KNAUF

Knauf Steel Frame Systems (SFS)

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/ AC:2021

Declaration Number: EPD-IES-0012892 (S-P-12892)

Issued on: 2024-05-28

Valid until: 2029-05-28

Programme: The International EPD® System (www.environdec.com)

Programme operator: EPD International AB

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- This is an EPD of multiple products, based on the average results of the product group.
- This Environmental Product Declaration has been verified by an independent third party.

Certification

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Introduction

This EPD provides environmental performance indicators for Knauf steel frame systems (SFS). This is a cradle-to-gate with modules A4, C1–C4 & D EPD in accordance with the requirements of EN 15804.
The EPD is based on a life cycle assessment (LCA) study which used production data for year 2021/05/01 –2022/04/30 from the manufacturer in Birmingham, UK. Background data were taken from the ecoinvent database (v3.8).

The EPD presents details of the LCA, a description of the product life cycle it covers, values for the environmental indicators specified by EN 15804 and a brief explanation of those results.

Programme:
The International EPD® System

Programme operator:
EPD International AB

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Programme Information	
EPD programme	The International EPD® System
EPD programme operator	EPD International AB - Box 210 60 - SE 100 31 Stockholm - Sweden www.environdec.com - info@environdec.com
Accountabilities for PCR, LCA and independent, third-party verification	
EPD based on product category rules	The CEN standard EN 15804 serves as the core PCR
	The International EPD® System's PCR 2019:14 Construction products (EN 15804:A2) v1.3.2 2023-12-08
PCR review conducted by	The Technical Committee of the International EPD® System Review chair: Claudia A. Peña, University of Concepción, Chile contact via info@environdec.com
LCA conducted by	EuGeos Limited, UK - www.eugeos.co.uk
LCA software	openLCA
Background database	ecoinvent V3.8
EPD verification	Independent verification of this EPD and data, according to ISO 14025:2006: ☐ EPD process certification ■ EPD verification
Third party verifier	Ugo Pretato, Studio Fieschi & soci (Italy) - Recognized Individual Verifier
Approved by	The International EPD® System
Procedure for data follow-up during EPD validity	Involves third party Verifier: ☐ yes ■ no
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Date of publication	2024-05-28
EPD vaild until	2029-05-28

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EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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.

Knauf

Founded in 1932, Knauf began as a family company and over the years has grown into a global enterprise spanning 90 countries, incorporating multiple brands, and delivering world class construction materials and solutions via 40,000 employees worldwide. Knauf is one of the world's leading manufacturers of building products.
Knauf UK and Ireland began in 1988 when the Knauf Group built a plasterboard factory in Sittingbourne, Kent. The production system, which was engineered and designed using the most modern manufacturing technologies, enables the production of a wide range of superior quality standard and high-performance plasterboards and insulating laminates.

In 1993 the Sittingbourne facility added the UK Powder Plant which produces a comprehensive range of products including Knauf Plasterboard Adhesive.

To increase capacity, the Immingham plant was extended in 2006. The latest energy management technology was incorporated, the whole plant insulated, and two huge heat exchangers added, saving 10% of the plant's energy requirements.

In 2013 Knauf opened a striking modernist-inspired building known as The Cube, an innovative training, visitor and administrative centre at the Sittingbourne site.

Following the success of the Sittingbourne Plant, construction on a second UK Plasterboard manufacturing facility commenced in 1990. The Immingham Plasterboard Plant was built to the same modern technical specification and has the capability to produce the complete range of Knauf plasterboards, thermal laminates and foil-backed plasterboards.

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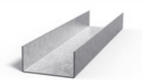
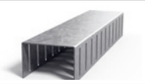
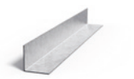
Product Information

This EPD applies to Knauf SFS components produced in Birmingham, UK, using raw materials sourced from the global steel supply chain.

