

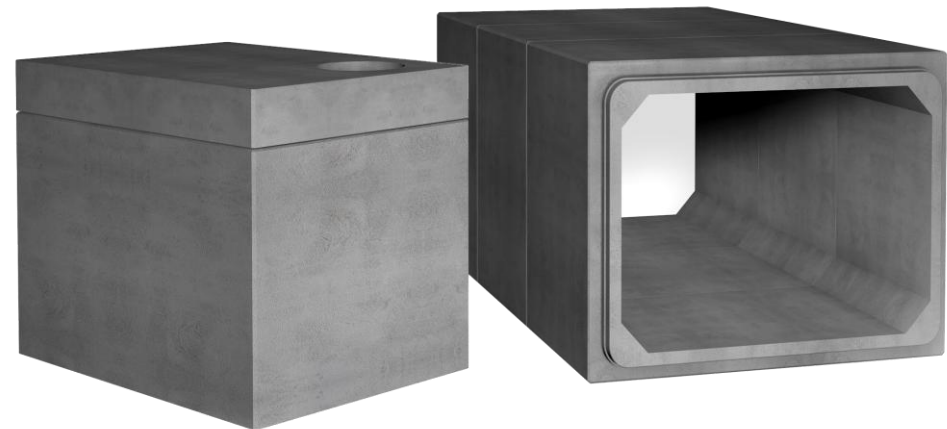


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

RB King

Ruskon Betoni Etelä Oy



EPD HUB, HUB-5353

Published on 12.02.2026, last updated on 12.02.2026, valid until 11.02.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Ruskon Betoni Etelä OY
Address	Kotajärventie 34, 15880 Hollola, Finland
Contact details	myynti.hollola@ruskonbetoni.fi
Website	https://www.rbinfra.fi/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4, and modules C1-C4, D
EPD author	Jori Jokela, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products

may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	RB King
Additional labels	Box culvert
Place(s) of raw material origin	Finland, EU
Place of production	Hollola, Finland
Place(s) of installation and use	Finland
Period for data	November 2024 to October 2025
Averaging in EPD	No grouping
A1-A3 Specific data (%)	92

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton of concrete product
Declared unit mass	1000 kg
Mass of packaging	No packaging
GWP-fossil, A1-A3 (kgCO ₂ e)	177
GWP-total, A1-A3 (kgCO ₂ e)	177
Secondary material, inputs (%)	3,12
Secondary material, outputs (%)	70,7
Total energy use, A1-A3 (kWh)	646
Net freshwater use, A1-A3 (m ³)	3,74

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Ruskon Betoni Etelä Oy is a part of traditional family company Ruskon Betoni Oy. Ruskon Betoni Oy has delivered ready-mix concrete and infra concrete products since 1983.

PRODUCT DESCRIPTION

A box culvert (RB-King) is a rectangular, reinforced concrete structure used to convey water under roads, railways, and other infrastructure. They are strong, durable, and can be precast for quick installation. Box culverts are versatile and can be used for drainage, underpasses for people and animals, and even as storage tanks

Further information can be found at: <https://www.rbinfra.fi/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	3	Finland, EU
Minerals	97	Finland, EU
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	-

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton of concrete product
Mass per declared unit	1000 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory (residual mix, Finland, ecoinvent 3.11). Light fuel oil is used for heating. Light fuel oil is used for heating. The use of energy has been optimized in culvert production.

RB-king box culverts are manufactured at production site of Ruskon Betoni Etelä Oy in Hollola, Finland. Culverts are made from virgin Portland cement and reinforced with recycled steel (recycled content of the steel used is 88.8%) as well as steel fibers. Culverts are manufactured in molds and raw material losses are minimal. The transport distance for production waste is modelled using an estimated distance of 50 km between the production site and the recycling facilities.

Raw material transport is mainly carried out by road transport (A2). A limited portion of the raw materials is transported by sea over longer distances.

The product is delivered without packaging materials.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from production plant to retailer's site is assumed as 110 km (distance to Helsinki capital area is used) and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

