EST 1854
JOHNSONS
WELLFIELD

ENVIRONMENTAL PRODUCT DECLARATION

NATURAL STONE MASONRY

In accordance with:

ISO 14025:2006
EN 15804:2012+A2:2019/AC:2021

COMPANY INFORMATION

Owner Of The EPD

Johnsons Wellfield Ltd
Crosland Hill
Huddersfield
Hd4 7ab

Contact

Michael Gorman

Description Of The Organisation

Johnsons Wellfield Ltd is an industry-leading supplier of dimensional Natural Stone. The quarry and stone processing facility is located on the outskirts of Huddersfield between the M1 and M62 motorways and so ideally positioned to supply national Yorkstone requirements.

First Established in 1854, the renowned Johnsons quarries were acquired by the Myers family in 1979. As part of the Myers Group, Johnsons Wellfield has benefited from consistent investment in land acquisitions, plant, and equipment. This dedication has resulted in Johnsons Wellfield annually providing the construction industry with over 17,000m^3 of Crosland Hill dimensional stone products. This achievement has solidified Johnsons Wellfield as Britain's foremost supplier of Natural Hard Yorkstone.

Johnsons Wellfield's mission is to combine tradition and innovation to realised and promote a vision for a sustainable stone supply. With over 50 dedicated staff, the company prides itself on sourcing and providing quality stone while prioritizing environmental responsibility and through teamwork and ethical practices, building a lasting foundation for future generations.

Name and location of production site(s):

Quarry 1: Thewlis Lane Quarry
Quarry 2: Moorend South Quarry
Saw Shed, Processing And Packaging Site:
Thewlis Lane, Huddersfield.

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PRODUCT INFORMATION

Product Name

Natural Stone Masonry

Product Identification

BS EN 771-6:2011
Natural Stone Masonry Units

Product Description

Johnson's Wellfield crafts premium masonry products from the renowned Crosland Hill natural Hard Yorkstone. This approach seamlessly blends traditional masonry expertise with state-of-the-art equipment, ensuring a harmonious fusion of heritage craftsmanship and modern production efficiency. The provides a broad range of exceptional Yorkstone products that meeting the demands of both contemporary and traditional construction projects.

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Typical Usage

All dimensional masonry components, including: Exterior Cladding, Paving, Kerbing, Steps & Stairs, Walls, Pillars, Columns, Fireplaces, Flooring; Retaining Walls; Monuments and Memorials; Architectural Details such as Cornices, Balusters, and Ornamental Carvings; Sculptures and Art Installations; Bridge Construction; Water Features, such as fountains, waterfalls, and decorative ponds, in landscaping and public spaces; Historic Restoration.

Bulk Density

2380 kgm^3

Block Size

2.5 x 1.5 x 1.2

Geological Type

Millstone Grit Sandstone of the Carboniferous age

Geographical Scope

Nationwide Distribution

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LCA INFORMATION

Declared Unit	1 tonne of Natural Stone Masonry
Time Representativeness	2022
Database(s) and LCA Software Used	Ecoinvent 3.10, Looper
Description of System Boundaries	Cradle-to-Gate with Modules C1-C4 and Module D

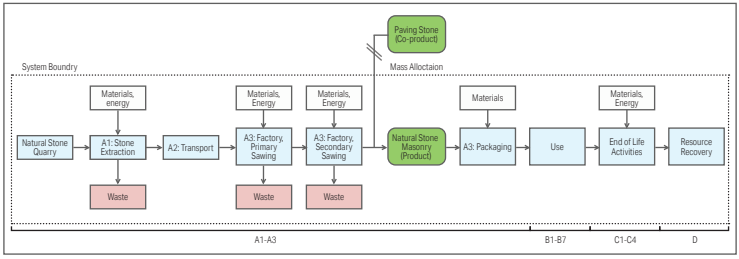
System Boundaries and Cut-Off

The system boundaries are cradle-to-gate (A1-A3) with modules C1-C4 and D. All known materials have been included. According to EN 15804:A2, the manufacturing of machinery has been excluded as it falls under the cut-off.

More than 95% of all inflows per module (mass and energy) are estimated to be included in the Inventory, which is required by EN 15804:A2. All input data regarding energy and resource use represent average annual data between 2022-2023.

All background LCA-data are generic from the latest version of the Ecoinvent database (version 3.10).

Schematic of Natural Stone Masonry manufacturing process and the system boundary for the LCA study



A1: Raw Material Supply

Johnsons Wellfield's Masonry production starts from the extraction of block stone. The block stone is from two hard Yorkstone Dimension Stone quarries, Thewlis Lane, and South Crosland, both located on Crosland Hill, Huddersfield, UK. Raw material supply includes extraction, preparation, and pre-treatment processes before production. A combination of digging and drilling is performed to extract the block stone from both quarries. Depending on the dimensions of the block stone, is either allocated for use as a Masonry Block Stone product or Paving Stone product.