Product Description
Knauf SFS components are metal framing components in galvanised lightweight steel used to frame external infill panel systems in buildings. They form an important part of Knauf's "Throughwall" exterior infill panel system; further information about this is available at:
https://www.knauf.co.uk/systems-and-products/systems/exterior-systems/throughwall-system
The range of SFS frame components covered by this EPD encompasses Knauf SFS C Stud, SFS U Track, SFS Slotted U Track, SFS Z Bar, SFS Angle Section, SFS Slotted Angle Section, SFS Flat Bracing Strap, SFS Parapet Post, SFS Parapet Post Slim Base, SFS Oversail Cleat, SFS Cill Plate, SFS Angle Cleat, and SFS Cleat.

Knauf SFS components are classified CPC 4126 under the UN CPC classification system v2.1.

Knauf SFS C Stud		Knauf SFS Parapet Post	
Knauf SFS U Track		Knauf SFS Parapet Post Slim Base	
Knauf SFS Slotted U Track		Knauf SFS Oversail Cleat	
Knauf SFS Z Bar		Knauf SFS Cill Plate	
Knauf SFS Angle Section		Knauf SFS Angle Cleat	
Knauf SFS Slotted Angle Section		Knauf SFS Cleat	
S Knauf FS Flat Bracing Strap			

Technical Data
Knauf SFS components are made from hot-dip galvanised steel which conforms to the BS EN 10346:2015 standard, with a Z275 zinc coating (275g/m^2 Zn). "C" section and "U" sections are formed from Grade S450 galvanised steel with a guaranteed minimum yield strength ≥ 450 N/mm^2; the ancillary components (angles, cleats, brackets, 'Z' bars, etc.) are formed from Grade S390 galvanised steel with a guaranteed minimum yield strength ≥ 390 N/mm^2.

Manufacturing
Wide coils of hot-dip galvanised steel are cut to width; the sections of the different finished products are then formed by cold rolling, with holes and slots punched inline.

Packaging & Transportation
The finished products are stored at the manufacturer's site, then despatched direct to customers.

Products are packed using plastic strapping and wooden bearers.

Installation
Knauf SFS components constitute the framework for external infill panel systems. Installation should follow manufacturers' instructions.

Installation activities are excluded from this EPD.

Product Use & Maintenance
After installation, the products are normally concealed and inaccessible. In normal use, neither maintenance nor repair is either required or possible.

The product is sufficiently durable to remain in place for the lifetime of a building.

End-Of-Life
When the framework is removed from the building at the end of its life, or the building is dismantled, metal framing components should be segregated for recycling with other ferrous metals; European Waste Catalogue (EWC) code 17 04 05 applies.

Furher Product Information
Detailed product information and datasheets can be found

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LCA Information

This section of the EPD records key features of the LCA on which it is based; the LCA was carried out by EuGeos using openLCA software and production data for the 12-months 2021/05/01 to 2022/04/30 from manufacturing facilities in Birmingham, UK; background data were taken from the ecoinvent database (v3.8).

Functional/Declared Unit
The declared unit (DU) is 1kg of Knauf SFS.

Content Information
The material composition of Knauf SFS - including delivery packaging - is shown below

Components/ Materials	Weight (kg)	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/DU
Steel	0.97 - 0.98	18	0
Zinc	0.02 - 0.03	assumed 0	0
TOTAL	**1**	**18**	**0**
Packaging	**Weight (kg)**	**Weight-% (versus the product)**	**Weight biogenic material, kg C/DU**
Plastics	0.002	<0.1	assumed 0
Wood	0.098	1	0.05
TOTAL	**0.1**	**1**	**0.05**

At the time of data collection, no substance included in the Candidate List of Substances of Very High Concern for authorization under the REACH Regulations is present in the protection materials, either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

Residual Risks and Emergencies
There are no residual risks associated with the normal day-to-day use of Knauf SFS components.

Care must be taken to select the materials in accordance with their declared properties and any other associated regulations governing their usage.

Geographical Scope
Modules A1 - A3 represent production in Birmingham, UK; other modules represent scenarios relevant to the UK.

