVAL

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 Programmes.

European Standard EN 15804:2012+A2:2019 serves as the basis for this EPD.

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 organisation

SIGEVAL, S.A. was incorporated as a public limited company on 15 November 1974, its main activity being the manufacture and marketing of butterfly valves for industry.

With over 50 years' experience, it has established itself as one of Europe's leading manufacturers and exporters of butterfly valves. The company has moved from focusing on the domestic market to a process of commercial internationalisation.

SIGEVAL, S.A. is located in the municipality of Torrejón de Ardoz and its address is C/ Sauce, 49; Polígono Industrial Torrejón de Ardoz; Madrid; Spain.

SIGEVAL is committed to environmental sustainability. The company has an environmental management system in accordance with ISO 14001. Measures implemented have reduced consumption of paper, wood and cardboard, as well as the generation of hazardous and non-hazardous waste. The company has also recently renewed its ISO 9001:2015 and ISO 14001:2015 quality and environmental sustainability certificates, issued by AENOR.

Its product range includes concentric rubber-seated butterfly valves and other valves considered special for their design, materials or technical performance. The company is also dedicated to innovation and continuous improvement of its products and processes.

These valves are critical components in fluid handling systems and are designed to enable regulation, interruption or control of the passage of liquids, gases and powdered products. They are notable for their bubble-tightness assurance at nominal pressure, ensuring strength and durability.

The manufacturing process focuses on high quality and reliability, with seven critical points controlled, including tightness and mechanical strength testing according to EN 12266-1, as well as ageing and operating cycle testing.

1.2. Scope of the Declaration

This Environmental Product Declaration (EPD) details all the environmental information relating to the environmental profile based on the Life Cycle Assessment (LCA) of the FL(w), LUG(w), FG(w), BBNV(w) and FFNV(w) industrial valves manufactured by Sigeval at its Torrejón de Ardoz plant.

These three valve types have similar technical characteristics and are manufactured by identical processes, using the same production facilities and procedures. The only difference between them lies in their specific configuration and application, which explains their different trade names.

The product analysed in this study is therefore considered as one product, including the three types mentioned above, as they share the same technological and manufacturing base.

FL(w) valves and variants are manufactured according to ISO PN 10/16 and EN 593 / 558 / ISO 5752 / API standards and are used in sectors such as water supply and water treatment, shipbuilding, general industry, pharmaceuticals, food, oil & gas and fire protection, thanks to their standard metal body construction and seat in rubber chosen according to the fluid characteristics.

The life cycle assessment (LCA) of type FL(w), LUG(w), FG(w), BBNV(w) and FFNV(w) valves covered a cradle-to-gate scope with options, modules C1-C4 and D, and additional modules A4 and A5.

1.3. Life cycle and compliance

This EPD has been developed and verified in accordance with EN ISO 14025:2010 and EN 15804:2012+A2:2019 and the following Category Rules:

INFORMATION ON PRODUCT CATEGORY RULES	
Descriptive title	Sustainability in construction. Environmental product declarations. Basic product category rules for construction products.
Registration code and version	EN 15804:2012+A2:2019 / AC 2021
Date of issue	2021
Compliance	EN 15804:2012 + A2:2019
Programme Manager	AENOR

This Environmental Declaration includes the following life cycle stages:

System boundaries.
Information modules considered

Product stage	A1	Raw material supply	X
	A2	Transport to the factory	X
	A3	Manufacturing	X
Construction	A4	Transport to site	X
	A5	Installation / construction	X
Use stage	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	In-service energy use	ND
	B7	In-service water use	ND
End of life	C1	Deconstruction / demolition	X
	C2	Transport	X
	C3	Waste processing	X
	C4	Disposal	X
	D	Reuse, recovery and/or recycling potential	X

X = Module included in the LCA; NR = Module not relevant; ND = Module not evaluated

This EPD includes the life cycle stages listed in table 1-2. This EPD is cradle-to-gate type with modules C and D (A1-A3, C1-C4, D) and additional modules A4 and A5.

This EPD may not be comparable with EPDs developed under other Programmes in accordance with different reference documents; in particular it may not be comparable with EPDs not prepared in accordance with EN 15804+A2.

