# Environmental Product Declaration

EPD of multiple products based on the average results of the product group in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for

## Cavity Stop Sock

from

## ARC Building Solutions Ltd

| | |
|---|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| Type of EPD: | EPD of multiple products from a company |
| EPD registration number: | EPD-IES-0026148:002 |
| Version date: | 2025-10-27 |
| Validity date: | 2030-10-09 |

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

# Programme information

| | |
|---|---|
| Programme: | The International EPD® System |
| Address: | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| Website: | www.environdec.com |
| Email: | support@environdec.com |

## Accountabilities for PCR, LCA and independent, third-party verification

### Product Category Rules (PCR)

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

Product Category Rules (PCR): PCR 2019:14 Version 2.0.1, Construction Products, EN 15804:2012 + A2:2019 Sustainability of Construction Works.

PCR review was conducted by: The Technical Committee of the International EPD® System.

Review chair:

Rob Rouwette (chair), Professional Consultant, start2see, Australia.

Noa Meron (co-chair), LCA Team Lead, thinkstep-anz, New Zealand.

The review panel may be contacted via support@environdec.com.

### Life Cycle Assessment (LCA)

LCA accountability: Valpak Sustainability Consulting

### Third-party verification

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

Individual EPD verification by individual verifier without a pre-verified LCA/EPD tool

Third-party verifier: Dr Callum Hill, JCH Industrial Ecology Ltd

Approved by: The International EPD® System

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

ARC Building Solutions Ltd is the owner of this EPD and has the sole ownership, liability and responsibility of the EPD.
**Contact: ARC Customer Support, email: intsales@arcbuildingsolutions.co.uk**

# Company information

## Owner of this EPD:

ARC Building Solutions Ltd, Unit J, Gildersome Spur, Leeds, LS27 7JZ.

Contact clair.richardson@arcbuildingsolutions.co.uk

## About ARC:

With over 15 years of industry experience we are a trusted leader in fire protection efficient solutions who deliver innovative systems that keep buildings safe sustainable and complaint with the highest industry standards.

This product is designed to deliver life-saving passive fire protection where it matters most. Rigorously tested and trusted by industry professionals, our solutions help prevent the spread of fire, safeguarding people, homes, and the future of our built environment.

Our mission is to be industry pioneers, leading the way through innovation and collaboration with our customers and industry partners. We deliver unrivalled quality and service. This is achieved through investment in our people, fueling lasting commercial relationships and delivering excellence.

## Product related or management system related certifications:

ISO 9001, ISO 14001 & ISO 45001, all referring to the company head office and production site.

## Name and location of production site:

Data used for this EPD is related to ARC Building Solutions head office and production facility, located in Leeds, England.

Address: Unit J, Gildersome Spur, Leeds, LS27 7JZ.The manufacturing site is located at ARC Building Solutions Ltd, Unit J Gildersome Spur, Leeds, LS27 7JZ, UK.

# Product information

## Product name:

Cavity Stop Sock (CCS)

## Product description:

ARC's Cavity Stop Sock restricts the spread of flames within the cavity of external masonry walls. It is ideally suited for providing a cavity barrier within the external wall cavity around windows and openings, in line with a separating wall or floor as required in Approved Document B, and for closing the cavity at eaves level.

Product identification:

ARC Cavity Stop Sock is manufactured using rock mineral wool which achieves a fire classification of Euroclass A1 as defined in BS EN 13501-1. It has been fire tested in accordance with the principles given in EN1366-4 and achieved up to four hours fire integrity within a masonry construction.

The declared product Cavity Stop Sock (CSS) is available in several types which vary mostly by dimension for different uses. The small differences between them are as follows:

| Product Range | Product | Number of products | W (mm) | H (mm) | L (mm) |
|---|---|---|---|---|---|
| CSS | Cavity Stop Sock (CSS) | 31 | 65 - 200 | 65 - 310 | 1200 |
| CSS | Party Wall Cavity Stop Sock (PWCSS) | 11 | 250 | 55 - 305 | 1200 |

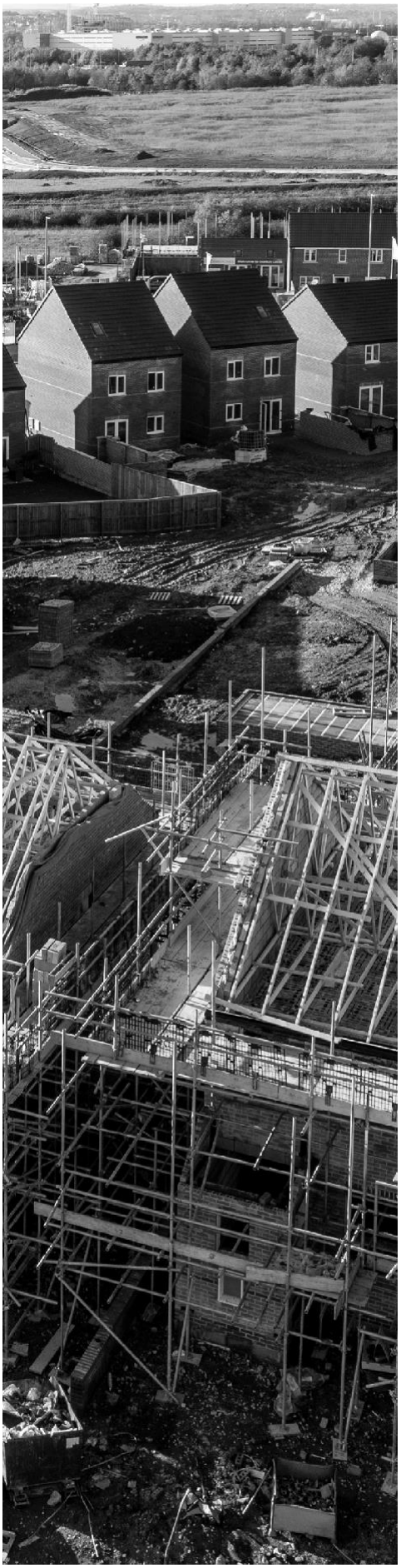
For further technical product information, please refer to the relevant data sheet: arcbuildingsolutions.co.uk/products/cavity-stop-sock/