LCA Scope
This EPD covers the production stage (modules A1-A3), transport to site (A4), end-of-life management (modules C) and module D. Module D provides an estimate of the potential benefits that would accrue to a different product system were the product constituents and recycled wastes identified in data for other life cycle modules actually recycled or recovered at current rates and using current technologies.

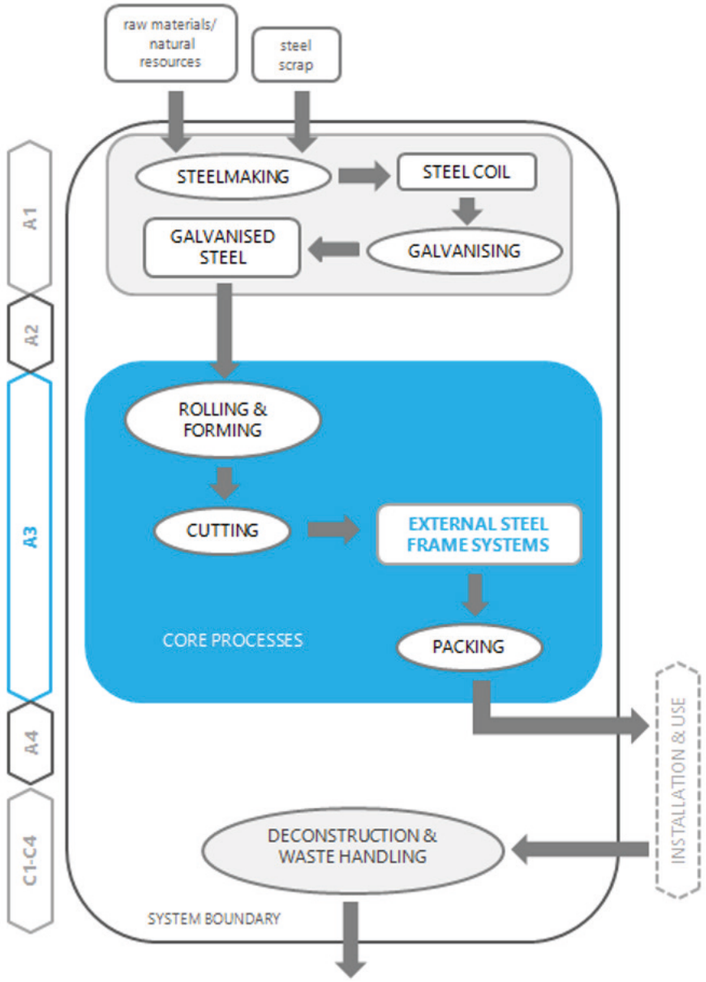
Product stage			**Construction process stage**		**Use stage**							**End of life stage**				**Benefits & loads beyond the system boundaries**
Raw material supply	Transport	Manufacturing	Transport to	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Water treatment	Disposal	Reuse- recovery- recycling - potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared X included in LCA – ND: module not declared – NR: module not relevant																
X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography																
GL O	RER	GB	GB	–	–	–	–	–	–	–	–	GB	GB	GB	GB	GLO
Specific data used																
<10%			–	–	–	–	–	–	–	–	–	–	–	–	–	–
Variation – products																
+/-3%			–	–	–	–	–	–	–	–	–	–	–	–	–	–
Variation – sites																
n/a			–	–	–	–	–	–	–	–	–	–	–	–	–	–

System Boundaries

The system boundary of the EPD is defined using the modular approach set out in EN 15804.

As well as the core processes which cover final product manufacture in Birmingham, the system includes production of all raw materials and components from basic resources; transport of those materials at all stages up to users' sites, subsequent installation and end-of-life management; the production of fuels and energy carriers and their delivery to manufacturing sites; the treatment of all wastes.

The product life cycle covered by this EPD is illustrated below:



Data Sources and Data Quality

Primary Data
Data characterising core processes (see above figure) were collected for a continuous 12-month period between 01/05/2021and 30/04/2022. The data have therefore been updated within the last 5 years.

These data were checked to ensure that sufficient materials and water are included within the inputs to account for all products, wastes and emissions.