Similarly, this EPD may not be comparable if the source of the data is different (e.g. the databases), not all the relevant information modules are included, or they are not based on the same scenarios.

Comparison of construction products must be made on the same function, applying the same functional unit and at the building (or architectural or engineering work) level, i.e. including the performance of the product throughout its life cycle, as well as the specifications of EN ISO 14025, section 6.7.2.

2. The product

2.1. Product identification

This EPD covers **SIGEVAL S.A.**'s bare shaft valves of type **FL(w), LUG(w), FG(w), BBNV(w) and FFNV(w)**.

They are devices designed for efficient regulation of flows of various fluids (liquids, gases, powdered products) in a wide range of sectors, in construction, industry and services.

The main function of these devices is to control, regulate or cut off the flow of fluids within the installations, to ensure system safety, tightness and proper operation.

Main components

- **Body:** epoxy-coated metal body, suitable for mounting between PN 10/16 or ANSI 150 flanges.
- **Disc**: pressure resistant design, coupled to central shaft.
- **Elastomer seat**: designed to guarantee sealing in both fluid flow and fluid blocking.
- **Shafts and bushes**: allowing for smooth rotation and durability.
- **Sealing elements**: O-rings and special coatings.

2.2. Product performance

The manufacturer declares the following information on the product technical specifications.

- The valves are manufactured according to ISO PN 10/16 and EN 593/558/ISO 5752/DIN/API standards.
- The manufacturing process focuses on high quality and reliability, with seven critical points controlled, including tightness and mechanical strength testing according to EN 12266-1, as well as ageing and operating cycle testing.
- Tested according to ISO 5208 / EN 12266-1, ISO 5211, EN 558, API 609, with functional certifications (SIL) in different models.
- Operation between -50°C and +200°C, and pressures of 10, 16 or 25 bar.




Product features

Type	Value	Units
FL(w)	25 - 1200	DN
FL(w)	1.5 - 960	kg
LUG(w)	25 - 1200	DN
LUG(w)	1.9 - 2900	kg
FG(w)	80 - 1600	DN
FG(w)	5.2 - 2150	kg
BBNV(w) FFNV(w)	40 - 1200	DN
BBNV(w) FFNV(w)	5.5 - 1460 6.2 - 1660	kg

Packaging material per kg of product

Material	Content	Units
Recycled cardboard	2.82E-02	%
Corrugated paper	8.36E-03	%
Wood	9.25E-02	%
Plastic (50% rec.)	1.35E-03	%

No hazardous substances listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorisation" are used during the product life cycle in a percentage greater than 0.1% by weight of the product.

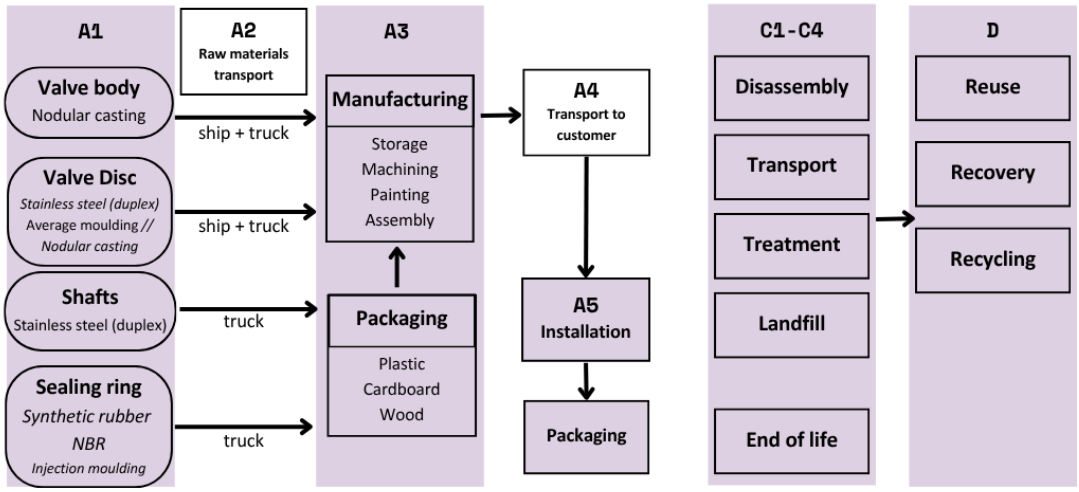
2.3. Product composition

The composition declared by the manufacturer is as follows

Product composition

Material	Content	Units
Nodular cast iron	77	%
Stainless steel (duplex)	18	%
EPDM / NBR*	4	%
Epoxy paint	1	%