## UN CPC Code:

37990 Non-metallic mineral products (including mineral wool, expanded mineral materials, worked mica, articles of mica, non-electrical articles of graphite or other carbon and articles of peat).

## Geographical scope:

This product is manufactured at ARC Building Solutions production site in Leeds, UK, and is intended for use in the UK & Europe.



# Content information

The products in this EPD contain the following component volumes:

| Product components | Weight (kg) average, min-max | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---|---|---|---|
| Rocksilk Universal Slab 33 | 0.95, 0.86-0.98 | 0% | 0% |
| Plastic | 0.05, 0.02-0.14 | 0% | 0% |

The products in this EPD include the following amounts of packaging materials (average):

| Packaging materials | Weight, kg | Weight-% (versus the product) | Weight biogenic carbon, kg C/kg |
|---|---|---|---|
| Plastic | 0.0175 | 2% | 0.00 |
| Wood | 0.000116 | 0% | 0.0000578 |
| Paper | 0.0000312 | 0% | 0.0000109 |
| Total | 0.0176 | 2% | 0.0000687 |

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in the product either above the threshold for registration with the European Chemicals Agency or above 0.1%.

# LCA information

| | |
|---|---|
| Declared unit: | 1 kg of CSS product + packaging |
| Reference service life: | Life of the building |
| Time representativeness: | 2024 |
| Database(s) and LCA software used: | Ecoinvent 3.10 (as implemented in GreenDelta's EN15804 Add-on version 3) and OpenLCA Version 2.2.0. CFs are EF 3.1 EN15804 method as implemented by Ecoinvent. |

## System boundary:

The system boundary is cradle to gate with options, modules C1-C4, module D.

Included options are A4 and A5. Excluded are modules B1-B7, as no maintenance, replacement, refurbishment is necessary during the service life and there is no operational energy or water use. Capital goods/infrastructure are excluded from the system boundary in line with the LCA report.

Disclaimer: The results of A1-A3 shall not be used without considering the results of module C.

## LCA modelling

CSS is one out of several product ranges produced at Arc's manufacturing site. Allocations for energy and waste on site were based on CSS's relative sales volumes.

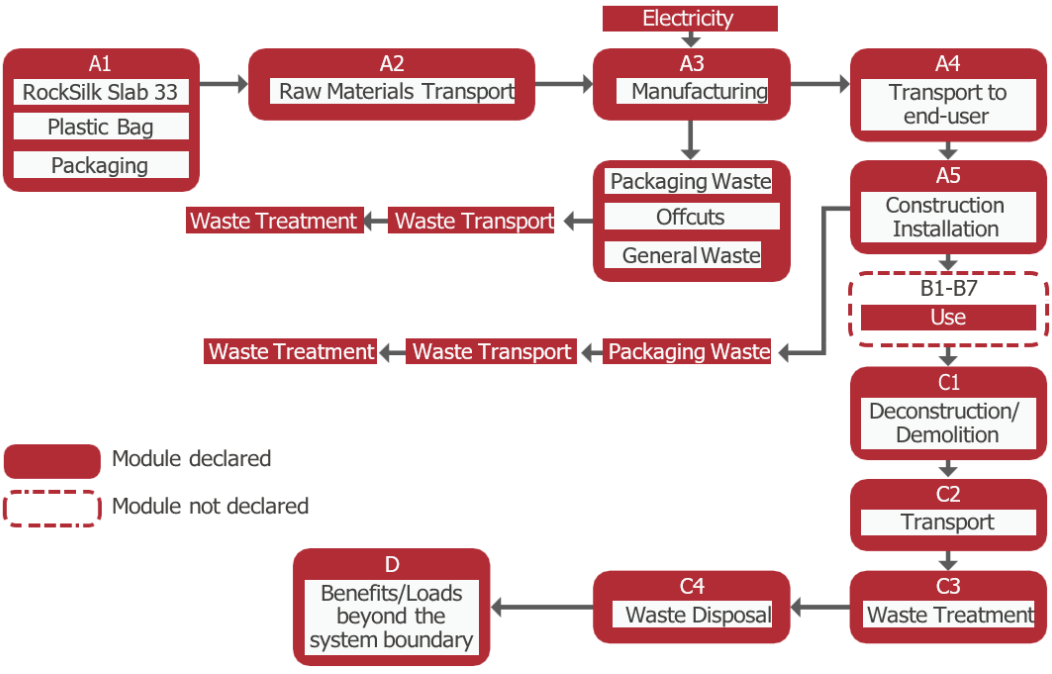
The LCA for this EPD uses an in date and valid EPD for RockSilk Universal Slab 33 to account for the A1-A3 impacts of RS33 production. The RS33 EPD published in 2024 in accordance with ISO 14025, EN15804+A2:2019 and PCR 2019:14. Construction products (EN 15804+A2) Version 1.3.3.

