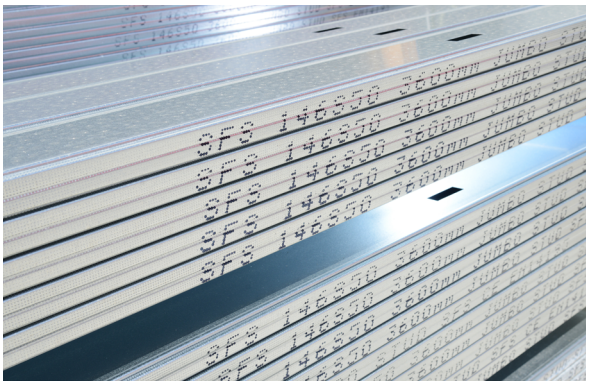


ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804 + A1
Owner of the Declaration – Steel Formed Sections Ltd.

Declaration number: EPDIE-21-45
Issue date 6th July 2021
Valid to 6th July 2026

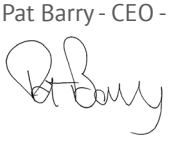
Cold-rolled steel profiles for framing and partition systems

EPD Programme - EPD Ireland
Programme Operator - Irish Green Building Council
www.epdireland.org

1. General information

PROGRAMME OPERATOR	OWNER OF DECLARATION
Irish Green Building Council, 19 Mountjoy Square, Dublin D01 E8P5	Steel Formed Sections Ltd. Lough Egish Food Park, Tullynamaira, Castleblayney, Co. Monaghan, IRELAND A75 KD73
DECLARATION NUMBER	**PRODUCTION SITE**
EPDIE-21-45	Lough Egish Food Park, Tullynamaira, Castleblayney, Co. Monaghan, IRELAND A75 KD73
ECO PLATFORM EPD	**DECLARED UNIT**
Yes	One tonne of steel profile section for interior and exterior applications
APPLICABLE PRODUCT CATEGORY RULES	**DECLARED PRODUCT**
I.S. EN 15804:2012+A1:2013. EPD Ireland Product Category Rules : Part A. Implementation and use of I.S. EN 15804:2012 and CEN TR 16970:2016 in Ireland.	Steel profile section for interior and exterior applications. The service life of the product is taken as 60 years.
DATE OF ISSUE	**SCOPE OF EPD**
06.07.2021	Cradle to grave (A1 - C4)
DATE OF EXPIRY	**LCA CONSULTANT OR PERSON RESPONSIBLE FOR LCA**
06.07.2026	EcoReview, Kilkenny, Co. Kilkenny, Ireland, +353 87 258 9783 / +31 646 264 9327 info@ecoreview.ie / www.ecoreview.eu
REISSUE	**REISSUE DETAILS**
12.06.2023	Correction of Declared Unit on impact tables from 'm² ' to 'tonne'.
TYPE OF EPD: SINGLE OR MULTI PRODUCT	**LCA SOFTWARE AND DEVELOPER IF APPLICABLE**
Single product	Ecochain
PRODUCT CLASSIFICATION OR NACE CODE	**NAME AND VERSION OF INVENTORY USED**
UN CPC 4219	Ecoinvent v 3.5
COMPARABILITY	
EPD of construction products may not be comparable if they do not comply with EN15804. 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+2012+A1:2013	
The CEN Norm /EN 15804 serves as the core PCR	
Independent verification of the declaration according to ISO 14025	

Internally ☐ Externally ✕

SIGNATURE OF PROGRAMME OPERATOR	SIGNATURE VERIFIER
Pat Barry - CEO - Irish Green Building Council  IGBC IRISH GREEN BUILDING COUNCIL	Marcel Gómez Ferrer - Marcel Gómez Consultoria Ambiental 

2. Scope and Type of EPD

This is a Cradle to Grave EPD. The Modules that are declared are shown in the table below. The geographical scope of this EPD is Europe.

PRODUCT STAGE			CONSTRUCTION ON PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X - Module declared.

MND - Module not declared.