Process flow diagram



3. Information on the LCA

3.1. Life cycle assessment

The Life Cycle Assessment Report for the sector EDP for SIGEVAL's butterfly valves of September 2025 was produced by the company Afyc Innovación y Gestión using the ecoinvent 3.11 database, cut-off allocation (June 2025) and openLCA 2.5 software, which is the most up-to-date version available at the time the LCA was carried out.

The study was carried out using specific data from Sigeval S.A.'s manufacturing plant, located at Polígono Industrial Torrejón de Ardoz, 28850, Torrejón de Ardoz (Madrid), Spain, and corresponds to production data for the year 2024. This was the most recent year and is considered representative.

The LCA study follows the recommendations and requirements set out in international standards ISO 14040:2006, ISO 14044:2006 and European standard EN 15804:2012+A2:2019/AC:2021.

The scope of this EPD is cradle-to-grave production of butterfly valves. In this case, the cradle-to-gate with options approach has been adopted, comprising modules A1-A3 (product stage), modules C1-C4 (end of life) and module D (benefits and burdens beyond the system boundary). Additional modules A4, transport to the customer, and A5, product installation, have also been added.

The only flows that have been excluded are those which could not be reliably quantified due to their low relevance or lack of specific data. This includes:

- Fugitive emissions during transport and internal storage at the plant.
- Internal transport of parts between production areas.
- Small sealing components of the final product.
- Type B stages (use, maintenance, repair, etc.), as their impact per unit of product is considered negligible compared to the production and end-of-life stages.

3.2. Declared unit

The declared unit is one kilogram (1 kg) of butterfly valves.

3.3. Allocation criteria

A mass-based allocation has been applied, as the products included in the study have similarities in terms of materials used and manufacturing processes.

This choice allows for proportional distribution of the environmental impacts among the products analysed and has been applied to the plant's general consumption (consumption of raw materials and energy), emissions, transport and waste.

The environmental impacts have been calculated on a per unit mass basis. To express impacts per functional unit.

3.4. Cut-off criteria

In the quantification of material and energy flows, cut-off criteria in accordance with EN 15804 +A2 were used. Material flows of less than 1% of the cumulative mass of inputs and outputs can therefore be excluded, unless their environmental relevance is significant.

Similarly, energy flows of less than 1% of the cumulative energy inputs and outputs can be excluded, unless their environmental relevance is significant.

The processes of repair, maintenance, replacement, refurbishment, in-service water use, production and maintenance of equipment, as well as employee travel have been excluded.

In any case, the sum of the flows excluded does not exceed 5% of the mass, energy or overall environmental impact.

The cut-off criterion has not been applied to omit available data with relevant impacts.

3.5. Data representativeness, quality and selection

To model the butterfly valve manufacturing process, production data from SIGEVAL's Torrejón de Ardoz plant for the year 2024 was used, which was considered representative of current manufacturing conditions.

Data was obtained from this facility on consumption of materials, fuels and energy, distances from suppliers and waste generation and transport of waste to the waste manager.

The guidelines of the reference standard were used to represent product end-of-life scenarios.

The ecoinvent 3.11 (March 2025) and Environmental Footprint 3.1 databases were used where necessary, as the latest version available at the time of the LCA.

OpenLCA 2.5 software was used for the inventory data, for modelling the LCA and for calculating the environmental impact categories required by the reference standard, which was the most up-to-date version available at the time of the study.

This study has been developed in accordance with the data quality requirements set out in Annex E of the EN 15804:2012+A2:2019 standard.

- Data representative of the technological development actually applied in the manufacturing processes were selected. Where information was not available, data representative of average technology were used.
- Data as close as geographically possible were selected, using regional average data where applicable.
- The most recent data possible were used.

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 the Product and Organisation Environmental Footprint guidance were applied.

- The geographical scope of the data corresponds to average data from a larger area including the study area. Classification: Very good quality
- Representative of the production technology or similar technologies, e.g. in the manufacture of colour additives. Classification: Excellent quality.
- Generic data were taken in 2024: Very good quality.

