EPD Hub

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

BFG DARACON

GRADE 1 FLY ASH

EPD HUB, HUB-3862

Publishing date 31 August 2025, last updated on 31 August 2025, valid until 30 August 2030.

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.

One Click LCA Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	BFG Daracon Pty Ltd
Address	33 Jura Street, Heatherbrae NSW 2324, Australia
Contact details	sales@bfgdaracon.com.au
Website	www.bfgdaracon.com.au

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
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate
EPD author	Niki Jackson
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, 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	Grade 1 Flyash
Additional labels	N/A
Product reference	N/A
Place(s) of raw material origin	Erarring, NSW, Australia
Place of production	Erarring, NSW, Australia
Place(s) of installation and use	N/A
Period for data	01-01-2024 to 31-12-2024
Averaging in EPD	No averaging
A1-A3 Specific Data	100%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton Bulk
Declared unit mass	1000 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2.62
GWP-total, A1-A3 ($kgCO_2e$)	2.70
Secondary material, inputs (%)	0
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	3.81
Net freshwater use, A1-A3 (m^3)	0,01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

BFG Daracon has provided recycled fly ash from coal fired power generation since 2016. We utilise the product within the concrete industry, bulk and bagged product supply, grouting solutions, and mine-subsidence remediation services to the civil, mining, construction and residential markets.

PRODUCT DESCRIPTION

Our high-quality grade 1, grade 2 and run-of-station (ROS) fly ash is captured as a by-product of coal power generation, securely stored in silos and ready for delivery by bulk tanker to our customers. The grade 1 fly ash meets the requirements of AS 3582.1 supplementary cementitious materials- Fly ash, with regards to the fineness, loss of ignition, oxide composition and relative strength index. The grade 1 fly ash meets the more stringent requirements of ATIC SP 43 cementitious materials for use in concrete (Registration number ATIC 213) with chloride content less than 0.05% and sodium equivalent less than 3% which is more stringent than AS 3582.1 It is not only a beneficial material when added to concrete, but also an effective reuse of waste materials.

Fly ash is a reliable product for multiple purposes, as it is workable, pumpable, and reduces risk of drying shrinkage, effects of heat, permeability and creep. The product can be used on its own or combined with other materials to produce high quality and economical concrete for use in building materials, stabilising roads, in dams, pre-mix, pavements, and more.

BFG Daracon offers a range of bagged and bulk fly ash, cement, slag and stabilisation solutions to suit diverse needs. We are committed to providing an excellent quality product, the convenience of a locally operated blending plant and an exceptional service designed to streamline your operations.

Further information can be found at www.bfgdaracon.com.au.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	N/A
Minerals	100	Australia Contains Silica, Alumina, Iron Oxide & Calcium Oxide
Fossil materials	0	N/A
Bio-based materials	0	N/A

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	N/A
Biogenic carbon content in packaging, kg C	N/A

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1ton Bulk
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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND		
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)

A1 - The waste fly ash is diverted away from the landfill to the BFG Daracon facility located on the same site as the power station.

A2 - The material is conveyed to the BFG Daracon facility by pneumatic conveyors, where the distance is less than 1km

A3 - It enters a classifier where the material is separated into Grade 1, Grade 2 and run-of-station (ROS) ash. This EPD only covers the classification of Grade 1 Flyash, as this forms over 92% of the volume produced. Any waste that is generated from the manufacturing facility is transported to the on-site storage dam, less than 1km away, with manufacturing losses of less than 10% of the total input material. All material losses are associated with the Grade 1 fly ash.

Electricity is Electricity, black coal NSW, at power plant/AU from Aus/LCI, and has an impact of 0.90 kg CO2e / kWh.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the transport and installation stages. There are various customers with varying geographical locations, and a suitable scenario cannot be determined.

