Statement of Verification

BREG EN EPD No: 000790 Issue: 01

This is to verify that the Environmental Product Declaration provided by:

Garnalex Aluminium Extrusions Ltd

are in accordance with the requirements of:

EN 15804:2012+A2:2019

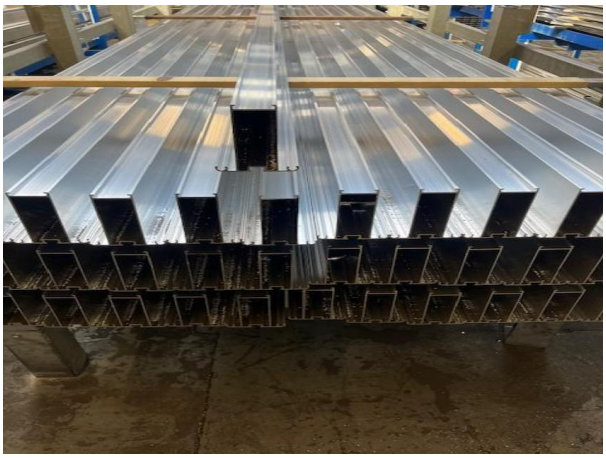
and

BRE Global Scheme Document SD207

This declaration is for:
1 kg of Garnalex Trade Aluminium Extrusions

Company Address

Garnalex Aluminium Extrusions Ltd
Firs Works,
Spanker Lane,
Nether Heage,
Belper, Derbyshire,
DE56 2JJ



Hayley Thomson
Signed for BRE Global Limited — Operator

26 May 2026	26 May 2026	25 May 2031
Date of this Issue	Date of First Issue	Expiry Date

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Environmental Product Declaration

EPD Number: 000790

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2025 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.2
Commissioner of LCA study	**LCA consultant/Tool**
Garnalex Aluminium Extrusions Ltd Firs Works, Spanker Lane, Nether Heage, Belper, Derbyshire, DE56 2JJ	Chi Zhang / BRE LINA2.0
Declared/Functional Unit	**Applicability/Coverage**
1 kg of Garnalex Trade Aluminium Extrusions	Product Specific
EPD Type	**Background database**
Cradle to Gate with Module C and D	Ecoinvent 3.8

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☒Internal ☐ External
(Where appropriate [b]) Third party verifier: Kim Allbury
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☑	☑	☑		☑

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Firs Works

Spanker Lane,
Nether Heage,
Belper,
Derbyshire,
DE56 2JJ

Construction Product:

Product Description

Garnalex is a King's Award-winning single site manufacturer based in Derbyshire that produces customer designs and specifications made from Al6063 aluminium, which is tempered to T6.

Operating a modern and technologically advanced aluminium extrusion plant with trained tool room technicians enables Garnalex to produce custom dies. Trade partners submit technical drawings for review before being quoted for die manufacture and the cost of finished and delivered products.

Every product is bespoke, there is no 'standard' or 'on the shelf' item, and they range from small clips to large roof beams, football goal posts, and everything between. Finished products are supplied in mill finish conditions – i.e., untreated aluminium leaves the extrusion press with no surface coating, paint, or further processing.

