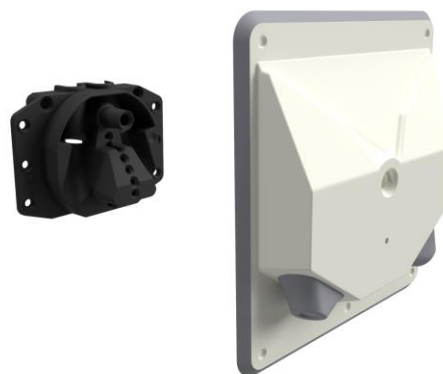


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Radiator Pipe Guide & Seal

Manthorpe Building Products



EPD HUB, HUB-1078

Publishing on 08.02.2024, last updated on 08.02.2024, valid until 08.02.2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Manthorpe Building Products
Address	Brittain Drive, Codnor Gate Business Park, Ripley, DE5 3ND
Contact details	mbp.care@manthorpebp.co.uk
Website	https://www.manthorpebp.co.uk/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Ben Hales, Dylan Stoppard
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

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	10mm Radiator Pipe Guide & Seal 15mm Radiator Pipe Guide & Seal
Additional labels	-
Product reference	GRS-DUO, GRS-DUO-15, GRS-FF
Place of production	United Kingdom
Period for data	2022-2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	N/A

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit GRS-DUO Radiator Pipe Guide and Seal
Declared unit mass	0.076 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	9.14E-02
GWP-total, A1-A3 (kgCO ₂ e)	5.56E-02
Secondary material, inputs (%)	47.4
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	0.525
Total water use, A1-A3 (m ³ e)	1.16E+00

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Manthorpe has been developing innovative building products for the construction industry for over 35 years.

Our comprehensive range of quality building products is designed to meet your every need, from groundwork to roofline, from new build to refurb.

With extensive experience in the plastics industry, we have the expertise to manufacture virtually all our building products in-house and continue to invest heavily in new technology and cutting edge machinery and production processes.

This enables our team to be at the forefront of product development, driving industry progress through precision and innovation.

PRODUCT DESCRIPTION

The Radiator Pipe Guide and Seals are designed to prevent air leakage at pipework penetrations behind a radiator that is plumbed with flexible plastic barrier pipework commonly used for central heating systems in modern buildings.

Primary data set covered in this EPD is taken from the characteristics of the GRS-DUO 10mm version of the Radiator Pipe Guide & Seal, for the overview of the product scaling used to extrapolate the accompanying versions within the range, see Annex A.

Further information can be found at <https://www.manthorpebp.co.uk/>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	-	-
Fossil materials	100	UK
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	0.0109

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit GRS-DUO Radiator Pipe Guide and Seal
Mass per declared unit	0.076 kg
Functional unit	-
Reference service life	In excess of 40 years.

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	x	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	Decommissioning / 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.

The product is manufactured for a mix of virgin and post-consumer material, consisting primarily of polypropylene sourced from various manufacturers and recycled sources. This material is then processed via an injection moulding machine to create either the rear mount plate or the front cover plate, the former being made from 100% recycled content. Material waste produced during manufacture (short shots, defective parts etc.) is reground on site to produced in-house supply of post-industrial recycled material which is fed back into the manufacture of the mount plates and other products produced on site. 20 pairs of mount and cover plates are then packaged together in a cardboard box, with 77 boxes then stacked onto a wooden pallet secured with plastic shrink wrapping. Hydraulic oils and lubricants have been included as a combined ancillary material used as a consumable within the manufacturing process. Manufacturing injection moulding machines fitted with a 3 phase energy logger to track amps used per cycle, outputted over a multiple hour run and averaged to provide the total amps used per run. Run through the formula $kWh = \sqrt{3} \times Pf \times Ah \times V / 1000$ to convert Amp-hours to Kilowatt-hours then divided by the total cycles made during the run to find the kWh used per declared unit. Process cross checked by comparing against total site energy usage, divided by tonnage processed, multiplied by weight of the declared unit. All electricity used in the manufacturing and polymer processing is procured through a renewable energy guarantee of origin via 100% wind power.

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.

The average transport distance from the manufacturing facility to the site was 241 kilometres. This was calculated using a sample of 40 merchant

locations serviced by 4 distribution hubs representing 64% of the declared units sales. This could vary depending on the specific order. All vehicles used are to the Euro5 standard. Empty returns are not considered as it is assumed that the vehicle will be used to facilitate the transportation of different products from other sites. There are no losses associated with transportation as the product is packaged and strapped effectively. Volume capacity utilisation is assumed to be 1 for the nested packaging products. Packaging waste assumed to be sent to disposal.

