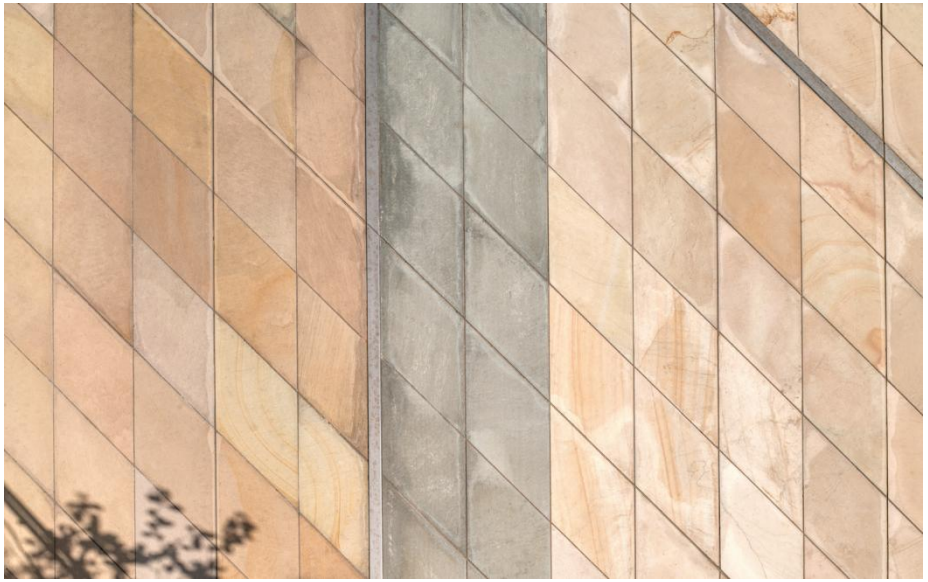
Marshalls

ENVIRONMENTAL PRODUCT DECLARATION

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

Marshalls Indian Sandstone
Brackendale, Brownridge, Laurel Bank, Hawks View and Thornlake



EPD HUB, HUB-2473
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Marshalls

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Marshalls
Address	Landscape House, Premier Way, Elland HX5 9HT, England, UK
Contact details	epd@marshalls.co.uk
Website	www.marshalls.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 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author VP-004	Mike Edwards
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ 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	Indian Sandstone - Natural Stone
Additional labels	Brackendale, Brownridge and Laurel Bank, Hawks View, Thornlake
Product reference	-
Place of production	Kota City, Rajastan, India
Period for data	2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	+11.85 %

Hawks View and Thornlake consume more fuel during the extraction phase. Representative products were selected based on production volumes.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 tonne
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,62E+02
GWP-total, A1-A3 ($kgCO_2e$)	2,09E+02
Secondary material, inputs (%)	0
Secondary material, outputs (%)	93
Total energy use, A1-A3 (kWh)	1100
Net freshwater use, A1-A3 (m^3)	0.71

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Marshalls is the UKs largest manufacturer and supplier of building and hard landscaping products, including paving blocks and flags, kerbs, drainage channels, bricks, roof tiles, street furniture and natural stone paving. It provides products for both commercial and domestic markets.

PRODUCT DESCRIPTION

Marshalls Indian Sandstone paving is a range of imported natural stone products.

Extremely strong, all stones offer all-round high performance and are an ideal choice for mixed-use areas given their ability to carry quite high loads. Suitable for both pedestrian and vehicular trafficked areas.

All Marshalls sandstones are fully tested to the appropriate standards in the UK and where relevant are UKCA marked in accordance with the latest legislation.

Sandstones are generally hard-wearing, strong and durable landscaping materials. Indian Sandstone is available in paving, setts and kerbs. Other products and specials may be available by agreement.

The packaging mass totals 27.2 kg.

Further information can be found at www.marshalls.co.uk.

PRODUCT RAW MATERIAL MAIN COMPOSITION VP

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	100	India
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	14.28

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit VP-011	1 tonne
Mass per declared unit VP-012	1000 kg
Functional unit	-
Reference service life	100 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	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.

The production process includes roughly four stages. The first is the separation of the natural stone from the rock face at the quarry. This is done either by explosives or by cutting and drilling. After this, the large stone block is cut into smaller blocks which are then transported to the manufacturing site. At the site the blocks are sawn and processed into the required shape and size. Finally, the stone products are given a finishing treatment and for the purposes of this EPD that relates to sawing, flaming, and shot blasting. Harvested rainwater is used for dust control to minimise the use of tap water. The final product is not washed.