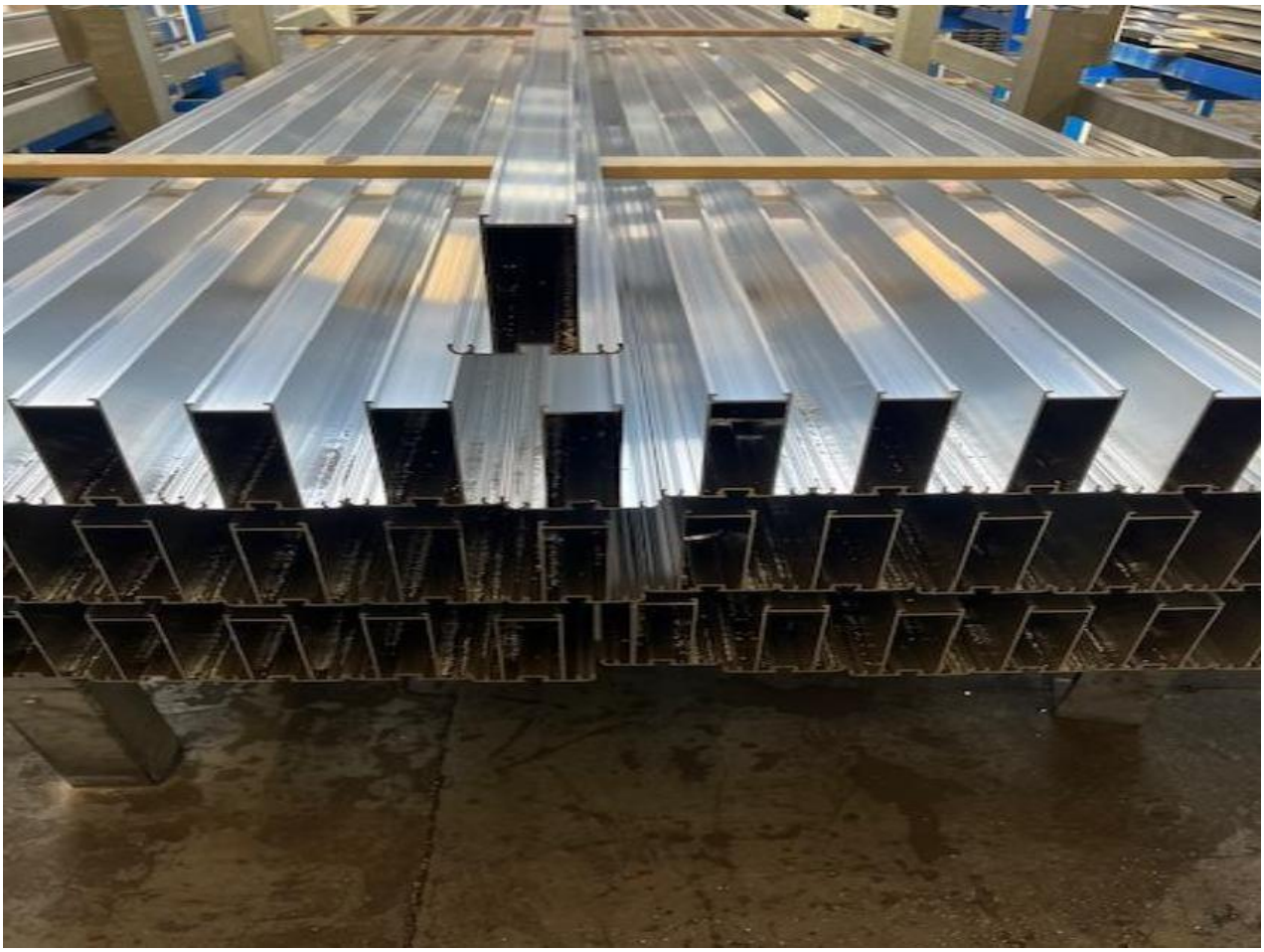
Quality is at the heart if everything Garnalex does. Every batch of aluminium extruded onsite can be tracked by the company's unique proprietary system. Products are delivered by Garnalex (Garner Aluminium Extrusions) directly through its fleet of vehicles.

All sizes of Garnalex Trade Aluminium Extrusions comply with the same manufacturing process and material composition. This EPD measures the environmental impacts per 1 kg of Garnalex Trade Aluminium Extrusions.

Technical Information

Property	Value, Unit
BS EN 755-9:2016 – Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles — Part 9: Profiles, tolerances on dimensions and form.	Conforms

Note: More technical information available in Garnalex website Garnalex.com – UK Aluminium Extruders, for more information please contact Garnalex at info@garnalex.com.