Background Data
Background (generic) data were taken from the ecoinvent database (v3.8); this fulfils the EN 15804 requirement that generic data used in the LCA have been updated within the last 10 years.

The quality of generic data has been reviewed; where necessary, data in the core ecoinvent database has been adjusted to better reflect the information provided about Knauf's specific supply chain.

Cut-off Criteria
The collected data encompassed raw materials and packaging materials used for the steel frame systems and process aids, as well as associated transport to the manufacturing site.

Process energy and scrap are included within the data. There is no process water use, nor are there any emissions to air or water from the manufacturing factory.

According to EN 15804 and the PCR, flows can be omitted (cut off) from a core process in the LCA up to a maximum of 1% of the total mass of material inputs or 1% of the total energy content of fuels and energy carriers; some ancillary materials used in small quantities within the process and amounting, in combination, to <0.5% of total input materials were omitted from the LCA underpinning this EPD.

Stockholder operations (storage and slitting of wide steel coils) are omitted from the LCA; neither public-domain information nor generic data are available to include them reliably. Short-term storage is also omitted.

Allocation
In the background data, the ecoinvent default allocation is applied to all processes except those in which secondary materials are used, where the "cut-off" allocation is applied. This ensures that secondary materials are free of upstream burdens that arise prior to their reaching the "end of waste" state, in accordance with Section 6.3.4.2 of EN 15804.

The burdens of final manufacture are allocated across all products made in the factory on the basis of the proportion of machine utilisation for which they account. The zinc coating thickness is the same for all products although they are of different steel gauges; a production-weighted average of the steel gauges used for Knauf SFS components is considered in the LCA.

Assumptions and Estimates
Inputs to and outputs from the system are accounted for over a 100-year time period; long-term emissions are therefore omitted from the impact assessment part of the LCA, except for biogenic carbon-containing flows, which are accounted for on an indefinite timeframe.

Capital equipment is excluded from the foreground system but included in the background datasets used.

A1-A3 results include the "balancing-out reporting" of the biogenic CO2 that is taken up into the wood used in packaging and would be released in Module A5 when the wood is either managed as waste or leaves the system.

In the LCA, post-consumer recycled content of steel is taken to be 18%, as reported by the manufacturer. All steelmaking uses some scrap, with 10% -30% reported as a typical range for steel produced by the blast furnace – basic oxygen furnace route in worldsteel's life cycle inventory methodology report for steel products (2017). Therefore the steel used is assumed to be produced by this route.

The "primary energy used as material" indicators (PERM; PENRM) are calculated using - as characterisation factors - published values for constituent materials which can yield energy on combustion, where available, and from published calorific values where PE(N)RM values are not available. In this study calculations of PERM are based on NCV of 14MJ/kg for wood (in packaging). "Primary energy as fuel" indicators (PENRE, PERE) are calculated as the total primary energy demand minus primary energy used as material.

Electricity is modelled as the residual mix for the UK from 2021 as reported by the Association of Issuing Bodies (2022). Overall, the mix applied is 0.8% oil, 2.7% biomass, 2.1% solar, 2.5% lignite (electricity imports), 24.2% nuclear, 67.8% gas. The carbon footprint of the delivered electricity (GWP-GHG) is 0.44kgCO2e/kWh; electricity used in Module A3 is of low significance for the overall results, accounting for <10% of the A1-A3 GWP-GHG indicator.

Scenarios

Transport to customers, waste processing, waste treatment and final disposal are modelled using scenarios.

Module A4

Scenario Parameters – transport module A4	
Parameter	**Quantity & unit (per declared unit)**
Vehicle type	lorry
Fuel type and consumption	diesel, 0.3l/km
Capacity utilisation (including empty returns)	38% / 16t average load
Distance travelled	100km road
Bulk density of transported products	7800kgm^{-3}

Modules C
Removal from site (Module C1) is assumed to be a manual operation, without identifiable energy or material inputs. No components for reuse are generated and all outputs are treated within the system boundary (in Module C3 or C4). Therefore no potential environmental impacts associated with this module are reported. Sorting and pressing of steel scrap is included to represent waste treatment (module C3); only the recycled fraction (950g) is assumed to undergo this treatment.