3.6. Other calculation rules and assumptions

The material composition of each valve varies according to its type and size. In order to provide an aggregate representation of all products, a weighted average composition was calculated.

Minor valve components that account individually for less than 1% of the total weight and total environmental impact were excluded from the study on the basis of relevance. Their mass was redistributed proportionally among the other components considered, without significantly affecting the results of the LCA.

This calculation was made using sales data by nominal diameter for the year 2024, so that greater weight was given to the composition of those diameters with the highest sales volumes by weight.

Subsequently, in order to integrate the three types of valves into a single functional unit, a second weighting was applied based on the relative sales of each type over the year in question.

This value was used as the composition resulting from the declared unit of 1 kg of valve. This unit was chosen because it is technically and methodologically representative, as well as facilitating its application in other studies and comparability with other EPDs in the market.

Comparing the results obtained for the impact of the different product types separately shows low variability with deviations of less than ±5%.

As the three products are technically very similar and share the same manufacturing system, the observed variability is not environmentally significant. For this reason, a grouped EPD was chosen for this project, which is representative, methodologically valid and consistent with the life cycle assessment approach, with no loss of rigour or reliability in the results.

Information on energy use:

- The GWP of the electricity mix specifically applied for A1-A3 in kg CO_2e/kWh from the use of the residual mix or the modelled energy mix is: 0.363 kgCO_2e/kWh.
- The ecoinvent v3.11 high voltage dataset was edited to reflect the share of each energy source declared by the utility company in the Spanish National Markets and Competition (CNMC) residual labelling section (2024).
- The transport of raw materials from the supplier to Sigeval's production plant has been modelled by land transport with Euro 6 regulations and by sea transport.
- For modules C1 to C4, the following bibliographic data were used for the purpose of estimating the environmental impacts associated with the product end-of-life stage.
- Subsequent treatment of the waste generated was selected on the basis of official statistical data, namely Developer Environmental Footprint (EF).
- Energy consumption is considered for installation under A5 and Dismantling under C1 for valves of over 25 kg.

4. System boundaries, scenarios and additional technical information

4.1. Upstream processes

Module A1 includes the processes of extraction and processing of the raw materials needed to manufacture the various components of the butterfly valve under study, as well as the transformation processes for the production of the different components that make up the valve.

Module A1 also includes the generation of imported electricity and gas, which are consumed in the product manufacturing processes.

Module 2 covers the transport of parts and raw materials from their manufacturing sites to Sigeval's plant at Torrejón de Ardoz (Madrid, Spain).

4.2. Manufacture of the product

Module A3 considers the consumption of auxiliary materials for production (auxiliary materials and general plant consumption); the production of the packing necessary for distribution of the product to the customer; emissions to air and water; and the transport to the waste manager of the waste generated during this stage of the life cycle.

The activities considered are:

- Storage: The parts received are stored temporarily until the order is issued.
- Machining: The parts require edge correction by sanding and machining processes for final assembly.
- Painting: The valve body is coated with epoxy paint. To ensure adhesion, the workpiece is preheated beforehand.
- Assembly: Manual assembly of all valve parts.
- Packing: The assembled valves are packed in boxes individually or in groups, using cardboard and protective plastic film.

4.3. Construction process

This stage comprises transport from Sigeval's manufacturing plant in Torrejón de Ardoz (Spain) to the final customers. A distribution scenario is modelled for this purpose by weighting the land and sea distance to final customers with the sales per country of the product during 2024.

Module A4 - Transport to site

Scenario information	Unit (expressed per functional unit or per declared unit)
Litres of diesel: - Euro 6 lorry (GVW: 16-32 t) - Ship.	- 0.03665 kg/tkm - 0.02952 kg/tkm
Distance - Euro 6 lorry (GVW: 16-32 t) - Ship	- 1,761.205 km - 622.954 km
Capacity utilisation (including no-load return)	50%
Capacity utilisation factor (factor: = 1 or < 1 or ≥ 1 for compressed or nested packaged products)	Not applicable

Module A5 – Installation

- System modelling for module A5 took into account the packing materials used in the preparation and shipment of butterfly valves, materials, transport to the waste manager and waste treatment.