Main Product Contents

Material/Chemical Input	%
Aluminium	100

Manufacturing Process

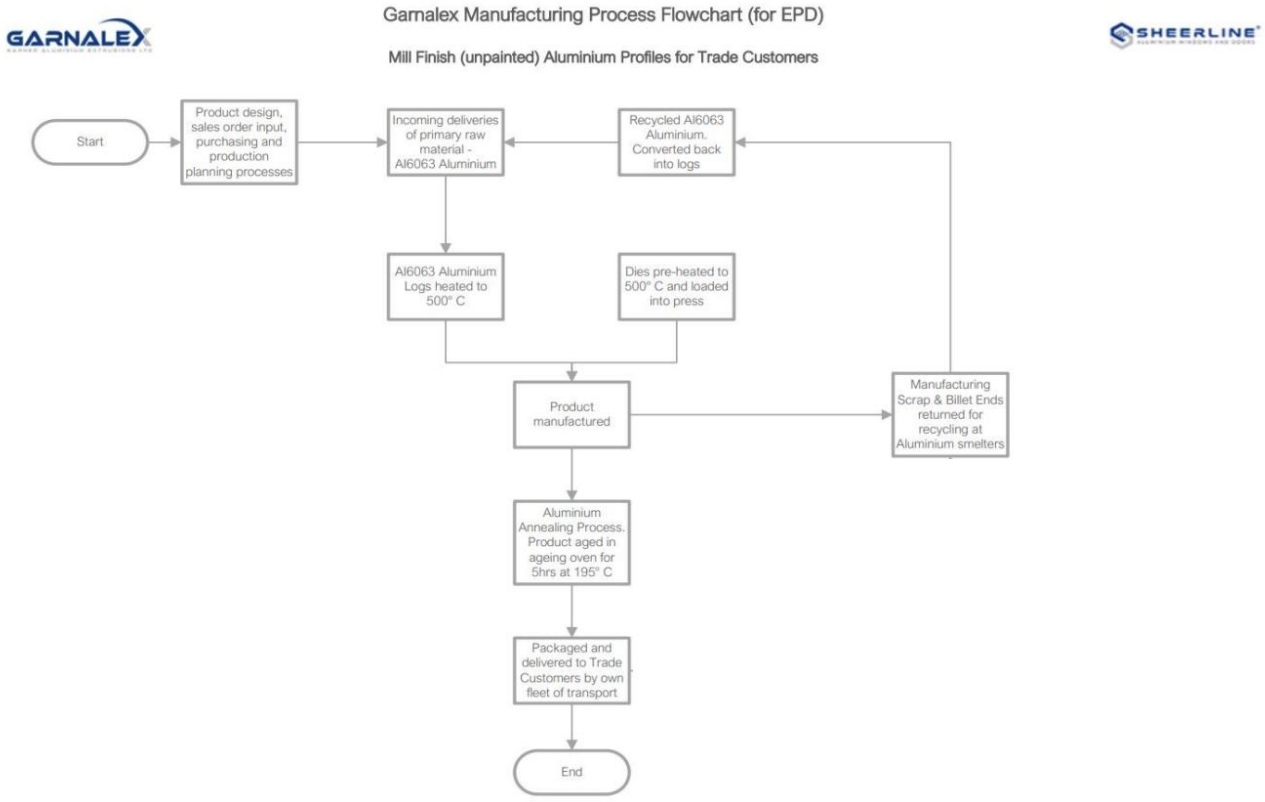
The manufacturing process begins with product design, sales order input, purchasing and production planning processes. Once planning is complete, incoming deliveries of primary raw material – Al6063 aluminium are received at Firs works site.

The Al6063 aluminium logs are heated to 500°C, while extrusion dies are pre-heated to 500°C and loaded into the press. At this stage, the aluminium is extruded, and the product is manufactured, then the aluminium annealing process. Product aged in ageing oven for 5 hrs at 195°C. The processed aluminium profiles are packaged and delivered to trade customers by Garnalex's own transport (this transport is not measured in the LCA analysis).

Throughout the process, manufacturing scrap and billet ends are returned to the aluminium smelter for recycling. This material is considered internal / pre-consumer scrap and, in accordance with ISO 14021, has not been counted as recycled content within the LCA.

Electricity from UK national grid is used in powering machinery and plant, and liquefied petroleum gas (LPG) is used for pre-heating aluminium logs, annealing process and paint curing.

Process flow diagram



Transport to site and construction – installation (A4 – A5)

Module A4 (transport to site) and A5 (construction-installation) are not declared in this EPD.

The product is packaged with twin wall cardboard and polypropylene strapping as shown below:

Packaging material	Mass per DU (kg)	Biogenic carbon (kg C per DU)
Twin wall cardboard	4.67×10^{-2}	2.10×10^{-2}
Polypropylene strapping	1.98×10^{-4}	0.00
Total	4.69×10^{-2}	2.10×10^{-2}

A standard UK disposal scenario has been applied based on DEFRA data (UK Statistics on Waste, 2025, Methodology 1 – provisional 2024 figures):

- Cardboard: 74.3% recycled, the remainder sent to energy recovery or landfill
- PP strapping: 51% recycled, the remainder sent to energy recovery or landfill

The biogenic carbon in the cardboard would be released in module A5 when the packaging is thrown away on site. The biogenic carbon content is shown in the table above for transparency.

