Statement of Verification

BREG EN EPD No.: 000233 Issue 1

This is to verify that the

Environmental Product Declaration

provided by:

SAS International

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:

SAS 900 Polynode Metal Ceiling System

Company Address

Parc Crescent
Waterton Industrial Estate
Bridgend
CF31 3XU

SAS International

Signed for BRE Global Ltd	Laura Critien Operator	20 November 2018 Date of this Issue
20 November 2018 Date of First Issue		19 November 2023 Expiry Date

BRE Global Verified EPD

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Environmental Product Declaration

EPD Number: 233

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**
SAS International 31 Sutton Business Park Reading UK RG6 1AZ	BRE LINA Version 2.0.8
Declared/Functional Unit	**Applicability/Coverage**
1m^2 of SAS 900 Polynode Metal Ceiling System	Manufacturer specific product average.
EPD Type	**Background database**
Cradle to Gate with options	ecoinvent v3.2

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)

SAS International
Waterton Industrial Estate
Bridgend
South Wales
UK

Construction Product:

Product Description

SAS 900 Polynode is an adjustable nodal ceiling system used to create multi-faceted ceiling designs. The Polynodal 900 system meets the demand of increasingly varied and complex ceiling surfaces in modern building design. Simple equilateral triangle tiles can create a near infinite variety of polyhedral ceiling forms.

Grid suspension with threaded rod and node plate which allows +/- 125mm adjustment from adjacent node (standard system). Highly complex geometrical surfaces can be installed using standard components, simply by adjusting the vertical position of the node. Corner anchor points suspend tiles which can be adjusted to create a free form ceiling. Our patent-pending nodal system can also be used to transition from ceiling to wall.

Standard modules are mounted on grid with 866mm centres and standard nodes are mounted every 1000mm. Standard tiles are triangular as standard (980mmon all sides). Each meter square (M2) consists of 2.4 tiles.

Bespoke sizes can be manufactured to suit client/project requirement and can be plain or perforated to meet acoustic requirements.

Technical Information

Property
System components are manufactured and tested in accordance with BS EN 13964:2014. **Essential Characteristics Performance:** Reaction to Fire: (up to) A2-S1-D0 European Reaction to Fire classification system (Euroclasses) Release of Formaldehyde: CLASS E1 Release of Asbestos: NO CONTENT Sound Absorption: (up to) Single Value α_w = 1.00 class A Durability: CLASS B

Main Product Contents

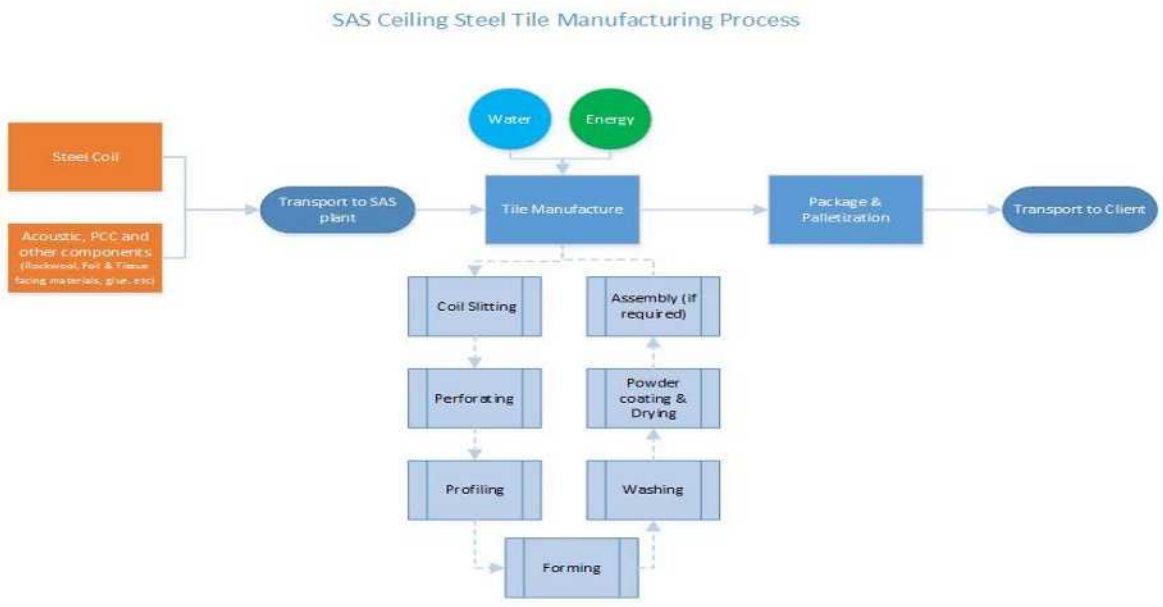
The raw material quantities have been taken for all variations of the system and modelled as a single dataset. The main product contents listed below represent the average values derived from this dataset, with a weight 4.317kg/m^2