The manufacturing energy use consists of grid electricity (specific to the region of extraction and manufacturing) used to power the equipment and lighting, as well as diesel for machinery. The flamed finish is produced through heat generated via natural gas supplies. As overall annual energy and production data for government and privately owned quarries in India it is currently impossible to source, these quantities have been based on a timed study carried out on site directly by a Marshalls employee in India.

Manufacturing waste consists mainly of waste ancillary materials like drill bits and tools being recycled by a contracted waste manager located in 50 km proximity to the production site. Waste grease and oil are mostly collected and sent to the municipal incineration plant for energy recovery. The dust emissions are recorded on-site and the samples result in an average of 0.02 kg per 1 tonne of product.

This study includes the quarrying and crushing processes, internal transport, as well as equipment maintenance and infrastructure. Administration and the quarry's end of life are not taken into account. Removal of the topsoil layer (overburden) is not considered. It also includes the land use (mineral extraction site and lake, no distinction of internal roads) considering an 80 year lifespan for the quarry.

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 product is delivered to the manufacturing facility in bulk by lorry after which the finished product is transported by road to the port and then by ship to the UK port, then shipped by road to the warehouse and finally by road to the customer (A4).

Installation of the stone paving products is by hand (A5).

PRODUCT USE AND MAINTENANCE (B1-B7) VP-
The Use phase is out of scope of this EPD.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D) VP-
At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as separate construction waste. The demolition process consumes energy in the form of diesel fuel used by building machines. Energy consumption of a demolition process is on the average 10 kWh/m2 (Bozdağ, Ö & Seçer, M. 2007). Basing on a Level(s) project, an average mass of a reinforced concrete building is about 1000 kg/m2. Therefore, energy consumption demolition is assumed to be 10 kWh/1000 kg = 0,01 kWh/kg. The source of energy is diesel fuel used by work machines (C1).

The dismantled natural stone is delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. Transportation distance to the closest disposal area is estimated as 100 km and the transportation method is lorry which is the most common. This is a reasonable assumption for an average distance to waste handling facilities in the UK (C2).

Natural stone waste can generally be reused on-site. According to the UK Government Statistics for non-hazardous C&D waste, this is assumed to be re-use of 93% (C3) and landfill of 7% (C4).

Due to the recycling potential of stone, it can be used as secondary raw material, which avoids the production of virgin raw materials. The 93% is converted into secondary raw materials in the form of aggregates. Benefits and loads for wood and plastic packaging were also considered (D).

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 material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	+11.85 %

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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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_2e	7,81E+00	9,20E+00	1,92E+02	2,09E+02	2,13E+02	5,34E+01	MND	MND	MND	MND	MND	MND	MND	3,18E+00	6,57E-01	0,00E+00	3,69E-01	-2,58E+01
GWP – fossil	kg CO_2e	7,80E+00	9,19E+00	2,45E+02	2,62E+02	2,13E+02	9,83E-01	MND	MND	MND	MND	MND	MND	MND	3,17E+00	6,57E-01	0,00E+00	3,69E-01	-2,57E+01
GWP – biogenic	kg CO_2e	2,50E-03	0,00E+00	-5,24E+01	-5,24E+01	0,00E+00	5,24E+01	MND	MND	MND	MND	MND	MND	MND	4,37E-03	0,00E+00	0,00E+00	0,00E+00	-8,15E-02
GWP – LULUC	kg CO_2e	7,93E-04	3,73E-03	7,68E-02	8,13E-02	1,20E-01	3,33E-04	MND	MND	MND	MND	MND	MND	MND	4,37E-03	2,42E-04	0,00E+00	3,48E-04	-3,65E-02
Ozone depletion pot.	kg CFC-$_{11}$e	1,67E-06	2,16E-06	6,00E-06	9,82E-06	4,59E-05	1,35E-07	MND	MND	MND	MND	MND	MND	MND	2,18E-07	1,51E-07	0,00E+00	1,49E-07	-2,43E-06
Acidification potential	mol H^+e	8,10E-02	5,18E-02	1,20E+00	1,33E+00	3,93E+00	6,36E-03	MND	MND	MND	MND	MND	MND	MND	1,11E-02	2,78E-03	0,00E+00	3,47E-03	-1,63E-01
EP-freshwater[2)]	kg Pe	1,64E-05	6,79E-05	1,47E-02	1,48E-02	1,26E-03	9,62E-06	MND	MND	MND	MND	MND	MND	MND	6,80E-05	5,38E-06	0,00E+00	3,86E-06	-1,12E-03
EP-marine	kg Ne	3,56E-02	1,86E-02	2,24E-01	2,78E-01	9,58E-01	2,67E-03	MND	MND	MND	MND	MND	MND	MND	2,22E-03	8,27E-04	0,00E+00	1,20E-03	-3,97E-02
EP-terrestrial	mol Ne	3,93E-01	2,05E-01	2,55E+00	3,15E+00	1,06E+01	2,84E-02	MND	MND	MND	MND	MND	MND	MND	2,67E-02	9,12E-03	0,00E+00	1,32E-02	-4,61E-01
POCP ("smog")[3)]	kg NMVOCe	1,08E-01	5,86E-02	6,71E-01	8,38E-01	2,86E+00	7,40E-03	MND	MND	MND	MND	MND	MND	MND	6,63E-03	2,92E-03	0,00E+00	3,84E-03	-1,24E-01
ADP-minerals & metals[4)]	kg Sbe	4,28E-06	3,12E-05	1,92E-04	2,28E-04	4,01E-04	2,78E-06	MND	MND	MND	MND	MND	MND	MND	3,62E-05	1,54E-06	0,00E+00	8,47E-07	-1,26E-04
ADP-fossil resources	MJ	1,05E+02	1,39E+02	2,98E+03	3,22E+03	2,98E+03	1,05E+01	MND	MND	MND	MND	MND	MND	MND	8,31E+01	9,87E+00	0,00E+00	1,01E+01	-3,56E+02
Water use[5)]	m^3e depr.	2,40E-01	6,67E-01	2,82E+01	2,91E+01	1,12E+01	1,80E+00	MND	MND	MND	MND	MND	MND	MND	7,24E-01	4,41E-02	0,00E+00	3,21E-02	-1,81E+01