Transport of waste product to the waste treatment facility (Module C2) is modelled using a scenario.

Scenario parameters – transport module C2	
Parameter	**Quantity & unit (per declared unit)**
Vehicle type	lorry
Fuel type and consumption	diesel, 0.1l/km
Capacity utilisation (including empty returns)	33% / 6t average load
Distance travelled	50km road
Bulk density of transported products	7800kgm^{-3}

Final disposal (module C4) assumes that 95% of steel frames are recycled, and that the remainder is sent to landfill.

Module D
The benefits reported in Module D are calculated for net flows of materials across the system boundary (materials to be recycled or recovered leaving the modelled system from the end-of-life stage minus recycled materials content of the product), as detailed in the table below; any recycling of or energy recovery from wooden packaging is omitted as a simplification.

Module D calculations exclude any recycling of packaging or process wastes arising in Module A1 – A3.

Scenario parameters: Module D					
Output to recycling / recovery	**Assumed fate**	**Displaced input flow**	**Quality factor**	**Net output**	
				Quantity	**Units**
Ferrous metals	recycling	converter steel production - electric arc furnace operation	1	0.75	kg

Environmental Information

Indicator Results
This EPD contains environmental information about Knauf SFS components in the form of quantitative indicator values for a number of parameters, which encompass calculated environmental impact potentials, resource and energy use, waste generation and material and energy outputs from the product system that may be reused, recycled or recovered into other, unspecified product life cycles.

Environmental indicator results for all declared modules are shown in tables on the following pages for the declared unit of 1kg of Knauf SFS components; the A1 - A3 modules are shown on an aggregated basis as mandated by PCR 2019:14 §5.4.5.; the results of modules A1-A3 should not be used without considering the results of module C.

The EF 3.0 package has been used for calculating the environmental impacts.

Interpretation of the LCA Results
The environmental indicator results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Indicator values obtained for resource depletion (ADPMM, ADPFF), stratospheric ozone depletion (ODP) and water deprivation (WDP) potential should be used with caution; all are subject to uncertainties in data or method which limit the scope for their use as the basis for comparisons.

In LCA of finished steel products, upstream activities contribute strongly to the environmental indicator values obtained. Data quality assessment identified various sources of uncertainty which influence the indicator values reported in this EPD. The uncertainty in those indicator values is considered to be at least +/-15%.

No untreated wastes leave the modelled system, which includes waste treatment activities as required by EN 15804. The waste indicators HWD, NHWD and TRWD presented in this EPD therefore represent waste flows within the modelled system.

