Statement of Verification

BREG EN EPD No.: 000473 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

SFS Group Fastening Technology Ltd

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

1 kg of aluminium profiles or brackets as installed as a subframe system

Company Address

SFS Group Fastening Technology Ltd
Division Construction
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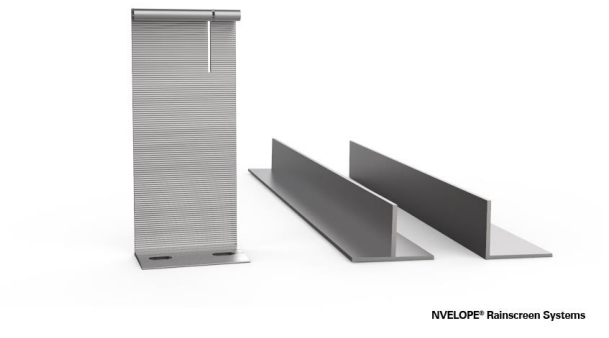
LS4 2AT



Signed for BRE Global Ltd	Emma Baker Operator	21 February 2023 Date of this Issue
30 January 2023 Date of First Issue		29 January 2028 Expiry Date

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ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EPD Number: 000473

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
SFS Group Fastening Technology Ltd Division Construction 153 Kirkstall Road Leeds LS4 2AT	BRE LINA 2.0 Andrew Stolworthy – SFS Group Fastening Technology Ltd
Declared/Functional Unit	**Applicability/Coverage**
1 kg of aluminium profiles or brackets as installed as a subframe system	Product Average.
EPD Type	**Background database**
Cradle to Gate	ecoinvent 3.2

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: Nigel Jones
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+A1:2013. 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+A1:2013 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)

SFS Factory 36
Mammoth Drive
Wolverhampton
WV10 9TF
UK

Construction Product

Product Description

The NVELOPE® Sub Frame System from SFS is a family of products designed to support a rainscreen cladding system for the building envelope. The system consists of aluminium helping hand brackets which are attached to the external wall structure of the building using appropriate fasteners, attached to these are a range of aluminium profiles that form a 'grid' for the aesthetic & weather resistant external façade system to be attached using appropriate fasteners. The gap created by the system is typically 47mm to 402mm and allows for installation of insulation which improves the thermal performance of the external wall system. The NVELOPE® Sub Frame system is a configurable kit of parts to suit the project requirements which includes NV, NH and F2F products which are fitted with a range of profiles to create the final system.

These NVELOPE® family of systems have *British Board of Agrément (BBA) certification and are CE and UKCA marked to EN 1090-1:2009+A1:2011.

This EPD is based on the grouping of the below products produced in the period of one year:

NVELOPE® Brackets - NV, NH3, NVF2F

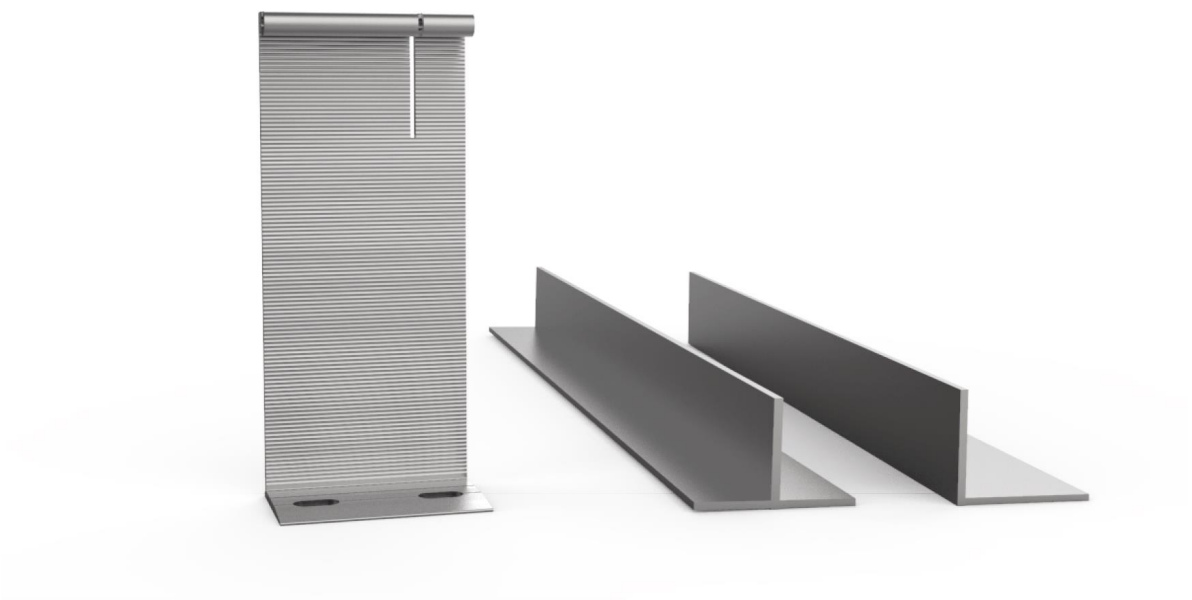
NVELOPE® Profiles - L, T, Lipped L, Corner, NV3, Nv4, NV5, NV8, NV10, F2F Box & T Box

The system described above is complimented by thermal Pads & Isolators and a range of fixings for each connection, the aluminium profiles are generally supplied in a mill finish however can be powder coated or anodised if required.