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	2,17E-06	1,02E-06	5,32E-06	8,51E-06	1,50E-05	8,79E-08	MND	MND	MND	MND	MND	MND	MND	5,71E-08	7,57E-08	0,00E+00	6,98E-08	-2,13E-06
Ionizing radiation[6)]	kBq U235e	4,83E-01	7,28E-01	6,26E+00	7,47E+00	1,40E+01	4,01E-02	MND	MND	MND	MND	MND	MND	MND	2,90E+00	4,70E-02	0,00E+00	4,57E-02	-3,92E+00
Ecotoxicity (freshwater)	CTUe	5,90E+01	1,17E+02	6,99E+03	7,17E+03	2,30E+03	1,29E+01	MND	MND	MND	MND	MND	MND	MND	5,07E+01	8,87E+00	0,00E+00	6,59E+00	-5,16E+02
Human toxicity, cancer	CTUh	2,43E-09	4,43E-09	6,60E-08	7,29E-08	1,01E-07	1,33E-09	MND	MND	MND	MND	MND	MND	MND	1,36E-09	2,18E-10	0,00E+00	1,65E-10	-1,60E-08
Human tox. non-cancer	CTUh	4,52E-08	1,30E-07	3,55E-06	3,73E-06	1,93E-06	6,15E-08	MND	MND	MND	MND	MND	MND	MND	4,06E-08	8,78E-09	0,00E+00	4,31E-09	-3,78E-07
SQP[7)]	-	1,36E+01	1,22E+02	7,17E+03	7,30E+03	2,03E+03	6,27E+00	MND	MND	MND	MND	MND	MND	MND	3,67E+01	1,14E+01	0,00E+00	2,16E+01	-7,26E+02

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	6,11E-01	2,02E+00	7,59E+02	7,62E+02	2,75E+01	1,68E-01	MND	MND	MND	MND	MND	MND	MND	1,78E+01	1,11E-01	0,00E+00	8,78E-02	-4,71E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	4,26E+02	4,26E+02	0,00E+00	-4,26E+02	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	6,11E-01	2,02E+00	1,19E+03	1,19E+03	2,75E+01	-4,26E+02	MND	MND	MND	MND	MND	MND	MND	1,78E+01	1,11E-01	0,00E+00	8,78E-02	-4,71E+01
Non-re. PER as energy	MJ	1,05E+02	1,39E+02	2,95E+03	3,20E+03	2,99E+03	1,05E+01	MND	MND	MND	MND	MND	MND	MND	8,31E+01	9,87E+00	0,00E+00	1,01E+01	-3,56E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	2,58E+01	2,58E+01	0,00E+00	-2,58E+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 non-re. PER	MJ	1,05E+02	1,39E+02	2,98E+03	3,22E+03	2,99E+03	-1,53E+01	MND	MND	MND	MND	MND	MND	MND	8,31E+01	9,87E+00	0,00E+00	1,01E+01	-3,56E+02
Secondary materials	kg	4,17E-02	4,64E-02	2,28E-01	3,16E-01	1,08E+00	1,06E-02	MND	MND	MND	MND	MND	MND	MND	8,09E-03	2,74E-03	0,00E+00	2,12E-03	-1,77E-01
Renew. secondary fuels	MJ	1,34E-04	4,84E-04	2,40E-02	2,46E-02	6,17E-03	5,11E-05	MND	MND	MND	MND	MND	MND	MND	6,22E-05	2,76E-05	0,00E+00	5,55E-05	-1,33E-03
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	2,72E-02	1,85E-02	6,65E-01	7,10E-01	2,95E-01	-4,60E-03	MND	MND	MND	MND	MND	MND	MND	1,71E-02	1,28E-03	0,00E+00	1,11E-02	-4,47E-01