No cut- offs are applied to either the inventory data or the calculated environmental impacts. As per the requirements of the International EPD® system, the EPD results are shown in the results tables.

## Audience

The intended application for this EPD is to provide comprehensive information on the environmental impacts of the range of ARC's cavity fire barrier products. The intended audience is B2B.

## System diagram:



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

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product Range | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Modules declared | X | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | UK | UK | UK | UK | UK | - | - | - | - | - | - | - | UK | UK | UK | UK | UK |
| Share of primary data | 78% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | -3% to 0.6% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | 0% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

## Raw materials supply (A1)

The extraction and processing of raw materials used to manufacture the cavity fire barrier products at the production site in the UK, and the product's packaging.

## Transport (A2)

Transport of materials and packaging from supplier locations to the production site in the UK. Supplier locations and transport modes are provided by ARC Building Solutions Ltd and include the below.

| Mode | Vehicle type | Fuel type |
|---|---|---|
| Road | Lorry, 7.5 – 16 tonnes, EURO6 | Diesel |

## Manufacturing (A3)

Usage amounts of energy are allocated according to 2024 production data supplied by ARC Building Solutions Ltd.

Climate impact GWP impact of electricity used in manufacturing is 0.0588 kg $CO_2$eq. per kWh, source: Wind (53%), Solar (9%), Hydro (4%), Bioenergy and waste (25%), natural gas, oil, coal and other (10%). The LCI electricity market mix data is for 2019.

## Transport to end-user (A4)

The transport of product and packaging from ARC's manufacturing site in Gildersome, England to end-user. The distance is assumed to be 100 km. Supplier locations and transport modes are provided by ARC Building Solutions Ltd and include the below.

| Mode | Vehicle type | Fuel type |
|---|---|---|
| Road | Lorry, 16 – 32 tonnes, EURO6 | Diesel |

## Construction Installation (A5)

The removal, transport and management of outbound packaging waste at construction site. No other impacts are included. Packaging components include wood, paper and plastic, and are assumed to be recycled. Biogenic emissions from processing the packaging waste are included.

## De-construction/demolition (C1)

There are no environmental impacts associated with the removal of the cavity fire barrier products at EoL included in this EPD.

## Waste transport (C2)

On average, the transport by road to local waste sites from the installation site is assumed to be a journey of 100 km by diesel lorry, 16-32 tonnes, EURO6.

## Waste treatment (C3)

UK recycling of the plastic bag around the slab for the cavity fire barrier products.

## Waste disposal (C4)

100% of the RockSilk in the cavity fire barrier products is assumed to be landfilled in the UK.

## Benefits (D)

The potential avoided impacts are from the recycling of the product packaging and materials at manufacturing site, construction installation and end-of-life.

## Excluded from the system boundary

The environmental impacts of buildings and infrastructure, plant, machinery and equipment, and repair/maintenance at the two production sites are excluded, as are impacts from business travel and staff commuting.

# Data Quality

Declaration of data sources, reference years, data categories, and share of primary data for this EPD.

| LCI process | Source type | Source | Reference year | Data category | % of GWP-GHG (A1-A3) |
|---|---|---|---|---|---|
| corrugated board box production \| corrugated board box \| EN15804GD, U -RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 6% |
| packaging film production, low density polyethylene \| packaging film, low density polyethylene \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 4% |
| polyethylene production, high density, granulate \| polyethylene, high density, granulate \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| polypropylene production, granulate \| polypropylene, granulate \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| EUR-flat pallet production \| EUR-flat pallet \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| market for printed paper \| printed paper \| EN15804GD, U - GLO | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| polyethylene production, low density, granulate \| polyethylene, low density, granulate \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| waste paperboard, sorted, Recycled Content cut-off \| waste paperboard, sorted \| EN15804GD, U - GLO | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| waste polyethylene, for recycling, sorted, Recycled Content cut-off \| waste polyethylene, for recycling, sorted \| EN15804GD, U - GLO | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| packaging film production, low density polyethylene \| packaging film, low density polyethylene \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 3% |
| EPD-IES-0016221 | EPD | EPD-IES-0016221 | 2024 | Primary data | 85% |
| transport, freight, lorry 7.5-16 metric ton, EURO6 \| transport, freight, lorry 7.5-16 metric ton, EURO6 \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data | 1% |
| treatment of waste polyethylene, for recycling, unsorted, sorting \| waste polyethylene, for recycling, sorted \| EN15804GD, U - Europe without Switzerland | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| Various processes for the production of medium Voltage UK renewable energy mix 2024 in GB | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data | 0% |
| treatment of municipal solid waste, municipal incineration \| municipal solid waste \| EN15804GD, U - GB | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| market for electricity, medium voltage \| electricity, medium voltage \| EN15804GD, U - GB | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data | 0% |
| transport, freight, lorry 7.5-16 metric ton, EURO6 \| transport, freight, lorry 7.5-16 metric ton, EURO6 \| EN15804GD, U - RER | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| treatment of waste paperboard, unsorted, sorting \| waste paperboard, sorted \| EN15804GD, U - Europe without Switzerland | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Representative generic data | 0% |
| treatment of waste wood, post-consumer, sorting and shredding \| wood chips, from post-consumer wood, measured as dry mass \| EN15804GD, U - Row | Collected data and Database | Arc and Ecoinvent 3.10 | 2024 | Primary data and Representative generic data | 0% |
| **Total primary % of GWP-GHG (A1 - A3)** | | | | | **78%** |