Knauf Steel Frame Systems (SFS)									
Enviornmental Impacts EN 15804 + A2 (Mandatory)		**Unit**	**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change – GWP fossil	GWP- fossil	kg CO_2 eq	3.40E+00	1.66E-02	0.00E+00	1.07E-02	1.17E-02	1.30E-04	-1.10E+00
Climate change – GWP biogenic	GWP-biogenic	kg CO_2 eq	5.09E-03	6.62E-06	0.00E+00	4.84E-06	5.44E-06	3.80E-08	-5.00E-04
Climate change – GWP land transformation	GWP-luluc	kg CO_2 eq	2.20E-03	6.44E-06	0.00E+00	4.98E-06	4.89E-06	1.38E-08	-5.90E-04
Climate change – GWP total	**GWP-total**	**kg CO_2 eq**	**3.41E+00**	**1.66E-02**	**0.00E+00**	**1.07E-02**	**1.17E-02**	**1.30E-04**	**-1.10E+00**
Ozone depletion	ODP	kg CFC-11 eq	2.05E-07	3.85E-09	0.00E+00	2.41E-09	2.07E-09	2.67E-11	-4.90E-08
Acidification potential	AP	mol H+ eq	1.41E-02	6.74E-05	0.00E+00	4.26E-05	1.00E-04	1.34E-06	-4.87E-03
Eutrophication – freshwater	EP-freshwater	kg P eq	1.65E-03	1.07E-06	0.00E+00	8.04E-07	7.42E-07	6.94E-09	-4.60E-04
Eutrophication – marine	EP-marine	kg N eq	3.14E-03	2.03E-05	0.00E+00	1.24E-05	4.24E-05	5.75E-07	-1.22E-03
Eutrophication – terrestrial	EP-terrestrial	mol N eq	3.30E-02	2.20E-04	0.00E+00	1.40E-04	4.60E-04	6.30E-06	-1.14E-02
Photochemical ozone formation	POFP	kg NMVOC eq	1.40E-02	6.80E-05	0.00E+00	4.16E-05	1.30E-04	1.76E-06	-5.54E-03
Depletion of abiotic resources – minerals & metals *	ADPMM	kg Sb eq	8.77E-05	5.76E-08	0.00E+00	4.87E-08	1.27E-08	6.68E-11	-1.72E-05
Depletion of abiotic resources – fossil fuels *	ADPFF	MJ, ncv	5.19E+01	2.57E-01	0.00E+00	1.64E-01	2.04E-01	1.84E-03	-1.45E+01
Water (user) deprivation potential *	WDP	m^3 world-eq deprived	1.26E+00	1.13E-03	0.00E+00	8.10E-04	8.40E-04	4.33E-06	-1.97E-01
Enviornmental Impact (Additional)		**Unit**	**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Climate change - GWP-GHG **	GWP-GHG	kg CO2 eq	3.41E+00	1.66E-02	0.00E+00	1.07E-02	1.17E-02	1.30E-04	-1.10E+00

* The results of this environmental impact indicator shall be used with care because either the uncertainties associated with the results are high or there is limited experience with the indicator.

** GWP-GHG includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Knauf Steel Frame Systems (SFS)									
Resource Use		**Unit**	**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Renewable primary energy as energy carrier	PERE	MJ	5.41E+00	3.54E-03	0.00E+00	2.70E-03	1.50E-02	1.46E-05	-6.56E-01
Renewable primary energy resources as material utilisation	PERM	MJ	1.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total renewable primary energy use	**PERT**	**MJ**	**6.78E+00**	**3.54E-03**	**0.00E+00**	**2.70E-03**	**1.50E-02**	**1.46E-05**	**-6.56E-01**
Non-renewable primary energy as energy carrier	PENRE	MJ	5.19E+01	2.57E-01	0.00E+00	1.64E-01	2.04E-01	1.84E-03	-1.45E+01
Non-renewable primary energy resources as material utilisation	PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total non-renewable primary energy use	**PENRT**	**MJ**	**5.19E+01**	**2.57E-01**	**0.00E+00**	**1.64E-01**	**2.04E-01**	**1.84E-03**	**-1.45E+01**
Use of secondary material	SM	kg	4.21E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	RSF	MJ	5.12E-02	7.56E-05	0.00E+00	5.99E-05	2.72E-05	1.77E-07	0.00E+00
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	FW	m^3	3.23E-02	2.86E-05	0.00E+00	2.07E-05	2.14E-05	1.10E-07	-5.57E-03
Wastes		**Unit**	**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	HWD	kg	8.63E+00	5.55E-03	0.00E+00	4.21E-03	3.71E-03	3.38E-05	-2.09E+00
Non-hazardous waste disposed	NHWD	kg	3.51E-01	1.28E-02	0.00E+00	6.70E-03	2.50E-04	1.48E-06	-6.84E-02
Radioactive waste disposed	TRWD	kg	3.40E-03	5.00E-06	0.00E+00	3.58E-06	2.37E-05	2.05E-08	0.00E+00
Outflows		**Unit**	**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	4.61E-01	0.00E+00	0.00E+00	0.00E+00	9.50E-01	0.00E+00	0.00E+00
Materials for energy recovery	MER	kg	2.43E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - electrical	EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

For information, indicator values calculated using the methods prescribed in the earlier version of EN 15804 (EN 15804+A1:2013) are provided in the table below for the declared unit of 1kg of Knauf internal metal partition components; modules A1 - A3 are shown on an aggregated basis.