End of Life

At end-of-life during the deconstruction phase, the Garnalex Trade Aluminium Extrusions are assumed to be dismantled as part of the building deconstruction. Hand power tools are used to dismantle the Garnalex products, electricity used to charge power tool batteries, which is considered negligible in comparison with the overall energy demand of building demolition. The product is then transported to the recycling facility, as per the end-of-life scenario for all types of aluminium stated in Appendix D of the BRE PCR document, using a generic transportation distance of 50 km. End-users of the EPD can use the Module C2 results to calculate a bespoke transport distance if required (divide results by 50 and multiply by required distance in km). The product contains 25.9% of pre-existing secondary content that has been removed from the Module D calculation to avoid the double-counting of environmental benefits.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 kg of Garnalex Trade Aluminium Extrusions

System boundary

In accordance with the modular approach as defined in EN15804:2012+A2:2019 and the BRE 2025 Product Category Rules (PN 524 Rev 3.2), this cradle-to-gate with modules C and D EPD includes the processes covered during the raw material extraction and manufacturing phase in modules A1 to A3, and the end-of-life scenario in modules C1, C2, C3, C4 and module D.

Data sources, quality and allocation

Specific primary data derived from Garnalex Aluminium Extrusions Ltd have been modelled using the LINA A2 tool for the period 01/01/2023 to 31/12/2023. In accordance with the requirements of EN 15804, the most current available data have been used. Secondary data have been obtained for all remaining upstream and downstream processes that are beyond the control of the manufacturer from the ecoinvent 3.8 database, applying the "Cut-off, EN 15804" system model.

Impact category results have been calculated using the characterisation factors specified in Annex C of EN 15804:2012+A2:2019, based on the Environmental Footprint (EF) 3.0 method. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN 15804+A2:2019.

The Garnalex Trade Aluminium Extrusions are not the only products manufactured at the Firs Works factory. A physical allocation by mass(kg) of the site process data has therefore been carried out, according to EN 15804 and ISO 14044 guidance, to determine the correct quantities of energy, packaging, water and non-production waste attributable to the Garnalex Trade Aluminium Extrusions production. This is because energy consumption and emissions are considered proportional to the mass of product throughput. Raw materials and production waste are actual usage, based on records.

The mass balance for the Garnalex Trade Aluminium Extrusions was within tolerance.

Data Quality Assessment:
The quality of the data used in this EPD has been assessed in accordance with Table E.1 of Annex E in BS EN 15804:2012+A2:2019, covering geographical, technical and time representativeness.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology).	There is approximately 3 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

The quality level of geography, time and technological representativeness is good as specific UK datasets have been selected from the ecoinvent LCI, the background LCI datasets are from ecoinvent v3.8 which was compiled in 2021, and manufacturer-specific primary data has been modelled. Therefore, the most appropriate LCA data have been used. The GWP of the electricity dataset used for this EPD is: 1 kWh UK electricity = 0.239 kgCO2eq (Electricity GB (kWh) market for electricity, medium voltage). This is a 2022 UK consumption (or location-based) electricity mix dataset. The GWP of the liquefied petroleum gas dataset used for this EPD is: 1 kg liquefied petroleum gas = 0.606 kg CO2eq (Liquefied petroleum gas production, Rest of World).

Cut-off criteria

All raw materials, packaging, energy, water, waste and processes associated with the manufacturing process have been included, except for direct emissions to air, water and soil, which are not measured.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	7.26E+00	7.22E+00	1.99E-02	1.75E-02	2.94E-07	4.41E-02	2.82E-03
	Transport	A2	1.79E-02	1.79E-02	1.41E-05	7.44E-06	4.11E-09	1.07E-04	1.12E-06
	Manufacturing	A3	5.21E-01	3.93E-01	1.27E-01	5.14E-04	8.67E-08	1.27E-03	6.05E-05
	Total	A1-3	7.80E+00	7.63E+00	1.47E-01	1.80E-02	3.85E-07	4.55E-02	2.88E-03
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.32E-03	8.31E-03	7.08E-06	3.26E-06	1.92E-09	3.37E-05	5.35E-07
	Waste processing	C3	2.83E-01	2.81E-01	1.70E-03	3.57E-04	1.81E-08	1.19E-03	7.48E-05
	Disposal	C4	1.97E-03	1.95E-03	1.76E-05	2.18E-06	2.13E-10	1.30E-05	5.75E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.57E+01	-1.58E+01	4.62E-02	-2.10E-02	-4.65E-07	-1.01E-01	-4.70E-03