Material/Chemical Input	%
Steel	95.1%
Polyester Powder Coating	4.99%

Manufacturing Process

The Bridgend factory is split into two separate units; Unit 1 is where the tile systems are formed, including the addition of the various types of acoustic padding. Key Unit 1 processes include: slitting of the steel/aluminium coils, perforating, washing, spray coating and drying. These processes account for the most energy intensive stages of the products life cycle. Unit 2 is where the grid systems, hangers, brackets and associated sub-structure components are rolled and formed; it houses less energy-intensive processes than Unit 1.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m^2 of SAS 900 Polynode system (4.317kg/m^2) - Polyester powder coated steel tile (2.4 per m^2) including node plate and suspension brackets for use in ceiling applications.

System boundary

This is a cradle-to-gate with options LCA, reporting all production life cycle stages of modules A1 to A3, and end of life disposal module C4 in accordance with EN15804:2012+A1:2013.

Data sources, quality and allocation

The supporting LCA study was carried out using BRE LINA v2.0.8 using manufacturer specific data provided by SAS International for the production period of the 12 months of 2017. Raw material quantities have been taken from recorded production/manufacture data and product geometry from the Syteline internal production system, for all variations of the SAS 900 systems made in the 12 month period.

SAS International manufacture other products in addition to the System 900 so some allocation of primary data has been carried out. Since the manufacturing steps responsible for slitting, perforating and drying the coated metal are the most energy intensive processes of the site, it is assumed that the gas and electricity consumption is the same for every m^2 of metal product produced. This same allocation was applied to total site water usage. Production waste has been allocated to individual products by applying a percentage wastage rate (based on historical values and used for stock management) to each quantity of raw material. All packaging and non-production waste (waste packaging) has also been allocated using this methodology with applied percentage based on planned/estimated packaging and waste requirements for each product/system/components.

Secondary data has been drawn from the BRE LINA database v2.0.38 and the background LCI datasets are based on ecoinvent v3.2. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA. Emissions from fuels used are included within the relevant datasets.

Cut-off criteria

No inputs or outputs have been excluded and all raw materials, packaging and transport, energy, water use and wastes, are included, except for direct emissions to air, water and soil, which are not measured.

LCA Results

Results per declared unit 1m^2 (4.317kg/m^2) – SAS 900 Polynode system, polyester powder coated steel tile (2.4 per m^2) including node plate and suspension brackets for the declared modules can be found in the following tables.

(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	1.05e+1	7.74e-7	1.18e-1	4.41e-2	1.14e-2	1.40e-3	1.48e+2
	Transport	A2	1.07e-1	2.01e-8	3.64e-4	9.62e-5	7.06e-5	2.30e-7	1.65
	Manufacturing	A3	5.04	5.90e-7	3.18e-2	8.14e-3	2.62e-3	1.26e-5	1.10e+2
	Total (of product stage)	A1-3	1.57e+1	1.38e-6	1.51e-1	5.23e-2	1.40e-2	1.41e-3	2.60e+2
	Disposal	C4	0	0	0	0	0	0	0

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;

LCA Results (continued)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	1.10e+1	2.69e-4	1.10e+1	1.56e+2	0	1.56e+2
	Transport	A2	2.40e-2	7.19e-8	2.40e-2	1.64	0	1.64
	Manufacturing	A3	3.27e+1	1.76e+1	3.27e+1	1.35e+2	0	1.35e+2
	Total (of product stage)	A1-3	4.38e+1	2.87e-4	4.38e+1	2.93e+2	0	2.93e+2
	Disposal	C4	0	0	0	0	0	0

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 (continued)

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	0	0	0	2.74e-1
	Transport	A2	0	0	0	3.76e-4
	Manufacturing	A3	0	0	0	3.81e-2
	Total (of product stage)	A1-3	0	0	0	3.13e-1
	Disposal	C4	0	0	0	0

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	2.29	9.84e-1	3.52e-4
	Transport	A2	6.61e-4	1.15e-1	1.14e-5
	Manufacturing	A3	2.87e-2	2.05e-1	6.20e-4
	Total (of product stage)	A1-3	2.32	1.30	9.83e-4
	Disposal	C4	0	0	0

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

LCA Results (continued)

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	0	0	0	0
	Transport	A2	0	0	0	0
	Manufacturing	A3	0	4.11e-1	0	0
	Total (of product stage)	A1-3	0	4.11e-1	0	0
	Disposal	C4	0	4.32	0	0

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
C4 - Disposal at end of life	It is assumed that as the main elements of the 900 system is steel and a valuable material, 100% of the product is recycled at end of life. Powder coat finish will remain and be processed as part of the steel recycling process.		

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.

BSI. Suspended Ceilings - Requirements and tests methods. BS EN 13964:2014. London, BSI, 2014.