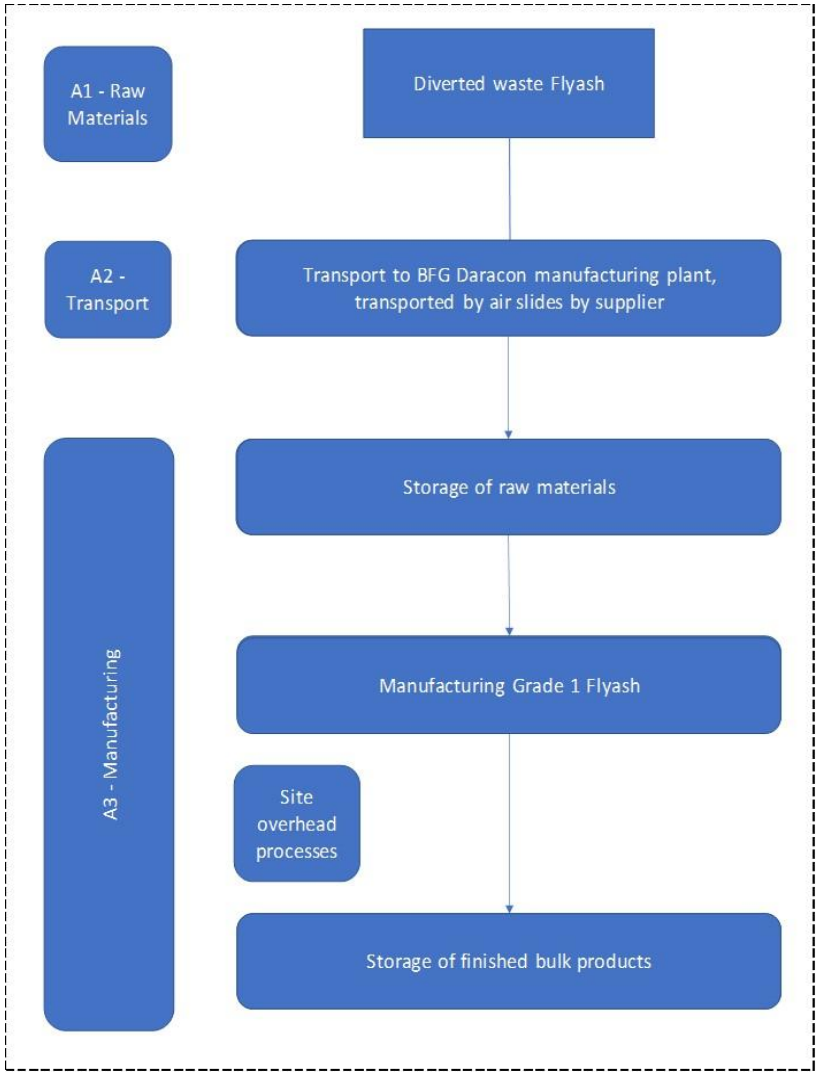
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use and maintenance phase. BFG Daracon has no control over the use phase, as the material can be used for multiple products; a suitable scenario cannot be determined.

PRODUCT END OF LIFE (C1-C4, D)

This EPD does not cover the product end of life because the material undergoes a chemical change that renders it unidentifiable. Additionally, the material does not contain biogenic carbon.

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.

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/AC2021 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
Manufacturing energy and waste	Allocated by mass

AVERAGES AND VARIABILITY

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. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2', and EPD Hub Core PCR, V1.2, 24-03-2025