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral& metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	7.61E-03	7.87E-02	2.43E-02	9.37E-05	7.86E+01	2.39E+00	1.11E-06
	Transport	A2	3.01E-05	3.31E-04	9.62E-05	5.98E-08	2.68E-01	1.17E-03	1.48E-09
	Manufacturing	A3	3.50E-04	3.13E-03	8.70E-04	1.92E-06	1.00E+01	5.24E-02	1.09E-08
	Total	A1-3	7.99E-03	8.21E-02	2.53E-02	9.57E-05	8.89E+01	2.44E+00	1.12E-06
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.02E-05	1.11E-04	3.40E-05	2.89E-08	1.26E-01	5.65E-04	7.17E-10
	Waste processing	C3	2.10E-04	2.31E-03	6.59E-04	1.17E-05	2.10E+00	4.79E-02	1.86E-08
	Disposal	C4	3.21E-06	3.45E-05	1.02E-05	4.32E-09	2.78E-02	8.79E-04	1.94E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.69E-02	-1.76E-01	-5.06E-02	-1.36E-05	-1.42E+02	-1.87E+00	-1.30E-06

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	5.63E-01	1.96E+02	1.45E-08	1.71E-07	1.77E+01
	Transport	A2	1.37E-03	2.07E-01	7.11E-12	2.13E-10	1.76E-01
	Manufacturing	A3	2.00E-01	6.01E+00	1.42E-10	3.83E-09	4.50E+00
	Total	A1-3	7.64E-01	2.02E+02	1.47E-08	1.75E-07	2.24E+01
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.46E-04	9.81E-02	3.18E-12	1.03E-10	8.63E-02
	Waste processing	C3	2.00E-02	6.03E+00	1.86E-10	7.72E-09	1.95E+00
	Disposal	C4	1.62E-04	3.10E+01	1.81E-12	4.78E-11	3.55E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.86E-01	-4.05E+02	-1.63E-08	-3.47E-07	-2.94E+01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	8.92E+00	0.00E+00	8.92E+00	7.79E+01	0.00E+00	7.79E+01
	Transport	A2	3.66E-03	0.00E+00	3.66E-03	2.63E-01	0.00E+00	2.63E-01
	Manufacturing	A3	-2.05E-01	1.92E+00	1.71E+00	7.46E+00	4.13E+00	1.16E+01
	Total	A1-3	8.72E+00	1.92E+00	1.06E+01	8.56E+01	4.13E+00	8.98E+01
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.77E-03	0.00E+00	1.77E-03	1.23E-01	0.00E+00	1.23E-01
	Waste processing	C3	1.78E-01	0.00E+00	1.78E-01	1.22E+00	0.00E+00	1.22E+00
	Disposal	C4	1.79E-03	0.00E+00	1.79E-03	2.75E-02	0.00E+00	2.75E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.65E+00	0.00E+00	-8.65E+00	-1.41E+02	0.00E+00	-1.41E+02

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	2.59E-01	0.00E+00	0.00E+00	6.05E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.91E-05
	Manufacturing	A3	4.65E-02	4.67E-06	0.00E+00	2.13E-03
	Total	A1-3	3.06E-01	4.67E-06	0.00E+00	6.26E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.40E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.18E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	2.13E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-5.04E-02

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	1.27E+00	1.21E+01	2.03E-04
	Transport	A2	2.99E-04	5.11E-03	1.82E-06
	Manufacturing	A3	1.95E-02	4.41E-01	7.57E-05
	Total	A1-3	1.29E+00	1.25E+01	2.81E-04
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.39E-04	2.46E-03	8.50E-07
	Waste processing	C3	1.92E-02	4.42E-01	4.89E-06
	Disposal	C4	7.60E-04	5.45E-02	1.10E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.11E+00	-1.95E+01	-1.62E-04

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life								
			CRU	MFR	MER	EE	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.67E-03	3.12E-06	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	8.10E-05	3.85E-08	3.73E-03	0.00E+00	2.10E-02
	Total	A1-3	0.00E+00	1.75E-03	3.16E-06	3.73E-03	0.00E+00	2.10E-02
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
C1 - Deconstruction	When the product reaches its end of life, Garnalex aluminium extrusions are assumed to be dismantled as part of the building deconstruction. Hand power tools are used to dismantle the Garnalex products, electricity used to charge power tool batteries, which is considered negligible in comparison with the overall energy demand of building demolition. Therefore, no data are reported for this module. It's assumed as 100% of the product is recovered from demolition site.		
C2 - Transportation	50 km by road has been modelled for module C2 as a typical distance from the demolition to site to the incineration with energy recovery plant. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module C2 if required.	Lorry	16 – 32 metric ton
	Transportation distance	km	50
C3 – Waste Processing	In Module C3, the Garnalex products are transported to the recycling facility. There are no pre-processing activities undergoes before the product component is sent to recycling centre. According to BRE's PCR 3.2 for EN15804:2019 +A2, the end-of-life scenario for all types of aluminium stated in Appendix D of the BRE PCR document applies the same % waste route: • Aluminium: 95% recycle, 5% landfill		
	Aluminium to recycling	kg	0.95
C4 - Disposal	Aluminium to landfill	kg	0.05
Module D	The aluminium dataset ({Aluminium alloy production Europe}) from Ecovient3.8 contains 25.9% recycled content. i.e. the remaining 74.1% of it is virgin materials. Accordingly, per 1 kg of recycled Garnalex, the Module D benefit is 0.70 kg.		