**Note** The share of primary data for A1–A3 is calculated based on GWP-GHG results. It is a simplified indicator for data quality that does not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

| Module | Stage | Type of Data | Source | Reference year |
|---|---|---|---|---|
| A1 | Materials acquisition | Collected data, database and EPD | Arc, Ecoinvent 3.10 and EPD-IES-0016221 | 2024 |
| A2 | Materials transport | Collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| A3 | Manufacturing | Collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| A4 | Distribution to end-user | Collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| A5 | Construction installation | Collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| C1 | De-construction/demolition | Scenario | Arc and Ecoinvent 3.10 | 2024 |
| C2 | EoL waste transport | Scenario, collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| C3 | EoL waste treatment | Scenario, collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| C4 | EoL waste disposal | Scenario, collected data and database | Arc and Ecoinvent 3.10 | 2024 |
| D | Benefits | Scenario, collected data and database | Arc and Ecoinvent 3.10 | 2024 |

Comprehensive process specific input data of high quality, accuracy and granularity have been provided by ARC Building Solutions Ltd regarding the manufacturing and supply chain processes for the assessed cavity fire barrier products.

The product specific datasets are for 2024, therefore recent and representative of the geography and technology used. The quality levels for all are between Very Good and Good. The EPD uses Knauf's EPD for RockSilk Universal Slab 33 in A1. The production dataset used for the RockSilk Universal Slab 33 EPD is 2019 and the publication date is 2024. The impacts are temporally, geographically and technologically representative. Generic LCI datasets are from Ecoinvent 3.10, released in 2024, therefore the quality of time representativeness is Very Good (<3years). Specific European and UK datasets (supplier locations, materials/packaging and transport modes etc) have been selected from the LCI for the LCA and the quality level for geographical and technical representativeness is between Very Good and Good.

# Results of the Environmental Performance Indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

## Mandatory impact category indicators according to EN 15804 (per kg of CSS)

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP - total | kg $CO_2$ eq. | 5.67E+00 | 1.93E-02 | 7.62E-03 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 5.97E-03 | -1.77E-01 |
| GWP - fossil | kg $CO_2$ eq. | 5.66E+00 | 1.93E-02 | 7.36E-03 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 5.97E-03 | -1.77E-01 |
| GWP - biogenic | kg $CO_2$ eq. | -2.52E-04 | 0.00E+00 | 2.52E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| GWP - luluc | kg $CO_2$ eq. | 7.22E-03 | 6.42E-06 | 3.98E-06 | 0.00E+00 | 6.31E-06 | 1.01E-05 | 3.07E-06 | -7.18E-05 |
| ODP | kg CFC 11 eq. | 2.30E-08 | 3.84E-10 | 8.60E-11 | 0.00E+00 | 3.78E-10 | 2.07E-10 | 1.73E-10 | -8.47E-09 |
| AP | mol H+ eq. | 3.09E-02 | 4.03E-05 | 1.85E-05 | 0.00E+00 | 3.96E-05 | 4.63E-05 | 4.23E-05 | -5.14E-04 |
| EP - freshwater | kg P eq. | 3.07E-04 | 1.31E-06 | 9.02E-07 | 0.00E+00 | 1.29E-06 | 2.29E-06 | 4.96E-07 | -2.44E-05 |
| EP - marine | kg N eq. | 3.51E-03 | 9.67E-06 | 7.23E-06 | 0.00E+00 | 9.51E-06 | 1.84E-05 | 1.61E-05 | -1.00E-04 |
| EP - terrestrial | mol N eq. | 9.25E-02 | 1.04E-04 | 5.85E-05 | 0.00E+00 | 1.03E-04 | 1.47E-04 | 1.76E-04 | -1.09E-03 |
| POCP | kg NMVOC eq. | 1.06E-02 | 6.69E-05 | 2.39E-05 | 0.00E+00 | 6.58E-05 | 5.91E-05 | 6.30E-05 | -1.02E-03 |
| ADP - minerals & metals* | kg Sb eq. | 4.74E-06 | 6.44E-08 | 2.95E-08 | 0.00E+00 | 6.33E-08 | 7.40E-08 | 9.52E-09 | -1.50E-06 |
| ADP - fossil* | MJ | 7.79E+01 | 2.72E-01 | 7.33E-02 | 0.00E+00 | 2.67E-01 | 1.78E-01 | 1.46E-01 | -5.75E+00 |
| WDP* | $m^3$ | 6.55E-01 | 1.33E-03 | 1.39E-03 | 0.00E+00 | 1.31E-03 | 3.55E-03 | 4.09E-04 | -4.30E-02 |

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

## Additional mandatory and voluntary impact category indicators (per kg of CSS)

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| GWP-GHG[1] | kg $CO_2$ eq. | 5.73E+00 | 1.93E-02 | 7.37E-03 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 5.97E-03 | -1.75E-01 |

[1]This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic $CO_2$ is set to zero.