A2: Transportation

Transport is required for delivery of block stone and other materials to the production plant also located on Crosland Hill, Huddersfield. Transportation of raw materials to the production site is completed using two methods, internal haul roads from Thewlis Lane and public roads from South Crosland. All block stone is weighed from both sites prior to going through the production process in the saw sheds.

A3: Manufacturing

Manufacturing starts with the selection of the block stone for production. Block stone is the cut into slab form with optimal resource efficiency.

C1: Deconstruction and Demolition

There is no energy use during deconstruction since the activity is assumed to be performed as manual work.

C2: Transport

Average distance from the demolition site to the final disposal site is assumed to be 100 km. A lorry (EURO 6) with capacity between 7.5 – 16 tonnes was assumed to accomplish the transport activity for the stone.

C3: Waste Processing

There is no waste processing since all the reclaimed stone (assumed as 80% of the total weight) is re-used back on-site.

C4: Disposal

Material at the end of life is expected to be reclaimed and used again in construction projects in the future. We have assumed that 20% of the stone by weight cannot be reclaimed and are sent for inert landfill (quarry back-filling).

D: Resource Recovery Stage

Because of large durability of stone, they are assumed to be reclaimed at the end of the first use to be used in other construction projects. We have assumed that 80% of the blocks can be reclaimed, substituting new stone blocks. The system is credited with the avoided burden of extracting new rock. Unprocessed limestone blocks were selected for the substitute material.

More Information

Volume and weight allocation was used to distribute the impacts of quarrying between masonry blocks and paving block stones.

The stages excluded from the calculations are A4 (transport to construction site), A5 (construction activities), the use stages, B1–B7.

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

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Resource Recovery Stage
	Raw material supply	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x
Geography	UK, EU	UK, EU	UK, EU GLO	-	-	-	-	-	-	-	-	-	-	GLO	-	GLO	GLO
Specific Data Used	40-60%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Products	2 Products, each declared separately			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation Sites	1 Factory, 2 Quarries			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL INFORMATION

Potential environmental impact – mandatory indicators according to EN 15804

Environmental Impact		Production				End of Life				
Impact Categories	Unit	A1	A2	A3	**A1–A3**	C1	C2	C3	C4	D
Climate Change – Total	kg CO2 eq	4.18E+00	3.37E-02	1.56E+00	**5.77E+00**	0.00E+00	2.40E+01	0.00E+00	5.78E-01	-1.81E+00
Climate Change – Biogenic	kg CO2 eq	4.52E-04	1.86E-05	-5.38E-02	**-5.33E-02**	0.00E+00	1.32E-02	0.00E+00	4.11E-05	4.21E-03
Climate change – Fossil	kg CO2 eq	4.18E+00	3.36E-02	1.61E+00	**5.82E+00**	0.00E+00	2.40E+01	0.00E+00	5.78E-01	-1.82E+00
Climate Change – Land Use and Land Use Change	kg CO2 eq	3.63E-04	1.06E-05	1.85E-03	**2.22E-03**	0.00E+00	7.57E-03	0.00E+00	5.71E-05	-4.82E-04
Acidification	mol H+ eq	1.43E-02	6.61E-05	4.97E-03	**1.93E-02**	0.00E+00	4.71E-02	0.00E+00	5.08E-03	-4.13E-02
Ozone Depletion	kg CFC11 eq	6.33E-08	6.72E-10	7.16E-08	**1.36E-07**	0.00E+00	4.79E-07	0.00E+00	8.36E-09	-2.46E-08
Eutrophication, fFreshwater	kg P eq	1.22E-04	2.20E-06	2.13E-04	**3.37E-04**	0.00E+00	1.57E-03	0.00E+00	2.83E-05	-1.33E-04
Eutrophication, Marine	kg N eq	5.84E-03	1.56E-05	1.26E-03	**7.12E-03**	0.00E+00	1.11E-02	0.00E+00	2.28E-03	-1.47E-02
Eutrophication, Terrestrial	mol N eq	6.40E-02	1.68E-04	1.43E-02	**7.84E-02**	0.00E+00	1.20E-01	0.00E+00	2.50E-02	-2.07E-01
Photochemical Ozone Formation	kg NMVOC eq	2.26E-02	1.11E-04	4.27E-03	**2.70E-02**	0.00E+00	7.94E-02	0.00E+00	7.57E-03	-4.53E-02
Resource Use, Minerals and Metals	kg Sb eq	1.60E-06	1.10E-07	9.37E-06	**1.11E-05**	0.00E+00	7.85E-05	0.00E+00	2.12E-07	-4.33E-06
Resource Use, Fossils	MJ	5.41E+01	4.70E-01	4.14E+01	**9.60E+01**	0.00E+00	3.35E+02	0.00E+00	7.39E+00	-2.22E+01
Water Deprivation Potential	m3 depriv.	1.34E-01	2.26E-03	3.81E-01	**5.17E-01**	0.00E+00	1.61E+00	0.00E+00	1.88E-02	-9.07E-01