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3
GWP – total[1)]	kg CO_2e	0,00E+00	2,16E-02	2,67E+00	2,70E+00
GWP – fossil	kg CO_2e	0,00E+00	2,16E-02	2,60E+00	2,62E+00
GWP – biogenic	kg CO_2e	0,00E+00	3,25E-05	5,37E-03	5,40E-03
GWP – LULUC	kg CO_2e	0,00E+00	4,08E-05	6,68E-02	6,68E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	0,00E+00	1,48E-10	1,83E-09	1,98E-09
Acidification potential	mol H^+e	0,00E+00	1,11E-04	7,02E-03	7,13E-03
EP-freshwater[2)]	kg Pe	0,00E+00	7,63E-06	2,09E-06	9,72E-06
EP-marine	kg Ne	0,00E+00	2,87E-05	2,19E-03	2,21E-03
EP-terrestrial	mol Ne	0,00E+00	3,00E-04	2,39E-02	2,42E-02
POCP (“smog”)[3)]	kg NMVOCe	0,00E+00	9,05E-05	8,54E-03	8,63E-03
ADP-minerals & metals[4)]	kg Sbe	0,00E+00	2,83E-08	1,25E-08	4,08E-08
ADP-fossil resources	MJ	0,00E+00	2,55E-01	1,49E-01	4,04E-01
Water use[5)]	m^3e depr.	0,00E+00	5,70E-03	2,28E-01	2,33E-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

Impact category	Unit	A1	A2	A3	A1-A3
Particulate matter	Incidence	0,00E+00	1,64E-09	3,27E-08	3,43E-08
Ionizing radiation[6)]	kBq U235e	0,00E+00	1,63E-03	1,45E-05	1,65E-03
Ecotoxicity (freshwater)	CTUe	0,00E+00	5,23E-02	9,78E-01	1,03E+00
Human toxicity, cancer	CTUh	0,00E+00	6,14E-12	1,69E-10	1,75E-10
Human tox. non-cancer	CTUh	0,00E+00	1,30E-10	6,66E-09	6,79E-09
SQP[7)]	-	0,00E+00	5,42E-02	1,33E+01	1,33E+01

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
Renew. PER as energy[8)]	MJ	0,00E+00	2,57E-02	3,63E-02	6,20E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	0,00E+00	2,57E-02	3,63E-02	6,20E-02
Non-re. PER as energy	MJ	0,00E+00	2,55E-01	1,34E+01	1,37E+01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	0,00E+00	2,55E-01	1,34E+01	1,37E+01
Secondary materials	kg	0,00E+00	4,54E-04	4,05E-06	4,58E-04
Renew. secondary fuels	MJ	0,00E+00	3,63E-07	3,24E-09	3,66E-07
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	0,00E+00	1,42E-04	5,30E-03	5,45E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3
Hazardous waste	kg	0,00E+00	2,39E-03	2,16E-05	2,41E-03
Non-hazardous waste	kg	0,00E+00	4,00E-02	1,12E-01	1,52E-01
Radioactive waste	kg	0,00E+00	3,96E-07	5,32E-09	4,02E-07

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3
Components for re-use	kg	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
Materials for energy rec	kg	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
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3
Global Warming Pot.	kg CO_2e	0,00E+00	2,15E-02	2,66E+00	2,69E+00
Ozone depletion Pot.	kg $CFC_{-11}e$	0,00E+00	1,25E-10	1,45E-09	1,57E-09
Acidification	kg SO_2e	0,00E+00	8,89E-05	5,48E-03	5,57E-03
Eutrophication	kg PO_4^3e	0,00E+00	1,37E-05	8,28E-04	8,41E-04
POCP (“smog”)	kg C_2H_4e	0,00E+00	6,06E-06	2,10E-04	2,16E-04
ADP-elements	kg Sbe	0,00E+00	2,75E-08	1,11E-08	3,86E-08
ADP-fossil	MJ	0,00E+00	2,30E-01	1,34E+01	1,36E+01

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3
GWP-GHG[9)]	kg CO_2e	0,00E+00	2,16E-02	2,67E+00	2,69E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, black coal, NSW, at power plant/AU, Very Good
Electricity CO2e / kWh	0.90

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 15802+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.

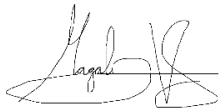
The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
31.08.2025



VERIFIED ISO 14025