## Resource use indicators (per kg of CSS)

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PERE | MJ | 8.89E+00 | 4.67E-03 | 3.87E-03 | 0.00E+00 | 4.59E-03 | 9.87E-03 | 1.36E-03 | -1.10E-01 |
| PERM | MJ | 5.68E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERT | MJ | 1.46E+01 | 4.67E-03 | 3.87E-03 | 0.00E+00 | 4.59E-03 | 9.87E-03 | 1.36E-03 | -1.10E-01 |
| PENRE | MJ | 7.37E+01 | 2.47E-01 | 6.78E-02 | 0.00E+00 | 2.42E-01 | 1.65E-01 | 1.32E-01 | -5.26E+00 |
| PENRM | MJ | 4.23E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT | MJ | 7.79E+01 | 2.47E-01 | 6.78E-02 | 0.00E+00 | 2.42E-01 | 1.65E-01 | 1.32E-01 | -5.26E+00 |
| SM | kg | 4.24E-01 | 3.11E-04 | 1.97E-02 | 0.00E+00 | 3.06E-04 | 5.10E-02 | 6.83E-05 | -3.59E-03 |
| RSF | MJ | 2.05E-02 | 8.69E-05 | 6.31E-05 | 0.00E+00 | 8.54E-05 | 1.60E-04 | 1.41E-05 | -2.05E-03 |
| NRSF | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW | m3 | 2.17E-02 | 3.65E-05 | 2.99E-05 | 0.00E+00 | 3.59E-05 | 7.61E-05 | 1.52E-04 | -1.09E-03 |

## Waste indicators (per kg of CSS)

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| HW | kg | 3.11E-02 | 2.70E-04 | 3.59E-04 | 0.00E+00 | 2.65E-04 | 9.22E-04 | 1.09E-04 | -4.36E-03 |
| NHW | kg | 2.79E+00 | 2.99E-03 | 1.24E-02 | 0.00E+00 | 2.94E-03 | 3.21E-02 | 1.58E-03 | -1.54E+00 |
| RW | kg | 1.36E-03 | 8.77E-08 | 6.48E-08 | 0.00E+00 | 8.61E-08 | 1.65E-07 | 2.28E-08 | -1.86E-06 |

## Output flow indicators (per kg of CSS)

| Indicator | Unit | 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 | 2.16E-02 | 0.00E+00 | 1.76E-02 | 0.00E+00 | 0.00E+00 | 4.56E-02 | 0.00E+00 | -4.79E-03 |
| MER | kg | 9.21E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EEE | MJ | 1.10E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EET | MJ | 7.70E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## Other environmental performance indicators (per kg of CSS)

| Indicator | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| PM | Disease inc. | 3.15E-07 | 1.42E-09 | 3.47E-10 | 0.00E+00 | 1.40E-09 | 8.38E-10 | 9.62E-10 | -3.91E-09 |
| IRP** | kBq U-235eq | 1.98E-01 | 3.53E-04 | 2.56E-04 | 0.00E+00 | 3.47E-04 | 6.51E-04 | 9.33E-05 | -7.39E-03 |
| ETP-fw* | CTUe | 2.11E+01 | 7.40E-02 | 4.20E-02 | 0.00E+00 | 7.27E-02 | 1.06E-01 | 2.00E-02 | -5.89E-01 |
| HTP-c* | CTUh | 8.36E-09 | 1.37E-10 | 6.84E-11 | 0.00E+00 | 1.35E-10 | 1.72E-10 | 2.70E-11 | -7.05E-10 |
| HTP-nc* | CTUh | 4.57E-07 | 1.76E-10 | 6.24E-11 | 0.00E+00 | 1.73E-10 | 1.55E-10 | 2.63E-11 | -1.37E-09 |
| SQP* | Pt | 1.09E+02 | 1.64E-01 | 5.36E-02 | 0.00E+00 | 1.61E-01 | 1.32E-01 | 2.88E-01 | -5.41E-01 |

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

** 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

# Additional LCA results

The following tables show the results for '100% recycling' and '100% disposal' scenarios at EoL (Modules C1 – C4) of the representative product.