- Energy consumption associated with the assembly and disassembly of the butterfly valve was considered. Activities related to the general installation, such as earthworks, civil works or infrastructure preparation, are considered to be inherent in the building construction process.
- The energy consumption accounted for is exclusively that for the use of cranes for handling large valves, at a representative average value of 0.015 kWh per operation.

4.4 Use linked to the building structure

No significant maintenance, repair or replacement interventions are foreseen during the period of use of the product. For this reason, modules B1 to B5 are considered not relevant (NR).

4.5 End-of-life stage

Stage C1 – Dismantling

At the end of its useful life, the product will be removed, either as part of a building renovation or during demolition. For disassembly of valves above 25 kg: crane-assisted disassembly with an estimated consumption of 0.015 kWh (0.054 MJ) per kilogram lifted.

C2 -Transport to recycling plant

Product waste is transported in a Euro 6 regulation-compliant heavy goods vehicle (16-32 t), to be managed either by depositing in landfill sites or by recycling. An average distance of 80 km is considered for waste generated from the building site to the final destination.

C3 - Waste treatment

This stage covers operations necessary to prepare the end-of-life product materials for recycling or final disposal. In the case of the metal valve assessed, it has been assumed that no pre-treatment is carried out on site.

For ferrous metals, which represent 95.8% of the total mass, a recovery efficiency factor of 85% is applied, resulting in 0.81 kg of recoverable scrap.

C4 – Disposal

This stage models final disposal of the non-recovered fractions from dismantling the valve.

- Ring elastomers: Due to their low mechanical recyclability, EPDM and NBR are assumed to be sent 100% (0.042 kg) to incineration without energy recovery.
- Losses in the disassembly process: Disassembly process losses: For ferrous metals (cast iron and stainless steel), it is assumed that 85% of the mass is recovered as recyclable scrap, while the remaining 15% is sent as non-recoverable waste, amounting to 0.144 kg per functional unit.

Parameter	Unit (expressed per functional unit)
Collection process, specified by type	1 kg collected separately
	0 kg collected with mixed construction waste
Recovery system, specified by type	0 kg for reuse
	0.81 kg for recycling
	0 kg for energy recovery
Disposal, specified by type	0.15 kg for final disposal (landfill) 0.04 kg for incineration
Transport to manager	80 km

4.6 Benefits and burdens beyond the system

Module D: the net impacts related to the recycling potential beyond the system boundary have been calculated as the impacts associated with the virgin material replaced by the recycled material, taking into account the avoided impacts of secondary materials entering and leaving the system.

In the case of the valve, this is removed as a whole at the use stage and is not contaminated by other substances, so the metal part can be recycled.

Initial modelling is performed with the scrap rates from the ecoinvent 3.11 database; therefore, the benefit is the difference between this scrap input and the 85% recycling rate, using bibliographic sources on recycling rates from the Developer Environmental Footprint (EF).

5. Declaration of LCA and LCI environmental parameters

Environmental impacts

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.