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	1,42E-01	1,61E-01	1,99E+01	2,02E+01	4,00E+00	9,84E-03	MND	MND	MND	MND	MND	MND	MND	1,83E-01	1,31E-02	0,00E+00	0,00E+00	-1,78E+00
Non-hazardous waste	kg	1,01E+00	2,85E+00	7,05E+02	7,08E+02	4,99E+01	2,74E+01	MND	MND	MND	MND	MND	MND	MND	2,77E+00	2,15E-01	0,00E+00	7,00E+01	-4,82E+01
Radioactive waste	kg	7,39E-04	9,54E-04	1,85E-03	3,54E-03	2,06E-02	4,52E-05	MND	MND	MND	MND	MND	MND	MND	7,27E-04	6,60E-05	0,00E+00	0,00E+00	-1,67E-03

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	9,30E+02	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	1,41E+02	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_2e	7,72E+00	9,11E+00	2,42E+02	2,59E+02	2,11E+02	9,39E-01	MND	MND	MND	MND	MND	MND	MND	3,13E+00	6,50E-01	0,00E+00	3,61E-01	-2,52E+01
Ozone depletion Pot.	kg CFC-$_{11}$e	1,32E-06	1,71E-06	4,56E-06	7,59E-06	3,64E-05	1,09E-07	MND	MND	MND	MND	MND	MND	MND	1,92E-07	1,20E-07	0,00E+00	1,18E-07	-1,98E-06
Acidification	kg SO_2e	5,78E-02	3,89E-02	9,82E-01	1,08E+00	3,15E+00	4,62E-03	MND	MND	MND	MND	MND	MND	MND	8,87E-03	2,16E-03	0,00E+00	2,62E-03	-1,29E-01
Eutrophication	kg PO_4^3e	1,33E-02	9,10E-03	4,54E-01	4,76E-01	3,79E-01	7,76E-03	MND	MND	MND	MND	MND	MND	MND	2,96E-03	4,92E-04	0,00E+00	5,65E-04	-4,89E-02
POCP (“smog”)	kg C_2H_4e	1,27E-03	1,27E-03	3,85E-02	4,10E-02	8,64E-02	1,77E-04	MND	MND	MND	MND	MND	MND	MND	4,27E-04	8,44E-05	0,00E+00	1,10E-04	-6,36E-03
ADP-elements	kg Sbe	4,21E-06	3,05E-05	1,91E-04	2,25E-04	3,91E-04	2,61E-06	MND	MND	MND	MND	MND	MND	MND	3,62E-05	1,49E-06	0,00E+00	8,35E-07	-1,25E-04
ADP-fossil	MJ	1,05E+02	1,39E+02	2,98E+03	3,22E+03	2,98E+03	1,05E+01	MND	MND	MND	MND	MND	MND	MND	8,30E+01	9,87E+00	0,00E+00	1,01E+01	-3,56E+02

CONVERSION TO PRODUCT SIZES

This EPD is calculated per tonne of sandstone type due to the infinite sizes and formats of final products that are possible with a naturally occurring material.

However, the correlation between the material and energy inputs to calculate A1-A4 data is linear, therefore, to calculate A1-A4 values for a particular size/volume of product, please use an average density of 2560kg/m3 of sandstone in your conversion calculations.

For example, if the product you are using is 900x600x63 paving slab and the stated GWP A1-A4 number is 422kg CO2e/tonne:

0.9*0.6*0.063 = 0.03402m3

0.03402*2560 = 87.09 kg

(87.09/1000) * 422 = **36.75 kg CO2e for that size unit of paving**

To convert that to a value per square metre:

0.9*0.6 = 0.54

1/0.54 = 1.85

36.75*1.85 = **67.99 kg CO2e per sqm of 63mm thick paving**

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
21.02.2025

VERIFIED ISO 14025