Potential environmental impact – additional mandatory and voluntary indicators

Environmental Impact		Production				End of Life				
Impact Categories	Unit	A1	A2	A3	**A1–A3**	C1	C2	C3	C4	D
GWP – GHG	kg CO2 eq	4.18E+00	3.37E-02	1.61E+00	**5.83E+00**	0.00E+00	2.40E+01	0.00E+00	5.78E-01	-1.82E+00

Resource Use

Environmental Impact		Production				End of Life				
Impact Categories	Unit	A1	A2	A3	**A1–A3**	C1	C2	C3	C4	D
PERE	MJ	3.43E-01	9.07E-03	1.16E+01	**1.20E+01**	0.00E+00	6.46E+00	0.00E+00	6.39E-02	-4.28E-01
PERM	MJ	0.00E+00	0.00E+00	4.22E-01	**4.22E-01**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	3.43E-01	9.07E-03	1.20E+01	**1.24E+01**	0.00E+00	6.46E+00	0.00E+00	6.39E-02	-4.28E-01
PENRE	MJ	5.41E+01	4.70E-01	4.03E+01	**9.49E+01**	0.00E+00	3.35E+02	0.00E+00	7.39E+00	-2.22E+01
PENRM	MJ	0.00E+00	0.00E+00	1.11E+00	**1.11E+00**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.41E+01	4.70E-01	4.14E+01	**9.60E+01**	0.00E+00	3.35E+02	0.00E+00	7.39E+00	-2.22E+01
SM	MJ	2.30E-02	2.06E-04	2.54E-02	**4.86E-02**	0.00E+00	1.47E-01	0.00E+00	2.98E-03	-9.81E-03
RSF	MJ	6.00E-05	2.09E-06	7.01E-05	**1.32E-04**	0.00E+00	1.49E-03	0.00E+00	8.11E-06	-4.09E-04
NRSF*	MJ									
FW	m3	3.55E-03	6.38E-05	9.39E-03	**1.30E-02**	0.00E+00	4.54E-02	0.00E+00	4.96E-04	-2.13E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT= Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; *NRSF = Use of non-renewable secondary fuels (excluded from the study due to background data unavailability); FW = Use of net fresh water.

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Waste Flows

Waste Flows		Production				End of Life				
Impact Categories	Unit	A1	A2	A3	**A1-A3**	C1	C2	C3	C4	D
Hazardous Waste Disposed	kg	6.50E-02	6.14E-04	2.37E-01	**3.02E-01**	0.00E+00	4.37E-01	0.00E+00	1.06E-02	-5.71E-02
Non-Hazardous Waste Disposed	kg	8.35E-01	1.44E-02	1.71E+00	**2.56E+00**	0.00E+00	1.03E+01	0.00E+00	1.68E-01	-9.03E-01
Radioactive Waste Disposed	kg	6.01E-06	1.80E-07	2.93E-04	**2.99E-04**	0.00E+00	1.28E-04	0.00E+00	8.69E-07	-3.95E-06

Output Flows

Waste Flows		Production				End of Life				
Impact Categories	Unit	A1	A2	A3	**A1-A3**	C1	C2	C3	C4	D
Components for Re-Use*	kg									
Material for Recycling	kg	8.07E-07	1.05E-08	3.13E-06	**3.95E-06**	0.00E+00	7.49E-06	0.00E+00	1.15E-07	-9.63E-07
Materials for Energy Recovery	kg	1.47E-04	3.61E-06	1.81E-03	**1.96E-03**	0.00E+00	2.57E-03	0.00E+00	2.28E-05	-3.05E-04
Exported Energy, Electricity	MJ	2.46E-03	1.02E-04	2.24E-01	**2.27E-01**	0.00E+00	7.30E-02	0.00E+00	3.51E-04	-1.51E-03
Exported Energy, Thermal	MJ	1.37E-03	5.78E-04	6.13E-03	**8.08E-03**	0.00E+00	4.12E-01	0.00E+00	1.91E-04	-1.45E-03

*Components for re-use data is excluded from the study due to background data unavailability.

REFERENCES

General Programme Instructions of the International EPD® System. Version 3.0 EN ISO 9001/ Quality Management Systems – Requirements.

EN ISO 14001/ Environmental Management Systems – Requirements.

ISO 45001/ Occupational Health & Safety Management System – Requirements ISO 14020:2000/ Environmental Labels and Declarations – General principles.

EN 15804:2012+A2:2019/ Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products

ISO 14025/ DIN EN ISO 14 0 25:20 09 –11: Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

ISO 14040/44/ DIN EN ISO 14040:2006–10, Environmental management – Life cycle assessment – Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006).

PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Tra, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limtra AB, SS AB, The International EPD System, 2019:14 Version 1.1 DATE 2019–12–20.

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 EPDs and PCRs in accordance with ISO14025. www.environdec.com.

Ecoinvent / Ecoinvent Centre www.ecoinvent.org.

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PROGRAM INFORMATION

CEN standard EN 15804 serves as the Core Product Category Rules (PCR), specifically EN 15804:2012+A2:2019 (henceforth EN 15804:A2)

Product Category Rules (PCR): 2019:14 Version 1.1. 2019-12-20. EN 15804

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

Third party verifier: TBD

Approved by: TBD

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes 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.

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