## Mandatory impact category indicators according to EN 15804 (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **C1** | **C2** | **C3** | **C4** | **C1** | **C2** | **C3** | **C4** |
| GWP - total | kg $CO_2$ eq. | 0.00E+00 | 1.90E-02 | 0.00E+00 | 1.14E-02 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 0.00E+00 |
| GWP - fossil | kg $CO_2$ eq. | 0.00E+00 | 1.90E-02 | 0.00E+00 | 1.14E-02 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 0.00E+00 |
| GWP - biogenic | kg $CO_2$ eq. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| GWP - luluc | kg $CO_2$ eq. | 0.00E+00 | 6.31E-06 | 0.00E+00 | 3.36E-06 | 0.00E+00 | 6.31E-06 | 1.01E-05 | 0.00E+00 |
| ODP | kg CFC 11 eq. | 0.00E+00 | 3.78E-10 | 0.00E+00 | 1.86E-10 | 0.00E+00 | 3.78E-10 | 2.07E-10 | 0.00E+00 |
| AP | mol $H^+$ eq. | 0.00E+00 | 3.96E-05 | 0.00E+00 | 4.59E-05 | 0.00E+00 | 3.96E-05 | 4.63E-05 | 0.00E+00 |
| EP - freshwater | kg P eq. | 0.00E+00 | 1.29E-06 | 0.00E+00 | 5.50E-07 | 0.00E+00 | 1.29E-06 | 2.29E-06 | 0.00E+00 |
| EP - marine | kg N eq. | 0.00E+00 | 9.51E-06 | 0.00E+00 | 2.82E-05 | 0.00E+00 | 9.51E-06 | 1.84E-05 | 0.00E+00 |
| EP - terrestrial | mol N eq. | 0.00E+00 | 1.03E-04 | 0.00E+00 | 1.91E-04 | 0.00E+00 | 1.03E-04 | 1.47E-04 | 0.00E+00 |
| POCP | kg NMVOC eq. | 0.00E+00 | 6.58E-05 | 0.00E+00 | 6.95E-05 | 0.00E+00 | 6.58E-05 | 5.91E-05 | 0.00E+00 |
| ADP - minerals & metals* | kg Sb eq. | 0.00E+00 | 6.33E-08 | 0.00E+00 | 1.07E-08 | 0.00E+00 | 6.33E-08 | 7.40E-08 | 0.00E+00 |
| ADP - fossil* | MJ | 0.00E+00 | 2.67E-01 | 0.00E+00 | 1.58E-01 | 0.00E+00 | 2.67E-01 | 1.78E-01 | 0.00E+00 |
| WDP* | $m^3$ | 0.00E+00 | 1.31E-03 | 0.00E+00 | 4.63E-04 | 0.00E+00 | 1.31E-03 | 3.55E-03 | 0.00E+00 |

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

## Additional mandatory and voluntary impact category indicators (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **C1** | **C2** | **C3** | **C4** | **C1** | **C2** | **C3** | **C4** |
| GWP-GHG[1] | kg $CO_2$ eq. | 0.00E+00 | 1.90E-02 | 0.00E+00 | 1.14E-02 | 0.00E+00 | 1.90E-02 | 1.83E-02 | 0.00E+00 |

[1]This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic $CO_2$ is set to zero.

## Resource use indicators (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | Unit | C1 | C2 | C3 | C4 | C1 | C2 | C3 | C4 |
| PERE | MJ | 0.00E+00 | 4.59E-03 | 0.00E+00 | 1.53E-03 | 0.00E+00 | 4.59E-03 | 9.87E-03 | 0.00E+00 |
| PERM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERT | MJ | 0.00E+00 | 4.59E-03 | 0.00E+00 | 1.53E-03 | 0.00E+00 | 4.59E-03 | 9.87E-03 | 0.00E+00 |
| PENRE | MJ | 0.00E+00 | 2.42E-01 | 0.00E+00 | 1.43E-01 | 0.00E+00 | 2.42E-01 | 1.65E-01 | 0.00E+00 |
| PENRM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT | MJ | 0.00E+00 | 2.42E-01 | 0.00E+00 | 1.43E-01 | 0.00E+00 | 2.42E-01 | 1.65E-01 | 0.00E+00 |
| SM | kg | 0.00E+00 | 3.06E-04 | 0.00E+00 | 7.73E-05 | 0.00E+00 | 3.06E-04 | 5.10E-02 | 0.00E+00 |
| RSF | MJ | 0.00E+00 | 8.54E-05 | 0.00E+00 | 1.57E-05 | 0.00E+00 | 8.54E-05 | 1.60E-04 | 0.00E+00 |
| NRSF | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW | $m^3$ | 0.00E+00 | 3.59E-05 | 0.00E+00 | -1.68E-05 | 0.00E+00 | 3.59E-05 | 7.61E-05 | 0.00E+00 |

## Waste indicators (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| Indicator | Unit | C1 | C2 | C3 | C4 | C1 | C2 | C3 | C4 |
| HW | kg | 0.00E+00 | 2.65E-04 | 0.00E+00 | 1.23E-04 | 0.00E+00 | 2.65E-04 | 9.22E-04 | 0.00E+00 |
| NHW | kg | 0.00E+00 | 2.94E-03 | 0.00E+00 | 2.28E-01 | 0.00E+00 | 2.94E-03 | 3.21E-02 | 0.00E+00 |
| RW | kg | 0.00E+00 | 8.61E-08 | 0.00E+00 | 2.56E-08 | 0.00E+00 | 8.61E-08 | 1.65E-07 | 0.00E+00 |

## Output flow indicators (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| Indicator | Unit | C1 | C2 | C3 | C4 | C1 | C2 | C3 | C4 |
| 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.00E+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 |
| EEE | 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 |
| EET | 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 |