* http://bba-data-platform-aux.azurewebsites.net/api/artefact/26924a55-837a-429a-96e9-313eb78c3af5

Technical Information

Property	Value, Unit
Aluminium Alloy	6005A T6
Product Standard	EN755-9:2016
Proof Stress	200 min, MPa
Tensile Strength	250 min, MPa
Elongation A50mm	6 min, %
Hardness Brinell	85, HB
Products Included	**Size (mm)**
NVELOPE® NV Bracket Range	40,60,90,120,150,180,210,240,270,300
NVELOPE® NH3 Bracket Range	75,90,120,150,180,210,240,270,300
NVELOPE® NVF2F Bracket Range	72,122,172,222
NVELOPE® Profiles	L,T,Lipped L,Corner,NV3,NV4,NV5,NV8,NV10,F2F



NVELOPE® Rainscreen Systems

Main Product Contents

Material/Chemical Input	%
Aluminium Alloy 6005A T6	100%

Manufacturing Process

The manufacturing site included in this life cycle analysis is SFS Factory 36 in Wolverhampton, UK.

The process of manufacturing begins with extruded aluminium profiles arriving at the factory from the UK mills, due to the inherent nature of the aluminium no surface treatment or coating takes place.

There are 2 different streams of product that define the processes required:

Profiles/ Rails

Majority of these arrive from the mills cut to the required length, so can be transferred directly into storage ready for despatch, on occasions they are required to be cut to a specific length to match a customer requirement. This is carried out on a manual or automated saw; these are cut singularly or in multiple lengths depending on the job required. Loading / unloading is dependent on the length of cut profiles, they are then wrapped with plastic and loaded into timber framed stillage and transferred into storage.