The installation of the declared unit can be achieved by a single person with the use of basic hand tools.

PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase of this product has been analysed and found to be immaterial to the overall carbon impact of the declared unit, this is due to the product application. This assumption is in alignment with the product category rules (PCRs). Air, soil and water impacts during the use phase have not been studied.

Air, soil, and water impacts during the use phase have not been studied.

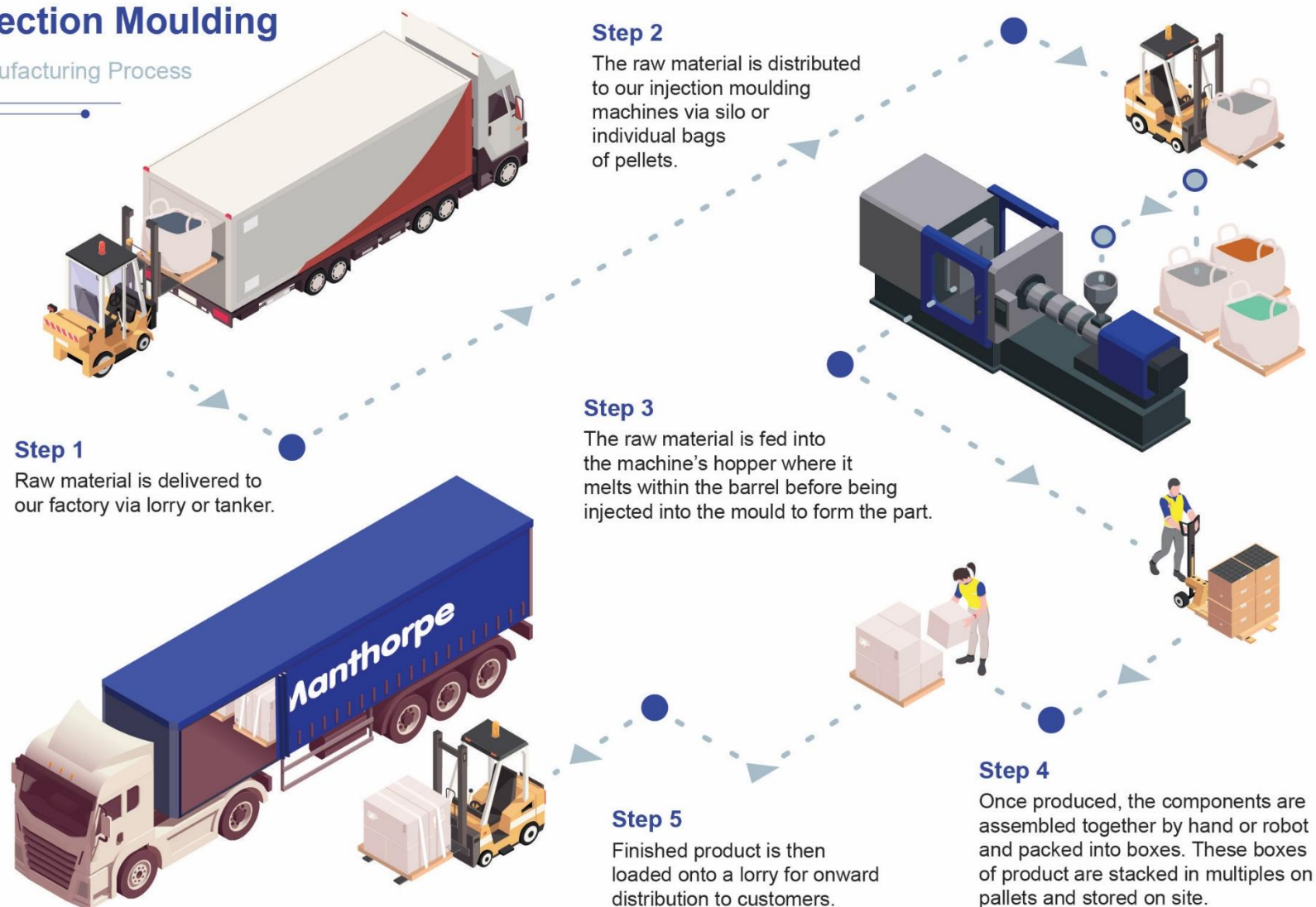
PRODUCT END OF LIFE (C1-c4, D)

The end-of-life product is assumed to be sent to landfill (C2) according to the latest government registry there are 526 landfill sites in the UK, is assumed that on average there is 50km to a landfill from a theoretical demolition site. A conservative approach was taken to the assumption that the product is taken for disposal at the end of its life rather than the untraceable option of recycling and/or reuse. (C3-4). The disassembly of the product at end-of-life from the surrounding structure is assumed to be done manually, as such any further environment impacts define by this module are considered to be negligible.

