

## Statement of Verification

BREG EN EPD No.: 213

Issue 1

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



is in accordance with the requirements of:  
**EN 15804:2012+A1:2013**

and  
**BRE Global Scheme Document SD207**

This declaration is for:  
**SAS 200 Metal Mesh Ceiling Tile**

### Company Address

Parc Crescent  
 Waterton Industrial Estate  
 Bridgend  
 CF31 3XU



  
 Signed for BRE Global Ltd

Laura Critien  
 Operator

13 November 2018  
 Date of this Issue

13 November 2018  
 Date of First Issue

10 November 2023  
 Expiry Date



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## Environmental Product Declaration

**EPD Number: 213**

### 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 <sup>2</sup> of SAS 200 metal mesh ceiling tile	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 <sup>a</sup>

Independent verification of the declaration and data according to EN ISO 14025:2010

Internal  External

(Where appropriate <sup>b</sup>)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
A1	A2	A3	A4	A5	Related to the building fabric				Related to the building			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
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

### Manufacturing site(s)

SAS International  
 Waterton Industrial Estate  
 Bridgend  
 South Wales  
 UK

### Construction Product:

#### Product Description

System 200 mesh tiles consist of powder coated expanded steel mesh formed into a tile which is compatible with various SAS sub-structure components. Expanded steel mesh tiles are available in round, square, diamond and hexagonal designs and offer between 45% to 63% open area to the tiles.

Standard System 200 mesh tiles modules are manufactured in the following sizes 1200 x 300mm, 1200 x 600mm, 1500 x 300mm, 1500 x 600mm, 1800 x 300mm, 1800 x 600mm, 3000 x 300mm & 3000 x 600mm. Depending on the tiles size the steel thickness/gauge will vary between 1.0 to 1.5mm for standard size tiles. Bespoke sizes can be manufactured to suit client/project requirement.

#### 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  $\alpha_w = 1.00$  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 of 4.23kg/m<sup>2</sup>

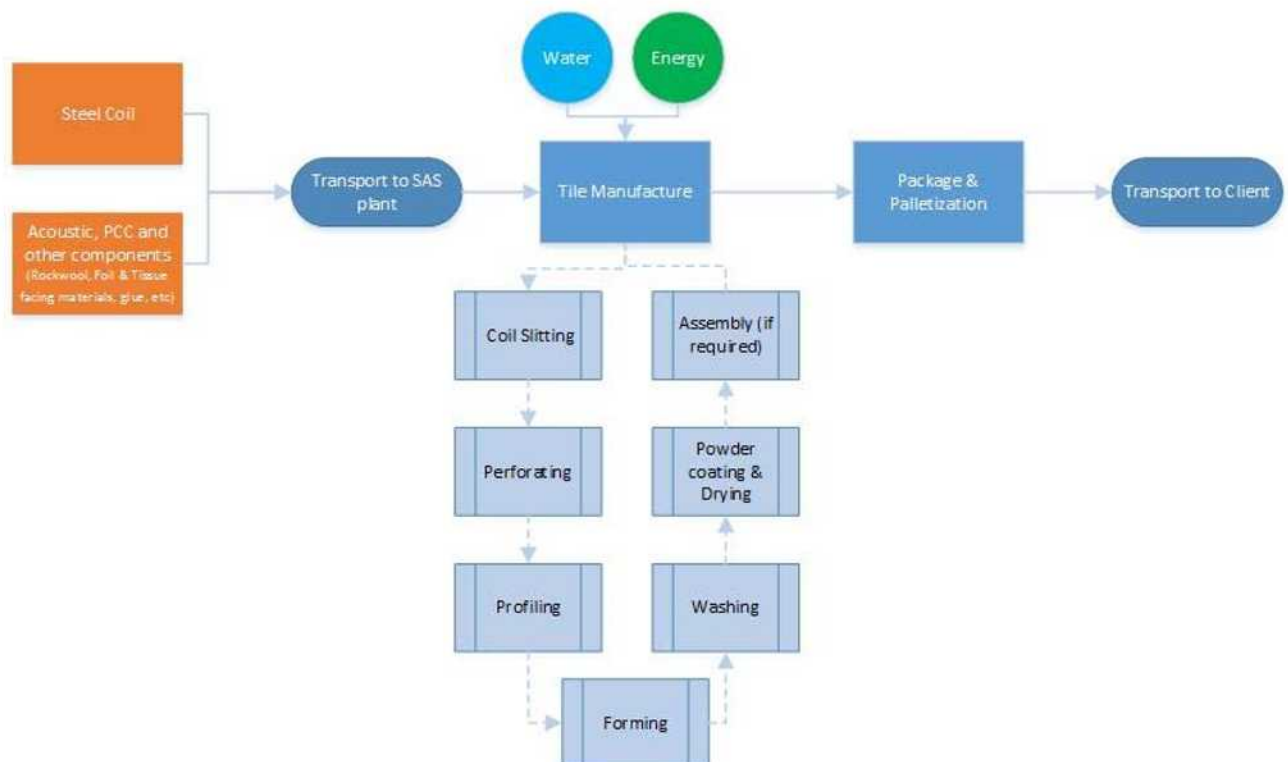
Material/Chemical Input	%
Steel	99%
Polyester Powder Coating	1%