## Other environmental performance indicators (per kg of CSS)

| | | 100% disposal | | | | 100% recycling | | | |
|---|---|---|---|---|---|---|---|---|---|
| Indicator | Unit | C1 | C2 | C3 | C4 | C1 | C2 | C3 | C4 |
| PM | Disease inc. | 0.00E+00 | 1.40E-09 | 0.00E+00 | 1.04E-09 | 0.00E+00 | 1.40E-09 | 8.38E-10 | 0.00E+00 |
| IRP | kBq U-235eq | 0.00E+00 | 3.47E-04 | 0.00E+00 | 1.05E-04 | 0.00E+00 | 3.47E-04 | 6.51E-04 | 0.00E+00 |
| ETP-fw | CTUe | 0.00E+00 | 7.27E-02 | 0.00E+00 | 3.77E-02 | 0.00E+00 | 7.27E-02 | 1.06E-01 | 0.00E+00 |
| HTP-c | CTUh | 0.00E+00 | 1.35E-10 | 0.00E+00 | 2.99E-11 | 0.00E+00 | 1.35E-10 | 1.72E-10 | 0.00E+00 |
| HTP-nc | CTUh | 0.00E+00 | 1.73E-10 | 0.00E+00 | 7.90E-11 | 0.00E+00 | 1.73E-10 | 1.55E-10 | 0.00E+00 |
| SQP | Pt | 0.00E+00 | 1.61E-01 | 0.00E+00 | 3.14E-01 | 0.00E+00 | 1.61E-01 | 1.32E-01 | 0.00E+00 |

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

** 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

This EPD covers 44 products within the cavity stop sock range. The variations in impacts above +/-10% are summarized below. Variations shown for ODP, EP-freshwater, POCP, WDP, IRP, HTP-c, SM, RSF, FW, HWD, NHWD, MFR, MER, EEE, EET are from background processes associated with a greater use of LDPE in some product variations from the cavity stop sock range. Variations shown for HTP-nc,, PERM, RWD, are from background processes associated with a lower use of LDPE in some product variations from the cavity stop sock range.

| Impact | Units | Average | Min | Max |
|---|---|---|---|---|
| ODP | kg CFC 11 eq. | 3.43E-08 | 3.70E-08 | 2.60E-08 |
| EP-freshwater | kg P eq. | 4.14E-04 | 4.41E-04 | 3.33E-04 |
| POCP | kg NMVOC eq. | 1.22E-02 | 1.25E-02 | 1.12E-02 |
| ADPE* | kg Sb eq. | 7.35E-06 | 8.02E-06 | 5.35E-06 |
| WDP* | m3 | 8.43E-01 | 8.93E-01 | 6.95E-01 |
| IRP** | kBq U-235eq | 2.24E-01 | 2.30E-01 | 2.07E-01 |
| HTP-c* | CTUh | 1.00E-08 | 1.03E-08 | 9.22E-09 |
| HTP-nc* | CTUh | 4.27E-07 | 4.15E-07 | 4.62E-07 |
| PERM | MJ | 5.25E+00 | 5.09E+00 | 5.72E+00 |
| SM | kg | 6.56E-01 | 6.90E-01 | 5.56E-01 |
| RSF | MJ | 2.82E-02 | 3.02E-02 | 2.21E-02 |
| FW | $m^3$ | 2.60E-02 | 2.71E-02 | 2.28E-02 |
| HWD | kg | 4.73E-02 | 5.12E-02 | 3.57E-02 |
| NHWD | kg | 4.45E+00 | 4.95E+00 | 2.98E+00 |
| RWD | kg | 1.26E-03 | 1.23E-03 | 1.37E-03 |
| MFR | kg | 2.01E-01 | 1.29E-01 | 1.13E-01 |
| MER | kg | 1.23E-05 | 1.32E-05 | 9.75E-06 |
| EEE | MJ | 1.54E-02 | 1.66E-02 | 1.21E-02 |