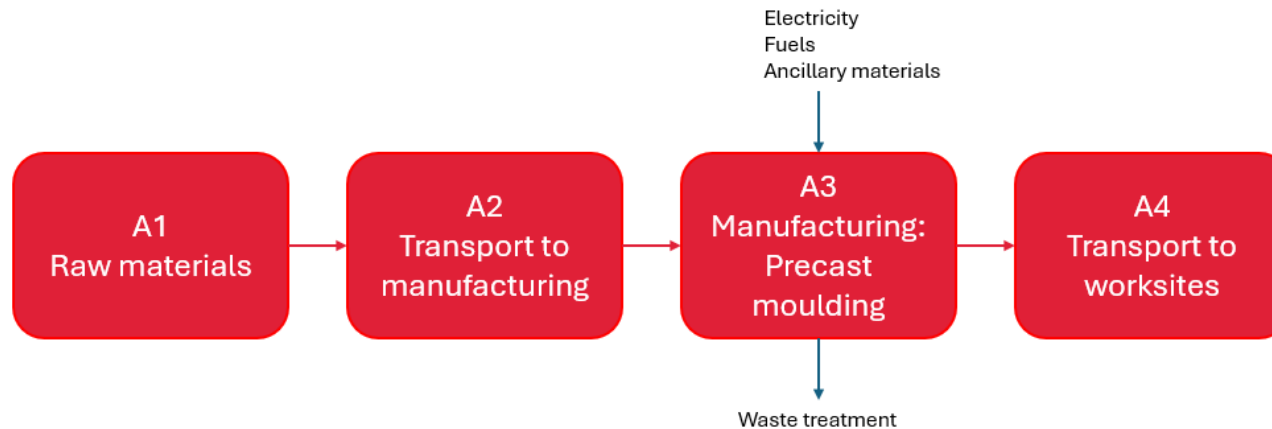
This study considers that the RB-king box culverts EoL are dismantled using machinery and reinforcement steel and concrete material are separated. It is assumed that 100% of the products are collected (C1). Distance for transportation to treatment is assumed as 50 km to 250 km and the transportation method is assumed to be lorry (C2). End of life scenario for metal parts is modelled based on data of World Steel Association (2020). At EoL, 70% of the product's concrete and 85% of metal components are assumed to be recycled (C3) and 30% of the concrete and 15% of the steel goes to landfill.

Due to the recycling potential of reinforcement steel and concrete, they can be used as secondary raw material, which avoids the use of virgin raw materials. 70% of concrete and 85% of steel are converted into secondary raw materials after recycling. The recycled material content in the concrete is assumed to be 0 % but in steel is assumed to be 88,8%, so the benefit of concrete is then 70% but steel benefit is only 9,52%. These values were used for the calculation of the net benefit and load in module D.

MANUFACTURING PROCESS

Raw materials are delivered to the production plant by road transport. The precast mould is prepared to the required dimensions and height. The reinforcement is prepared in accordance with the plan, inspected, and formally approved. The precast mould is then secured, the concrete is prepared, and the casting is carried out. The surface is finished and any required inserts or attachments are installed.

Once the concrete has set, the precast mould is opened, and the element is lifted out. The element is finished, prepared for storage, and all required quality assurance inspections are performed.



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product’s manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Not applicable
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'. EPD Hub Core PCR Version 1.2, 24 Mar 2025 and EN 16757 Product Category Rules for concrete and concrete elements have been followed.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1,43E+02	6,48E+00	2,73E+01	1,77E+02	2,76E+01	3,62E+00	1,03E+01	6,35E+00	-7,67E-01	-1,39E+01
GWP – fossil	kg CO ₂ e	1,43E+02	6,47E+00	2,73E+01	1,77E+02	2,76E+01	3,62E+00	1,03E+01	6,36E+00	-7,67E-01	-1,39E+01
GWP – biogenic	kg CO ₂ e	7,97E-02	1,06E-03	1,83E-02	9,90E-02	6,02E-03	6,90E-04	2,06E-03	-1,16E-02	-5,53E-04	-1,15E-03
GWP – LULUC	kg CO ₂ e	3,37E-02	2,74E-03	2,28E-02	5,92E-02	1,07E-02	3,71E-04	3,72E-03	1,31E-03	1,05E-03	-1,01E-02
Ozone depletion pot.	kg CFC ₋₁₁ e	2,73E-06	1,30E-07	3,95E-07	3,26E-06	5,75E-07	5,38E-08	1,99E-07	5,64E-08	5,30E-08	-8,02E-08
Acidification potential	mol H ⁺ e	3,85E-01	3,45E-02	7,86E-02	4,98E-01	6,50E-02	3,24E-02	3,24E-02	3,64E-02	1,30E-02	-7,16E-02
EP-freshwater ²⁾	kg Pe	4,14E-01	4,26E-04	1,17E-02	4,26E-01	1,93E-03	1,17E-04	6,92E-04	6,27E-04	1,51E-04	-7,04E-03
EP-marine	kg Ne	1,98E-01	8,32E-03	1,90E-02	2,26E-01	1,71E-02	1,51E-02	1,09E-02	1,46E-02	4,95E-03	-1,62E-02
EP-terrestrial	mol Ne	1,08E+00	9,16E-02	1,86E-01	1,35E+00	1,85E-01	1,65E-01	1,18E-01	1,60E-01	5,41E-02	-1,88E-01
POCP (“smog”) ³⁾	kg NMVOCe	3,16E-01	3,81E-02	5,62E-02	4,11E-01	1,13E-01	4,94E-02	5,04E-02	4,76E-02	1,94E-02	-5,64E-02
ADP-minerals & metals ⁴⁾	kg Sbe	2,36E-02	1,72E-05	2,60E-05	2,37E-02	7,89E-05	1,30E-06	3,31E-05	5,81E-05	2,91E-06	-1,09E-04
ADP-fossil resources	MJ	2,80E+04	9,49E+01	3,74E+02	2,84E+04	4,14E+02	4,72E+01	1,45E+02	4,96E+01	4,50E+01	-1,53E+02
Water use ⁵⁾	m ³ e depr.	1,81E+02	4,68E-01	3,52E+00	1,85E+02	2,12E+00	1,21E-01	7,11E-01	4,45E-01	1,69E-01	-1,17E+01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterization method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,57E+02	1,48E+00	1,64E+01	1,75E+02	6,74E+00	2,96E-01	2,45E+00	2,25E+00	4,34E-01	-1,56E+01
Renew. PER as material	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
Total use of renew. PER	MJ	1,57E+02	1,48E+00	1,64E+01	1,75E+02	6,74E+00	2,96E-01	2,45E+00	2,25E+00	4,34E-01	-1,56E+01
Non-re. PER as energy	MJ	1,38E+03	9,49E+01	3,74E+02	1,85E+03	4,14E+02	4,72E+01	1,45E+02	2,70E+01	4,50E+01	-1,53E+02
Non-re. PER as material	MJ	5,14E+01	0,00E+00	0,00E+00	5,14E+01	0,00E+00	0,00E+00	0,00E+00	-4,56E+01	-5,78E+00	0,00E+00
Total use of non-re. PER	MJ	1,43E+03	9,49E+01	3,74E+02	1,90E+03	4,14E+02	4,72E+01	1,45E+02	-1,86E+01	3,92E+01	-1,53E+02
Secondary materials	kg	3,12E+01	4,24E-02	3,84E-02	3,12E+01	1,79E-01	1,95E-02	6,58E-02	2,95E-02	1,13E-02	3,63E+00
Renew. secondary fuels	MJ	1,27E+02	4,76E-04	2,08E-04	1,27E+02	2,26E-03	5,12E-05	8,31E-04	6,72E-04	2,34E-04	-1,22E-03
Non-ren. secondary fuels	MJ	1,73E+02	0,00E+00	0,00E+00	1,73E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	3,62E+00	1,33E-02	1,02E-01	3,74E+00	6,11E-02	3,02E-03	1,97E-02	9,89E-03	4,68E-02	-2,68E-01