3. Detailed product description

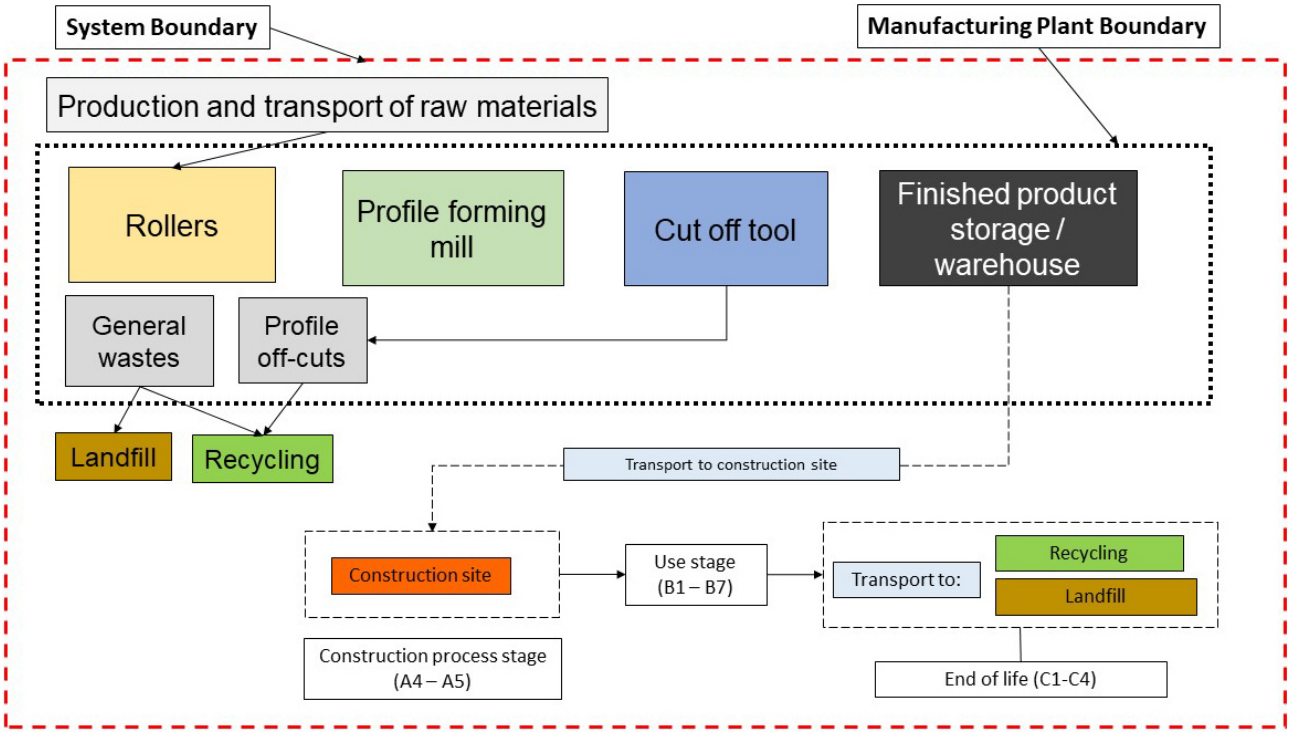
This EPD is carried out for the steel profile sections manufactured by Steel Formed Sections Ltd. The raw material is hot dipped sheet rolled galvanised steel, grade DX51D+Z steel for forming. The steel profile sections are manufactured in accordance with EN 14195:2014 Metal framing components for gypsum board systems. Definitions, requirements and test methods.

Further technical information can be obtained at https://www.steelformedsections.ie/

3.1 Manufacturing Process

The steel coils are placed on a coil holder, and the steel strip is fed through a series of specially shaped rollers that form the steel to any required profile. Whilst being rolled, the steel sections are punched to create service holes or any other cut-out features as required. Once the required length of profile has been achieved, the profile section is cut to size. The cut sections are then stockpiled before being despatched to the customer. Off-cuts from the cutting process are collected and sent to a local recycling operation.