## 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 are rolled and formed; it houses less energy-intensive processes than Unit 1.

## Process flow diagram

SAS Ceiling Steel Tile Manufacturing Process



## Life Cycle Assessment Calculation Rules

### Declared / Functional unit description

1m<sup>2</sup> of SAS 200 Mesh Tile System (4.23kg/m<sup>2</sup>) - Polyester powder coated expanded steel mesh formed into a tile for use in ceiling applications. The product represented in this EPD is based on manufacturing data for all types of steel SAS 200 mesh tile only systems made.

### 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 200 mesh steel tile only systems made in the 12 month period.

SAS International manufacture other products in addition to the System 200 mesh 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<sup>2</sup> 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 v2.0.34 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<sup>2</sup> (4.23kg/m<sup>2</sup>) of this SAS 200 mesh tile only system, 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 <sub>2</sub> equiv.	kg CFC 11 equiv.	kg SO <sub>2</sub> equiv.	kg (PO <sub>4</sub> ) <sup>3-</sup> equiv.	kg C <sub>2</sub> H <sub>4</sub> equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	1.68e+1	1.11e-6	1.52e-1	5.15e-2	1.26e-2	1.42e-3	2.40e+2
	Transport	A2	8.64e-2	1.63e-8	2.95e-4	7.79e-5	5.99e-5	1.60e-7	1.34
	Manufacturing	A3	5.38	5.53e-7	3.02e-2	7.46e-3	2.29e-3	9.75e-6	1.04e+2
	Total (of product stage)	A1-3	2.23e+1	1.68e-6	1.82e-1	5.91e-2	1.50e-2	1.43e-3	3.46e+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	1.97e+1	9.75e-5	1.97e+1	2.83e+2	0	2.83e+2
	Transport	A2	2.01e-2	5.37e-8	2.01e-2	1.33	0	1.33
	Manufacturing	A3	2.25e+1	1.55e-5	2.25e+1	1.28e+2	0	1.28e+2
	Total (of product stage)	A1-3	4.22e+1	1.13e-4	4.22e+1	4.13e+2	0	4.13e+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 <sup>3</sup>
Product stage	Raw material supply	A1	0	0	0	2.87e-1
	Transport	A2	0	0	0	3.11e-4
	Manufacturing	A3	0	0	0	3.29e-2
	Total (of product stage)	A1-3	0	0	0	3.21e-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	2.25	1.06	1.09e-3	
	Transport	A2	5.18e-4	1.08e-1	9.28e-6	
	Manufacturing	A3	2.24e-2	1.73e-1	5.97e-4	
	Total (of product stage)	A1-3	2.27	1.34	1.69e-3	
	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	3.25e-1	0	0
	Total (of product stage)	A1-3	0	3.25e-1	0	0
	Disposal	C4	0	4.24	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 element of the 200 mesh tile 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.