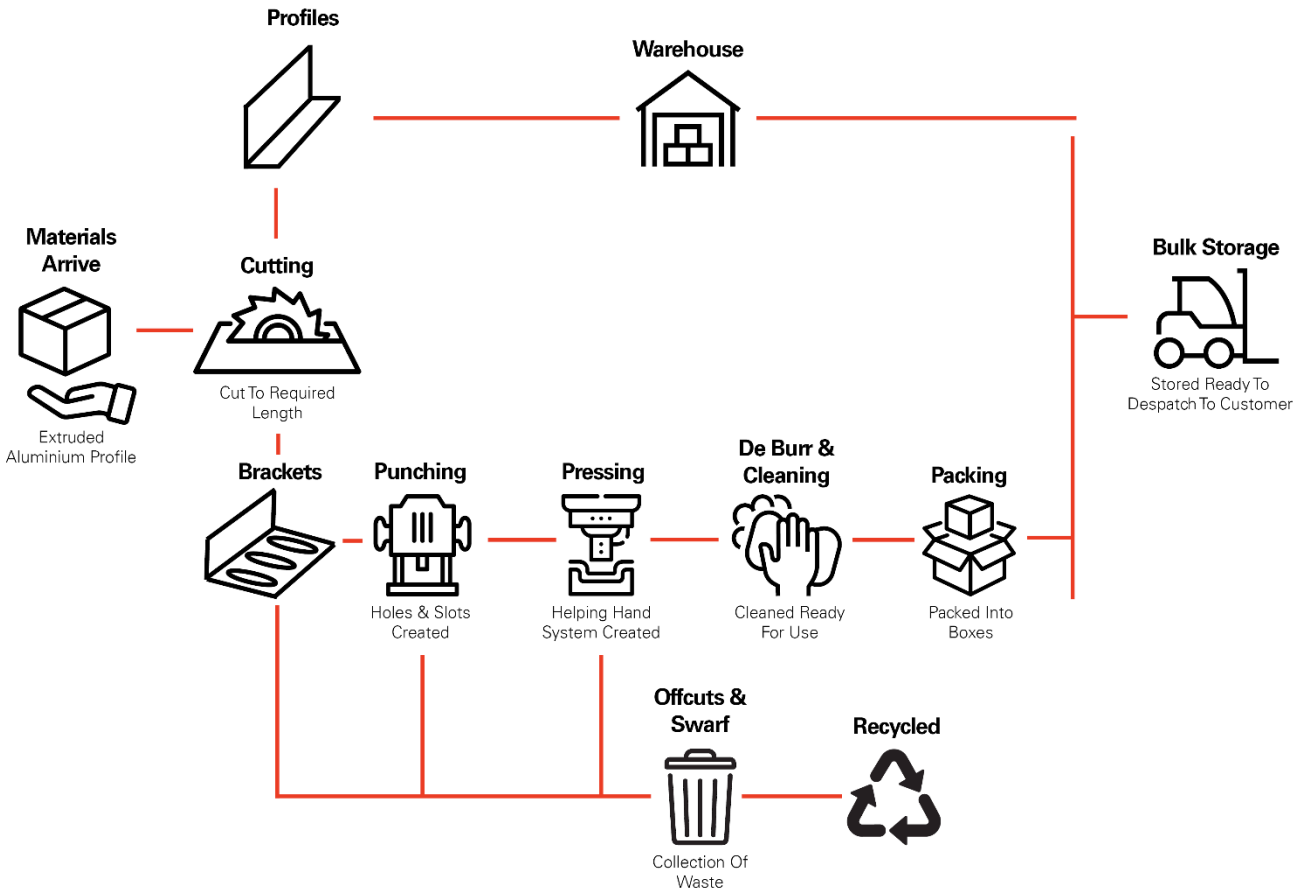
Brackets/ Hangers

These require a number of fabrication steps to turn the starting extrusion into a finished component:

- Long length extrusions are cut to the required length using a saw (manual or automated), cut in single or multiple lengths dependent on the profile, packed into cages for transfer to next operation/process.
- Holes and slots are pressed on the vertical leg of the bracket & hanger using a power press, stored in cages for transfer to next operation/process.
- The brackets are loaded onto a power press which creates the helping hand system and slots are then pressed in the foot of the bracket, brackets are then stored in cages for transfer to next operation/process.
- The brackets and hangers are deburred to remove any sharp edges and cleaned at each point in the process by hand.
- Hangers are packed into cardboard boxes and brackets are fitted with the required isolator (not included in this LCA) before being packed into cardboard boxes.
- The finished boxes are labelled, stacked on pallets and transferred into storage.

The water mix metal working fluid waste is emptied in intermediate bulk containers and collected by a registered hazardous waste carrier, it is processed and recycled where possible or disposed of legally.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 kilogram of aluminium profiles or brackets as installed as a subframe system.

System boundary

This is a cradle-to-gate LCA study that follows the modular design defined in EN15804:2012+A1:2013 for lifecycle stages A1-A3.

Data sources, quality and allocation

Datasets are derived from Ecoinvent v3.2 (2015) and the LCA tool used was BRE LINA v2.0. The LCA models and reports the production stage modules, A1 to A3. No inputs or outputs have been excluded, all the ancillary materials, energy, and water use are included. The only exceptions are packaging (which is not used in the process), and direct emissions to air,cwater and soil, which are not measured.

SFS manufacture other products in addition to Aluminium brackets & profiles, therefore an allocation of fuel consumption, water consumption & discharge, and waste emissions was required. So, the allocation has made accordingly to that:

- 100% of the profile material received is allocated
- 25% of the total energy used is allocated
- 100% of the propane used is allocated
- 15% of the aluminium scrap waste is allocated
- 20% of the water mix metal working fluids are allocated

All data has been collected from supplier's invoices and allocation % from production data. The quality of data from supplier's invoices is accurate, allocations are based on averages over the year period covering (01/01/2021 – 31/12/2021). The original data collection form has been used while doing an LCA analysis, there was a no uplift in the given data. Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e., raw material production) from the Ecoinvent 3.2 database. 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 EN15804.

Specific European and UK datasets have been selected from the Ecoinvent LCI for this LCA. The quality level of geographical and technical representativeness is therefore Very Good. The quality level of time representativeness is fair as the background LCI datasets are based on Ecoinvent v3.2 which was compiled in 2015. Therefore, there is approximately 5-6 years between the Ecoinvent LCI reference year and the time period for which the LCA was undertaken

Cut-off criteria

No inputs or outputs have been excluded, all the ancillary materials, energy, and water use are included. The only exceptions are packaging (which is not used in the process), and 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	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	9.59E+00	1.71E-06	6.35E-02	2.07E-02	1.07E-02	5.21E-04	1.67E+02

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels;

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	1.85E+01	3.68E-04	1.85E+01	1.83E+02	0.00E+00	1.83E+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

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	1.20E-01

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 (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	5.28E-01	4.38E-01	3.22E-04

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

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	6.19E-02	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling
MER = Materials for energy recovery;
EE = Exported Energy

Interpretation of results:

As the product is 100% “Aluminium alloy”, most of the environmental impacts are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A1:2013.

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

BS EN 755-9:2016 - Aluminium and aluminium alloys. Extruded rod/ bar, tube and profiles. Profiles, tolerances on dimensions and form.

BS EN 1090-1:2009+A1:2011 - Execution of steel structures and aluminium structures. Requirements for conformity assessment of structural components.