The manufacturing process flowchart is shown below:



4.1 LCA results - One tonne of steel profile section

Environmental impact per tonne

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO_2-Eq.]	2.61E+03	1.10E+02	4.58E-01	2.72E+03	1.94E+01	8.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+01	0.00E+00	2.64E-01	MND
ODP	[kg CFC11-Eq.]	1.55E-04	1.84E-05	2.39E-08	1.74E-04	3.58E-06	1.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E-06	0.00E+00	9.52E-08	MND
AP	[kg SO_2-Eq.]	1.35E+01	1.67E+00	3.30E-03	1.52E+01	4.62E-02	2.21E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-02	0.00E+00	1.99E-03	MND
EP	[kg (PO4)-Eq.]	1.87E+00	1.56E-01	8.64E-04	2.03E+00	7.42E-03	3.59E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.04E-03	0.00E+00	3.77E-04	MND
POCP	[kg ethene-Eq.]	3.33E+00	9.93E-02	3.99E-04	3.43E+00	9.52E-03	4.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-02	0.00E+00	2.88E-04	MND
ADPE	[kg Sb-Eq.]	6.27E-01	1.22E-04	1.58E-05	6.27E-01	5.92E-05	2.49E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.46E-05	0.00E+00	2.97E-07	MND
ADPF	[MJ]	3.66E+04	1.61E+03	4.90E+00	3.82E+04	2.96E+02	1.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.19E+02	0.00E+00	8.03E+00	MND

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

Note - MND - Module not declared INA - Indicator not assessed.

4.2 LCA results - One tonne of steel profile section

Resource use per tonne

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	1.86E+03	3.07E+01	7.15E+01	1.96E+03	3.18E+00	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E+00	0.00E+00	6.64E-02	MND
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
PERT	[MJ]	1.86E+03	3.07E+01	7.15E+01	1.96E+03	3.18E+00	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.76E+00	0.00E+00	6.64E-02	MND
PENRE	[MJ]	2.96E+04	1.72E+03	4.57E+00	3.13E+04	3.17E+02	1.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E+02	0.00E+00	8.62E+00	MND
PENRM	[MJ]	0.00E+00	0.00E+00	1.37E+01	1.37E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
PENRT	[MJ]	2.96E+04	1.72E+03	1.82E+01	3.13E+04	3.17E+02	1.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E+02	0.00E+00	8.62E+00	MND
SM	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
FW	[m^3]	1.55E+01	2.90E-01	1.36E-02	1.58E+01	4.88E-02	2.22E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.20E-02	0.00E+00	8.39E-03	MND

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water. INA = Indicator not assessed. MND = Module not declared.

SM, RSF and NRSF are not calculated by the EcoChain software.

4.3 LCA results - One tonne of steel profile section

Output flows and waste categories per tonne

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	6.66E-01	9.82E-04	4.18E-05	6.67E-01	1.90E-04	9.17E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-04	0.00E+00	5.43E-06	MND
NHWD	[kg]	4.04E+02	2.71E+01	5.80E-01	4.31E+02	1.43E+01	5.98E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E+01	0.00E+00	5.00E+01	MND
RWD	[kg]	5.33E-02	1.07E-02	1.27E-05	6.40E-02	2.02E-03	8.67E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E-03	0.00E+00	5.37E-05	MND
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
MFR	[kg]	5.70E-03	0.00E+00	0.00E+00	5.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.50E+02	0.00E+00	MND
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EEE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.

CRU, MFR, MER, EEE, EET are not calculated by the EcoChain software.

5. LCA results - One tonne of steel profile section

Environmental impact per tonne

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Human toxicity potential	kg 1,4-DB-eq	1.44E+03	4.83E+01	9.80E-01	1.49E+03	7.41E+00	3.16E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.42E+00	0.00E+00	1.15E-01	MND
Freshwater aquatic ecotoxicity potential	kg 1,4-DB-eq	2.22E+01	9.76E-01	1.39E-02	2.32E+01	2.03E-01	8.58E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-01	0.00E+00	2.78E-03	MND
Marine aquatic ecotoxicity potential	kg 1,4-DB-eq	7.54E+04	4.34E+03	3.73E+01	7.98E+04	7.77E+02	3.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.57E+02	0.00E+00	9.75E+00	MND
Terrestrial ecotoxicity potential	kg 1,4-DB-eq	1.60E+01	1.56E-01	5.22E-02	1.62E+01	2.59E-02	1.11E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.88E-02	0.00E+00	2.87E-04	MND

Note - MND - Module not declared INA - Indicator not assessed.