MANUFACTURING PROCESS

Injection Moulding

Manufacturing Process



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.

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 materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	7,83E-02	1,21E-03	-2,35E-02	5,59E-02	8,48E-03	3,74E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,61E-04	0,00E+00	1,04E-02	0,00E+00
GWP – fossil	kg CO ₂ e	7,82E-02	1,21E-03	1,35E-02	9,29E-02	8,47E-03	3,57E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,60E-04	0,00E+00	1,04E-02	0,00E+00
GWP – biogenic	kg CO ₂ e	6,71E-07	7,39E-09	-3,71E-02	-3,71E-02	6,05E-06	3,71E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,39E-07	0,00E+00	6,69E-06	0,00E+00
GWP – LULUC	kg CO ₂ e	1,66E-05	4,46E-07	8,21E-05	9,91E-05	4,50E-06	2,63E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,33E-07	0,00E+00	8,52E-07	0,00E+00
Ozone depletion pot.	kg CFC-11e	1,46E-09	2,77E-10	1,72E-09	3,45E-09	1,86E-09	9,66E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,29E-11	0,00E+00	2,46E-10	0,00E+00
Acidification potential	mol H ⁺ e	2,67E-04	5,10E-06	7,37E-05	3,46E-04	4,17E-05	2,37E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,53E-06	0,00E+00	6,96E-06	0,00E+00
EP-freshwater ²⁾	kg Pe	2,94E-06	9,83E-09	9,42E-07	3,89E-06	9,26E-08	4,63E-09	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,95E-09	0,00E+00	1,33E-08	0,00E+00
EP-marine	kg Ne	5,65E-05	1,52E-06	3,25E-05	9,05E-05	1,25E-05	1,23E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,53E-07	0,00E+00	4,12E-06	0,00E+00
EP-terrestrial	mol Ne	6,00E-04	1,67E-05	2,21E-04	8,38E-04	1,38E-04	8,65E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,00E-06	0,00E+00	2,58E-05	0,00E+00
POCP (“smog”) ³⁾	kg NMVOCe	2,55E-04	5,34E-06	6,19E-05	3,22E-04	4,41E-05	2,91E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,60E-06	0,00E+00	9,68E-06	0,00E+00
ADP-minerals & metals ⁴⁾	kg Sbe	1,02E-07	2,87E-09	1,28E-07	2,33E-07	8,63E-08	9,39E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,45E-10	0,00E+00	2,77E-09	0,00E+00
ADP-fossil resources	MJ	2,14E-01	1,81E-02	2,20E-01	4,52E-01	1,24E-01	6,92E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,41E-03	0,00E+00	1,88E-02	0,00E+00
Water use ⁵⁾	m ³ e depr.	4,28E-03	8,11E-05	9,33E-03	1,37E-02	7,69E-04	3,47E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,42E-05	0,00E+00	1,12E-04	0,00E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation 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.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	3,18E-09	1,38E-10	1,14E-09	4,46E-09	8,39E-10	5,08E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,15E-11	0,00E+00	1,39E-10	0,00E+00
Ionizing radiation ⁶⁾	kBq U235e	6,39E-03	8,65E-05	1,61E-03	8,08E-03	7,38E-04	3,28E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,58E-05	0,00E+00	9,07E-05	0,00E+00
Ecotoxicity (freshwater)	CTUe	8,72E-01	1,63E-02	3,04E-01	1,19E+00	1,21E-01	6,29E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,87E-03	0,00E+00	1,97E-02	0,00E+00
Human toxicity, cancer	CTUh	1,50E-11	4,02E-13	3,47E-11	5,01E-11	9,33E-12	1,83E-13	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,20E-13	0,00E+00	6,15E-13	0,00E+00
Human tox. non-cancer	CTUh	3,86E-10	1,61E-11	2,38E-10	6,40E-10	1,40E-10	5,96E-12	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,82E-12	0,00E+00	1,17E-11	0,00E+00
SQP ⁷⁾	-	8,45E-02	2,06E-02	2,18E+00	2,28E+00	7,18E-02	1,42E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,24E-03	0,00E+00	4,53E-02	0,00E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	6,04E-02	2,05E-04	4,51E-01	5,12E-01	2,75E-03	1,01E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,10E-05	0,00E+00	3,47E-04	0,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	3,23E-01	3,23E-01	0,00E+00	-3,23E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	6,04E-02	2,05E-04	7,74E-01	8,34E-01	2,75E-03	-3,22E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,10E-05	0,00E+00	3,47E-04	0,00E+00
Non-re. PER as energy	MJ	1,20E+00	1,81E-02	1,94E-01	1,41E+00	1,24E-01	6,92E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,41E-03	0,00E+00	1,88E-02	0,00E+00
Non-re. PER as material	MJ	3,46E+00	0,00E+00	2,20E-02	3,48E+00	0,00E+00	-2,20E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-3,43E+00	0,00E+00
Total use of non-re. PER	MJ	4,66E+00	1,81E-02	2,16E-01	4,89E+00	1,24E-01	-1,51E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,41E-03	0,00E+00	-3,42E+00	0,00E+00
Secondary materials	kg	3,60E-02	5,06E-06	1,11E-02	4,71E-02	5,63E-05	2,12E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,50E-06	0,00E+00	6,70E-06	0,00E+00
Renew. secondary fuels	MJ	1,01E-06	5,12E-08	7,11E-03	7,11E-03	5,58E-07	6,43E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,52E-08	0,00E+00	2,57E-07	0,00E+00
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,16E+00	2,34E-06	2,21E-04	1,16E+00	2,02E-05	5,88E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,01E-07	0,00E+00	2,01E-05	0,00E+00