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	4.51E+00	7.30E-01	-2.22E-01	5.02E+00	4.03E-01	3.24E-01	6.64E-03	1.49E-02	0.00E+00	2.09E-01	-4.43E-01
GWP-fossil	kg CO_2 eq	4.40E+00	7.29E-01	8.24E-02	5.44E+00	4.03E-01	1.06E-02	6.63E-03	1.49E-02	0.00E+00	1.51E-01	-4.44E-01
GWP-biogenic	kg CO_2 eq	1.07E-01	-3.60E-05	-3.05E-01	6.31E-03	2.18E-04	3.13E-01	8.96E-07	1.04E-05	0.00E+00	5.79E-02	1.66E-03
GWP-luluc	kg CO_2 eq	4.32E-03	3.42E-04	1.15E-03	6.13E-03	1.47E-04	2.08E-06	9.05E-07	5.03E-06	0.00E+00	6.59E-06	-9.12E-05
ODP	kg CFC11 eq	5.10E-08	1.09E-08	3.28E-09	6.21E-08	8.21E-09	1.84E-10	1.14E-10	3.25E-10	0.00E+00	1.05E-10	-1.82E-09
AP	mol H^+ eq	3.02E-02	1.95E-02	1.54E-02	6.64E-02	2.91E-03	4.24E-05	2.24E-05	3.21E-05	0.00E+00	5.51E-05	-1.51E-03
EP-freshwater	kg P eq	3.32E-03	2.63E-05	3.59E-05	3.42E-03	2.52E-05	2.32E-06	1.51E-06	1.04E-06	0.00E+00	9.59E-06	-1.74E-04
EP-marine	kg N eq	4.65E-03	4.93E-03	7.99E-03	1.78E-02	7.26E-04	1.66E-05	4.74E-06	7.72E-06	0.00E+00	4.74E-04	-3.65E-04
EP-terrestrial	mol N eq	4.76E-02	5.48E-02	8.74E-02	1.93E-01	8.01E-03	1.37E-04	4.76E-05	8.34E-05	0.00E+00	2.02E-04	-3.92E-03
POCP	kg NMVOC eq	1.60E-02	1.49E-02	2.10E-02	5.29E-02	2.79E-03	4.64E-05	1.91E-05	5.09E-05	0.00E+00	6.29E-05	-1.36E-03
ADP-minerals&metals [2]	kg Sb eq	6.16E+01	9.08E+00	1.45E+00	7.31E+01	5.58E+00	2.27E-01	1.79E-01	2.12E-01	0.00E+00	7.35E-02	-4.64E+00
ADP-fossil [2]	MJ	1.83E-04	8.69E-07	1.60E-06	1.86E-04	1.22E-06	7.59E-08	6.42E-08	5.25E-08	0.00E+00	1.49E-08	1.63E-07
WDP [2]	m3 world eq depriv	1.61E+00	2.71E-02	2.01E-01	1.82E+00	2.72E-02	4.71E-03	1.43E-03	1.13E-03	0.00E+00	9.31E-03	-2.92E-02

GWP-total: Global warming potential; **GWP-fossil**: Global warming potential of fossil fuels; **GWP-biogenic**: Biogenic global warming potential; **GWP-luluc**: Global warming potential of land use and land use change; **ODP**: Stratospheric ozone depletion potential; **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**: Photochemical ozone creation potential; **ADP-minerals&metals**: Abiotic depletion potential for non-fossil resources; **APD-fossil**: Abiotic depletion potential for fossil resources; **WDP**: Water deprivation potential (user), deprivation-weighted water consumption. **NR**: Not relevant

Additional environmental impacts

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total-IPCC	kg CO_2 eq	4.45E+00	7.30E-01	8.46E-02	5.52E+00	4.03E-01	1.06E-02	6.64E-03	1.49E-02	0.00E+00	1.91E-01	-4.45E-01
PM	Incidence of diseases	3.48E-07	2.46E-08	3.80E-08	4.49E-07	2.68E-08	4.20E-10	9.48E-11	1.12E-09	0.00E+00	4.85E-10	-3.28E-08
IRP [1]	kBq U235 eq	6.16E-01	4.41E-03	6.44E-03	5.47E-01	6.00E-03	5.29E-03	5.22E-03	2.56E-04	0.00E+00	5.37E-04	-4.53E-03
ETP-fw [2]	CTUe	4.07E+01	6.87E-01	6.26E-01	4.40E+01	6.89E-01	3.15E-02	1.20E-02	2.85E-02	0.00E+00	5.31E-01	-1.17E+00
HTP-c [2]	CTUh	8.33E-09	1.47E-10	1.75E-10	8.83E-09	7.05E-11	4.69E-12	1.62E-12	2.51E-12	0.00E+00	5.97E-12	-6.43E-10
HTP-nc [2]	CTUh	3.84E-07	2.56E-09	1.63E-09	3.89E-07	3.16E-09	2.68E-10	6.59E-11	1.34E-10	0.00E+00	5.80E-10	-7.29E-10
SQP [2]	-	2.38E+01	1.21E+00	1.24E+01	3.76E+01	2.87E+00	3.02E-02	8.16E-03	1.27E-01	0.00E+00	9.49E-02	-7.92E-01

PM: Potential incidence of disease due to particulate matter (PM) emissions; **IRP**: Potential human exposure efficiency relative to U235; **ETP-fw**: Potential comparative toxic unit for ecosystems - freshwater; **HTP-c**: Potential comparative toxic unit for ecosystems [*sic*: humans] - carcinogenic effects; **HTP-nc**: Potential comparative toxic unit for ecosystems [*sic*: humans] - non-carcinogenic effects; **SQP**: Soil quality potential index; **GWP-total-IPCC:** Potencial de calentamiento global definido por IPCC **NR**: Not relevant

Note 1: This impact category deals mainly with the potential impacts of low doses of ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure due to the disposal of radioactive waste in underground facilities. The ionising radiation potential of soil due to radon or any building materials is also not measured with this parameter.