Knauf Steel Frame Systems (SFS)									
Enviornmental Impacts EN 15804 + A2	**Unit**		**A1 - A3**	**A4**	**C1**	**C2**	**C3**	**C4**	**D**
Global warming potential	kg CO2-eq	GWP	3.29E+00	1.65E-02	0.00E+00	1.06E-02	1.16E-02	1.30E-04	-1.05E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq	ODP	2.05E-07	3.85E-09	0.00E+00	2.41E-09	2.07E-09	2.67E-11	-4.90E-08
Acidification potential of land and water	kg SO2-eq	AP	1.33E-02	5.30E-05	0.00E+00	3.37E-05	7.24E-05	9.65E-07	-4.08E-03
Eutrophication potential	kg PO43--eq	EP	6.33E-03	1.14E-05	0.00E+00	7.51E-06	1.73E-05	2.23E-07	-1.95E-03
Formation potential of tropospheric ozone photochemical oxidants	kg ethene-eq	POCP	1.35E-03	2.14E-06	0.00E+00	1.40E-06	1.74E-06	3.88E-08	-5.90E-04
Abiotic depletion potential for non-fossil resources	kg Sb-eq	ADPE	8.77E-05	5.76E-08	0.00E+00	4.87E-08	1.27E-08	6.68E-11	-1.72E-05
Abiotic depletion potential for fossil resources	MJ	ADPF	5.19E+01	2.57E-01	0.00E+00	1.64E-01	2.04E-01	1.84E-03	-1.45E+01

Additional Environmental Information

Environmental Accreditations

Environmental and health during manufacture
At Knauf, Health and Safety is a core value. The Company's aim is always to be injury-free. A target of zero accidents at work for employees, visitors and contractors is set by the business.

In all aspects of the Company's activities, the Health and Safety rules and relevant regulations must be complied with. In addition, there are a number of definitive Company Safety Procedures and together these determine the minimum standards expected by the Company. In order to achieve this, close co-operation with representatives of the relevant enforcement agencies is ensured. To ensure that the Company's objectives are achieved, documented safety management systems are employed at site and within the central functions. These include a systematic identification of hazards, assessment of the risks and the development of safe systems of work to eliminate or reduce any risks to an acceptable level. Audits and Inspections are used to monitor standards of safety management, adherence to the law and Company procedures. Knauf plants are managed through BES 6001, ISO 14001, ISO 9001 and OHSAS 18001, now changed to ISO 45001 certified systems.

References

BES 6001 - Responsible Sourcing of Construction Products - British Standards Institute, London

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European Residual Mixes 2021, Version 1.0, 2022-05-31 - Association of Issuing Bodies, 2022

External Metal Framework LCA (2024) - Report for Knauf UK GmbH - EuGeos Limited

General Program Instructions, V4.0, 2021-03-29 - The International EPD® System - EPD International AB

ISO 9001 - Quality management systems - Requirements

ISO 14001:2015 - Environmental management systems – Requirements with guidance for use

ISO 14025:2009-11 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures

OHSAS 18001/ISO 45001- Occupational Health and Safety Management

PCR 2019:14 Construction products (EN 15804:A2) V1.3.2 2023-12-08 - The International EPD® System - EPD International AB)

Life cycle inventory methodology report for steel products - worldsteel 2017

Glossary
The International EPD® System: a programme for Type III environmental declarations, maintaining a system to verify and register EPDs as well as keeping a library of EPDs and PCRs in accordance with ISO 14025. (www.environdec.com)

Life cycle assessment (LCA): LCA studies the environmental aspects and quantifies the potential impacts (positive or negative) of a product (or service) throughout its entire life. ISO standards ISO 14040 and ISO 14044 set out conventions for conducting LCA.

REACH Regulation: REACH is the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals. It entered into force in 2007, replacing the former legislative framework for chemicals in the EU.

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