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7,42E-04	2,39E-05	9,25E-04	1,69E-03	2,13E-04	2,20E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,18E-06	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste	kg	3,59E-02	3,94E-04	2,09E-02	5,71E-02	4,20E-03	2,57E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,18E-04	0,00E+00	7,68E-02	0,00E+00
Radioactive waste	kg	1,46E-06	1,21E-07	6,99E-07	2,28E-06	8,45E-07	1,11E-08	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,62E-08	0,00E+00	0,00E+00	0,00E+00

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	7,74E-02	1,19E-03	1,38E-02	9,24E-02	8,35E-03	1,32E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,57E-04	0,00E+00	8,43E-03	0,00E+00
Ozone depletion Pot.	kg CFC ₁₁ e	1,19E-09	2,20E-10	1,45E-09	2,86E-09	1,47E-09	7,65E-11	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,57E-11	0,00E+00	1,95E-10	0,00E+00
Acidification	kg SO ₂ e	2,20E-04	3,96E-06	5,34E-05	2,78E-04	3,23E-05	1,80E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,19E-06	0,00E+00	5,29E-06	0,00E+00
Eutrophication	kg PO ₄ ³ e	8,35E-05	9,02E-07	3,98E-05	1,24E-04	8,13E-06	4,44E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,70E-07	0,00E+00	3,88E-04	0,00E+00
POCP ("smog")	kg C ₂ H ₄ e	1,74E-05	1,55E-07	4,76E-06	2,23E-05	2,26E-06	2,86E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,63E-08	0,00E+00	1,53E-06	0,00E+00
ADP-elements	kg Sbe	1,05E-07	2,78E-09	1,17E-07	2,25E-07	8,57E-08	9,10E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,18E-10	0,00E+00	2,68E-09	0,00E+00
ADP-fossil	MJ	3,27E+00	1,81E-02	2,18E-01	3,51E+00	1,24E-01	6,92E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,41E-03	0,00E+00	1,88E-02	0,00E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant

standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
08.02.2024



ANNEX A

PRODUCT SCALING

GRS Product Range (code)	Pipe Diameter (mm)	Declared Unit Weight (kg)	Scaling Factor (per declared unit)	A1 - D GWP Fossil (kg/C0 ₂ e)
GRS-DUO	10	0.077	1.00	0.279
GRS-FF	10	0.077	1.05	0.292
GRS-DUO-15	15	0.114	1.48	0.414

PRODUCT VARIATIONS

Primary data set covered in this EPD is taken from the characteristics of the GRS-DUO 10mm version of the Radiator Pipe Guide & Seal. The GRS-FF variant consists of the same 10mm product in the same part quantities, but with an alternative packing configuration which splits the mount and cover plates into separate boxes within an outer sleeve. The GRS-DUO-15 is a larger version of the Radiator Pipe Guide & Seal designed for larger diameter 15mm barrier pipe. For this larger version, the mount and cover plates are in turn a larger size and so contain more of the base material, in addition the packaging content is greater due to the larger parts and the use of the split box specification despite the box quantity remaining the same. As the raw materials, manufacturing process, distribution and installation is the same across the 3 variants, the base template from the GRS-DUO was duplicated once complete and the values for material, packaging, energy use during manufacture and distribution weights were substituted where relevant to obtain the output values for the other variants. The scaling factors shown above were then calculated based on this data.