6. Additional LCI Indicators

N/A

7. Calculation rules

Methodology and reproducibility

The process descriptions and quantities in this study are reproducible in accordance to the reference standards that have been used. The references of all sources, both primary and public sources and literature, have been documented in the LCA report. The 'polluter pays' and 'modularity' principles have been followed. The cut-off criteria of section 6.3.5 of EN 15804 have been followed. Allocation has been done on a mass basis. The measurement of environmental impacts uses the CML 2 baseline method In addition, to facilitate the reproducibility of this LCA, a full set of data records has been generated which can be accessed via the EcoChain tool. This data portfolio contains a summary of all the data used in this LCA, and correspondingly, in the Steel Formed Sections Ecochain account.

Data quality

Data flows have been modeled as realistically as possible. Data quality assessment is based on the principle that the primary data used for processes occurring at the production site is selected in the first instance. Where this is not available, other reference data is selected from appropriate sources.

Data collection period

The dataset is representative for the production processes used in 2019.

8. Scenarios and additional technical information

A1. Raw materials supply

This module considers the extraction and processing of all raw materials and energy which occur upstream to the steel profile manufacturing process, as well as waste processing up to the end-of waste state.

A2. Transport of raw materials to manufacturer

This includes the transport distance of the raw materials to the manufacturing facility via road and sea. The ecoinvent record for road transport to site used is: market for transport, freight, lorry 16-32 metric ton, EURO6.

A3. Manufacturing

This module covers the manufacturing of the Steel Formed Sections steel profiles and includes all processes linked to production such as, forming, packing and internal transportation. Use of electricity, fuels and auxiliary materials used during production is taken into account as well.

9. Mandatory additional information on release of dangerous substances to indoor air, soil and water

None of the substances contained in the product are listed in the "Candidate List of Substances of Very High Concern for authorisation", or they do not exceed the limit for registration with the European Chemicals Agency.

10. Other optional additional environmental information

Summary of overall product CO_2-eq footprint (kg CO_2eq per tonne)

PRODUCTION PHASE	USE PHASE		END OF LIFE PHASE		TOTAL
Product A1 - A3	**Transport to site** (120 km) **A4**	**Installation on site** (transport and recycling of installation losses) **A5**	**Transport to recycling and landfilling** (100 km) **C2**	**Landfilling C4**	**Total CO_2 footprint of product**
2.72E+03	1.94E+01	8.48E-02	2.12E+01	2.64E-01	2.76E+03

The electricity fuel mix used by Steel Formed Sections is 100% renewable.

The density of the steel sections is 7750 kg/m^3.

SFS Cold rolled sections are 100% recyclable from plant to site and building end of life.

11. References

1. ISO 14040: Environmental management - Life cycle assessment - Principles and Framework', International Organization for Standardization, ISO 14040:2006.
2. ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO 14044:2006.
3. ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO 14025:2006.
4. I.S. EN 15804: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', I.S. EN 15804:2012+A1:2013.
5. Ecochain, 2020, web: http://app.ecochain.com.
6. CML - Department of Industrial Ecology, CML-IA Characterisation Factors, Dated August 2016, Leiden University, Leiden, Netherlands Available at: https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors
7. Ministerie van Verkeer en Waterstaat, 8 maart 2004, Toxiciteit heeft z'n prijs, Schaduwprijzen voor (eco-) toxiciteit en uitputting van abiotische grondstoffen binnen DuboCalc.
8. I.S. EN 14195:2014 Metal framing components for gypsum board systems. Definitions, requirements and test methods.
9. Product Category Rules : Part A. Implementation and use of I.S. EN 15804:2012 and CEN TR 16970:2016 in Ireland. EPD Ireland, Irish Green Building Council, July 2018.
10. Eco-profiles and Environmental Product Declarations of the European Plastics Manufacturers, Expandable Polystyrene (EPS), PlasticsEurope, February 2015