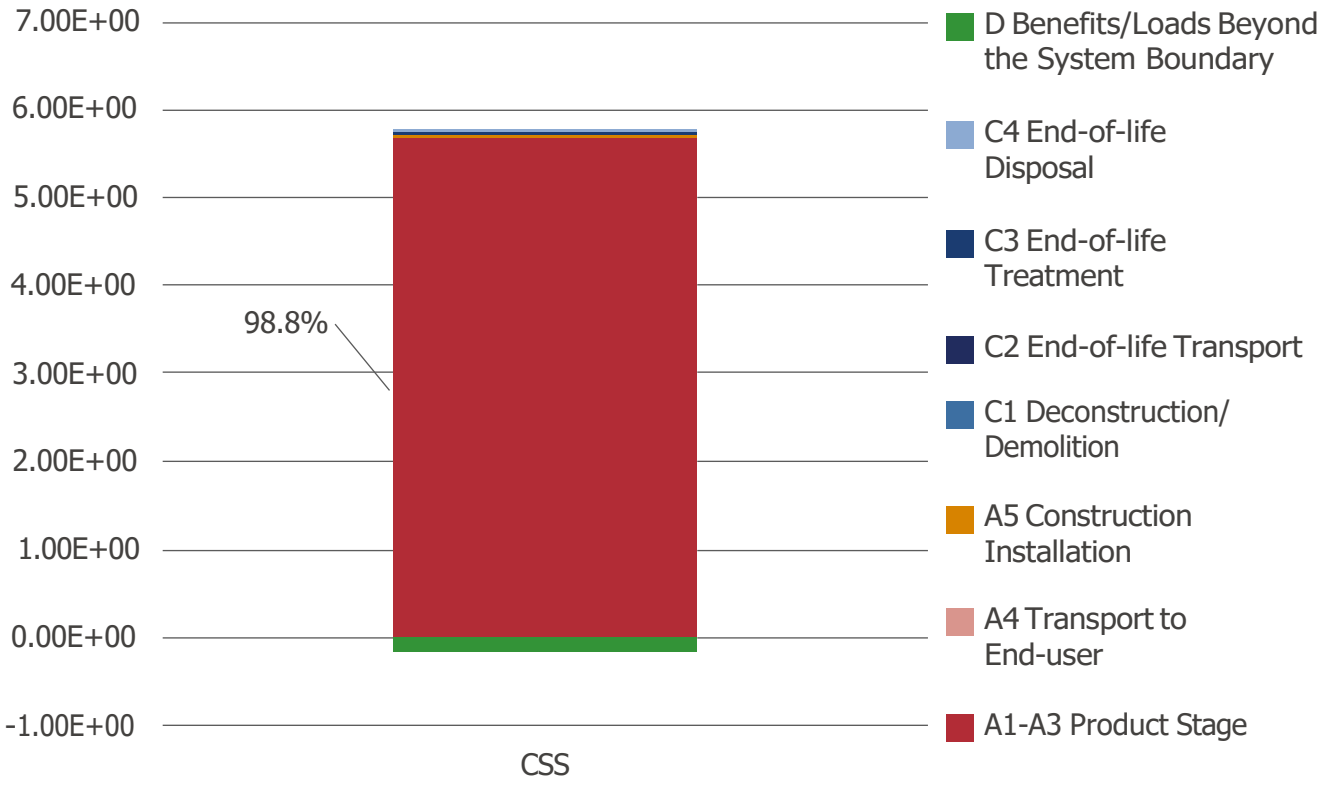
*The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

** 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

# Interpretation

The average carbon footprint of the CSS products included is 5.74 kg $CO_2$eq. per kg, ranging from 5.62 to 5.76 kg $CO_2$eq. per kg. The figure below shows the contribution to the overall carbon footprint of each of the included stages of the life cycle. The product stage (modules A1-A3) is the biggest contributor to the CSS product's carbon footprint, accounting for 98.8%. The transport to end-user, construction installation and end-of-life modules account for just 1.2% of the CSS average product's carbon footprint.

## CSS products – Global Warming Potential (GWP-Total)



# Additional Environmental Information

**Disassembly & Recyclability:** Rock Mineral Wool & Encapsulated LDPE Plastic

Rock mineral wool is comprised of volcanic basalt rock, which is a naturally occurring material. Dependent on the condition of the rock mineral wool waste, this material can be sent back to ARCs rock mineral wool manufacturer and recycled back into their production process.

This product is encapsulated in low density polyethylene (LDPE) plastic to provide weather protection and protect products from damage.

Where disassembly is required, ARC recommends that waste rock mineral wool from this product that is found in decent condition (i.e., dry and not contaminated with other materials) should be returned to ARC for appropriate recycling and reuse. In this event, ARC asks that LDPE plastic encapsulating the rock mineral wool, should be left in situ to protect the rock mineral wool from damage on its journey back to ARCs production facility.

Alternatively, where returning to ARC is not feasible, please consult your chosen waste provider regarding suitable disposal options and separate materials accordingly to ensure that all materials are disposed of through the correct waste streams.

# Abbreviations

ADP-fossil – Abiotic depletion for fossil resources potential
ADP-mineral & metals – Abiotic depletion potential for non-fossil resources
AP – Acidification potential, accumulated exceedance
CRU – Components for reuse
CSS – Cavity Stop Sock
EE – Exported Energy
EI – Environmental Impact
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 terrestrial
FW – Net use of fresh water
GHG – Greenhouse Gases
GLO - Global
GWP – Global Warming Potential
GWP-biogenic – Global warming potential, biogenic
GWP-fossil – Global warming potential, fossil fuels
GWP-luluc – Global warming potential, land use and land use change
GWP-total – Global warming potential, total
HDPE – High density polyethylene
HH – Human Health
HWD – Hazardous waste disposed
kg – Kilogram
kg.km – Kilogram kilometre
LCA – Life Cycle Assessment
LDPE – Low-density polyethylene
MER – Materials for energy recovery
MFR – Materials for recycling
NHWD – Non-hazardous waste disposed
NRSF – Use of non-renewable secondary fuels
ODP – Ozone layer depletion potential
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 resource SM – Use of secondary material
PERE – Use of renewable primary energy excluding renewable primary energy used as raw materials
PERM – Use of renewable primary energy resources used as raw materials
PERT – Total use of renewable primary energy resources
POCP – Formation potential of tropospheric ozone
RER – Rest of Europe
RoW – Rest of World
RS33- RockSilk Universal Slab 33
RSF – Use of renewable secondary fuels
RWD – Radioactive waste disposed
WDP – Water deprivation potential, deprivation-weighted water consumption

# References

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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.

ISO 14025 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040/44 Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006).

The International EPD® System - The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

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GreenDelta GmbH, https://www.greendelta.com/

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# Version History

Original version: 10-10-2025
Revision 1: 27-10-2025. Editorial change.

Protecting **People.**
Protecting **Places.**

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