Interpretation

The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing of Garnalex Trade Aluminium Extrusions product, covered by information modules A1-A3 of EN15804:2012+A2:2019.

Only one input materials – Aluminium. The chart illustrates the relative contributions of various processes to overall greenhouse gas emissions, measured as global warming potential. It highlights that aluminium alloy production standing out as the most significant contributor. Overall, the chart underscores the importance of material choice and waste management in reducing carbon emissions across the lifecycle.

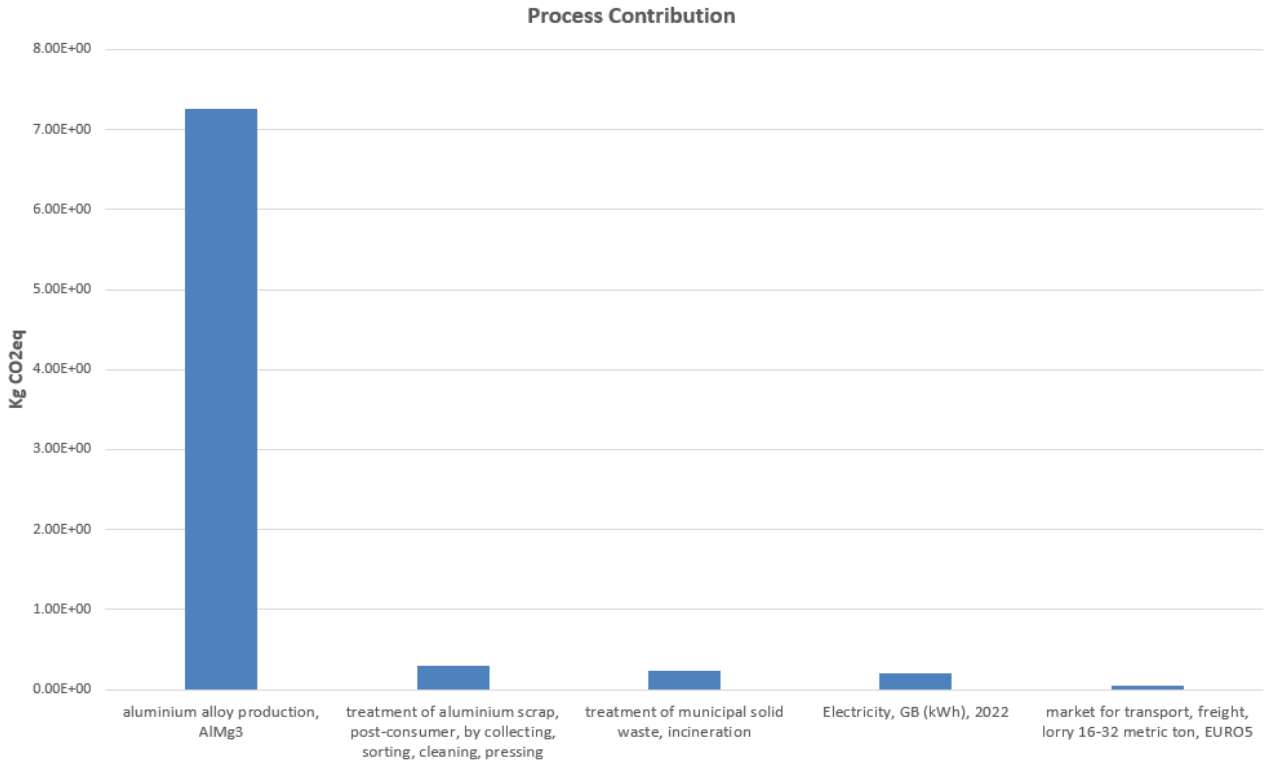


Figure 1: Process Contribution

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