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	8,10E+00	1,38E-01	2,25E+00	1,05E+01	5,99E-01	5,29E-02	2,11E-01	1,96E-01	4,97E-02	-2,87E+00
Non-hazardous waste	kg	5,85E+01	2,67E+00	5,87E+01	1,20E+02	1,20E+01	7,71E-01	4,39E+00	4,35E+00	1,14E+00	-3,88E+01
Radioactive waste	kg	2,76E-02	2,67E-05	1,04E-03	2,87E-02	1,23E-04	4,93E-06	4,43E-05	2,84E-05	6,89E-06	-1,59E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	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	0,00E+00	0,00E+00
Materials for recycling	kg	9,12E-01	0,00E+00	0,00E+00	9,12E-01	0,00E+00	0,00E+00	0,00E+00	7,06E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	1,21E-02	0,00E+00	0,00E+00	1,21E-02	0,00E+00	0,00E+00	0,00E+00	8,30E-01	0,00E+00	0,00E+00
Exported energy	MJ	5,65E-01	0,00E+00	0,00E+00	5,65E-01	0,00E+00	0,00E+00	0,00E+00	9,46E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,98E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,48E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	1,43E+02	6,47E+00	2,73E+01	1,77E+02	2,76E+01	3,62E+00	1,03E+01	6,36E+00	-7,66E-01	-1,39E+01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, medium voltage, residual mix, Finland, Ecoinvent 3.11
Electricity CO2e / kWh	0,71
Own heat production	Heat production, light fuel oil, at boiler 100kW condensing, non-modulating, Ecoinvent 3.11
Heating CO2e / MJ	0,0956

Transport scenario documentation - A4 (Transport resources)

Scenario parameter	Value
Fuel type, consumption, and vehicle type. Eg, electric truck, diesel powered truck	Diesel lorry >32 metric ton, EURO6
Average transport distance, km	110 km
Capacity utilization (including empty return) %	50

Bulk density of transported products	Not applicable for bulk materials – transported products are precast concrete elements. Average transport load density approx. 288 kg/m ³ .
Volume capacity utilization factor	1

End-of-life scenario documentation - C1-C4 (Data source)

Scenario information	Value
Diesel, burned in building machine, Ecoinvent,	10 kWh
Treatment of waste concrete, not reinforced, recycling, Ecoinvent, Materials for recycling	670,3 kg
Treatment of waste concrete, inert material landfill, Ecoinvent,	287,3 kg
Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling	35,7 kg
Treatment of waste steel, inert material landfill, Ecoinvent	6,3 kg

Treatment of waste rubber, unspecified, municipal incineration, Ecoinvent, Materials for energy recovery	0,83 kg
Exported Energy: Electricity, Ecoinvent	3,98 MJ
Exported Energy: Thermal, Ecoinvent	5,48 MJ
Direct emission to air: Carbon dioxide, fossil, One Click LCA	- 2.6 kg
Recycling or waste disposal transport	Transport is assumed to be 50 km or 250 km

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
12.02.2026