Note 2: The results of this environmental impact indicator must be used with caution, as the uncertainties in the results are high and experience with this parameter is limited.

Use of resources

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.78E+00	7.29E-02	3.54E+00	1.20E+01	8.33E-02	5.17E-03	4.20E-03	3.50E-03	0.00E+00	5.20E-03	-8.75E-02
PERM	MJ	0.00E+00	0.00E+00	1.83E+00	1.83E+00	0.00E+00	-2.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	8.78E+00	7.29E-02	1.71E+00	1.02E+01	8.33E-02	2.26E+00	4.20E-03	3.50E-03	0.00E+00	5.20E-03	-8.75E-02
PENRE	MJ	6.16E+01	9.08E+00	1.45E+00	7.31E+01	5.58E+00	2.27E-01	1.79E-01	2.12E-01	0.00E+00	7.35E-02	-4.64E+00
PENRM	MJ	2.09E+00	0.00E+00	-1.25E+00	8.42E-01	0.00E+00	-5.39E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.95E+01	9.08E+00	2.71E+00	7.22E+01	5.58E+00	2.81E-01	1.79E-01	2.12E-01	0.00E+00	7.35E-02	-4.64E+00
SM	kg	2.62E-01	0.00E+00	0.00E+00	2.62E-01	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	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	0.00E+00	0.00E+00	0.00E+00
FW	m3	3.51E-02	6.24E-04	4.75E-03	4.00E-02	6.27E-04	5.09E-05	3.35E-05	2.60E-05	0.00E+00	-5.16E-05	-8.23E-04

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 resources; **SM**: Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW**: Net use of fresh water; **NR**: Not relevant

Waste categories

Parameter	Units	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	1.55E+00	9.03E-03	5.15E-03	1.58E+00	5.71E-03	6.84E-04	1.37E-04	2.19E-04	0.00E+00	2.84E-03	-6.64E-03
NHWD	kg	1.22E+01	6.77E-02	1.03E-01	9.84E+00	5.78E-02	9.94E-02	1.26E-03	2.34E-03	0.00E+00	4.29E-01	-5.98E-02
RWD	kg	1.53E-04	1.08E-06	1.64E-06	1.34E-04	1.48E-06	1.22E-06	1.20E-06	6.32E-08	0.00E+00	1.29E-07	-1.12E-06

HWD: Hazardous waste disposed of; **NHWD**: Non-hazardous waste disposed of; **RWD**: Radioactive waste disposed of; **NR**: Not relevant

Output flows

Parameter	Units	A1-A3	A4	A5	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	0.00E+00
MFR	kg	5.46E-02	0.00E+00	3.66E-02	0.00E+00	0.00E+00	8.14E-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	0.00E+00
EE	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

CRU: Components for re-use; **MFR**: Materials for recycling; **MER**: Materials for energy recovery; **EE**: Exported energy; **NR**: Not relevant

Information on biogenic carbon content

Biogenic carbon content	Units	Result per declared functional unit
Biogenic carbon content (product)	kgC	0.00E+00
Biogenic carbon content (packaging)	kgC	4.84E-02

References

[1] General Instructions for the GlobalEPD Programme 3rd revision 09-10 2023

[2] EN ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations. Principles and procedures (ISO 14025:2006).

[3] EN 15804:2012+A2:2019 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.

[4] EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products.

[5] EN ISO 14040:2006. Environmental management. Life cycle assessment. Principles and framework.

[6] EN ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

[7] Life Cycle Assessment Report for the product's Environmental Product Declaration: Butterfly valves: wafer type FL(w), LUG(w) type and double flanged type FG(w), BBNV(w) and FFNV(w), from the company SIGEVAL, written by AFYC Innovación y Gestión, February 2026. Version 1

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