Statement of Verification

BREG EN EPD No.: 000424 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Gradus Ltd

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

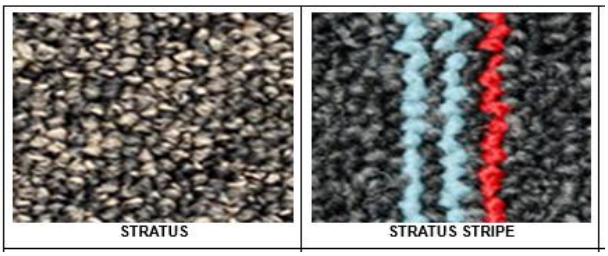
BRE Global Scheme Document SD207

This declaration is for:

1m² Stratus/Stratus Stripe Loop Pile Tufted Bitumen Backed Carpet Tile

Company Address

Park Green
Macclesfield
Cheshire
SK11 7LZ



GRADUS

Signed for BRE Global Ltd	Emma Baker Operator	06 June 2022 Date of this Issue
06 June 2022 Date of First Issue		05 June 2027 Expiry Date

BRE Global Verified EPD

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ECO PLATFORM EPD EN 15804 VERIFIED

Environmental Product Declaration

EPD Number: 000424

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**
Gradus Ltd Park Green Macclesfield Cheshire SK11 7LZ	Andrew Dutfield/BRE LINA v2.0
Declared Unit	**Applicability/Coverage**
1m2 (4.585 kg/m^2) Stratus/Stratus Stripe loop pile tufted bitumen backed carpet tile	Product Average.
EPD Type	**Background database**
Cradle to Gate	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)

3 First Avenue
Poynton Industrial Estate
Poynton
Cheshire
SK12 1YJ

Winsford Industrial Estate
Winsford
Cheshire
CW7 3QB

Construction Product:

Product Description

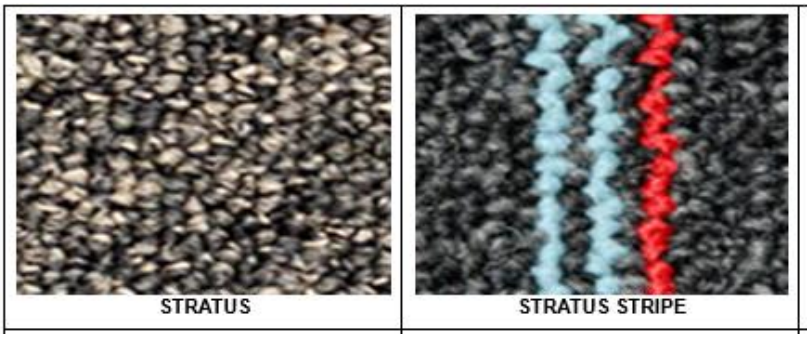
Stratus & Stratus Stripe loop pile products feature a range of complementary designs and colours that can work together to create interesting and contemporary floor schemes. Stratus & Stratus Stripe are suitable for a wide range of environments including commercial, education and healthcare.

The following products are included in this EPD:

Product	Pile weight (g/m^2)	Total product weight (g/m^2)
Stratus Loop pile	615	4,585
Stratus Stripe Loop pile	615	4,585

Technical Information

Property	Value, Unit
Wear Class Classification BS EN 1307	33
Castor Chair BS EN 985 Part A	Pass
Impact Noise Rating ISO 140-8	26dB
Static Electricity ISO 6356	<2 kV
Flammability BS EN 13501-1	Class Bfl-s1



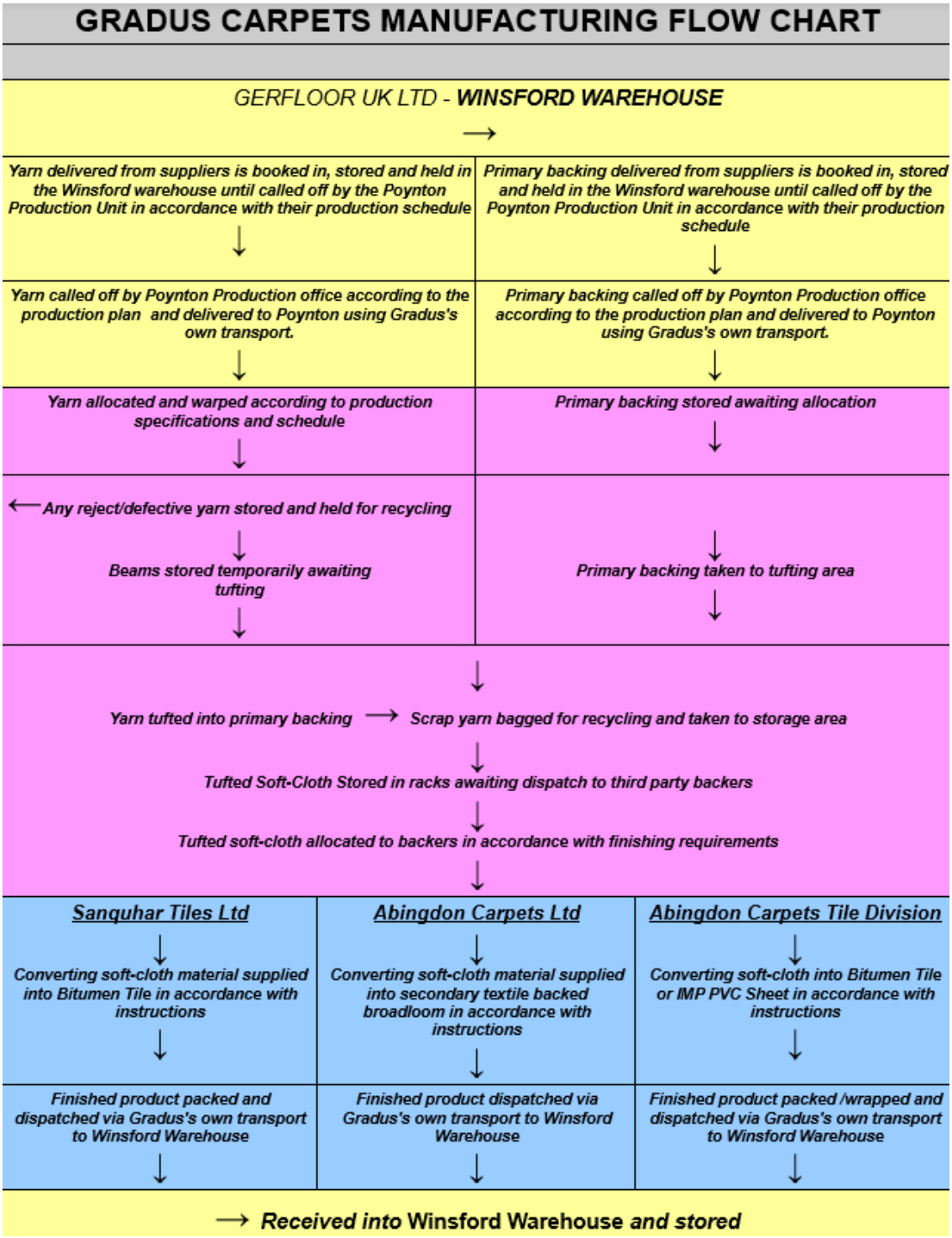
Main Product Contents

Material/Chemical Input	%
Nylon 6 yarn	13.4
Primary backing	2.0
Bitumen backing	84.6

Manufacturing Process

Gradus Carpets manufactures a range of contract carpets from Nylon and Polypropylene pile yarns. Their own manufacturing facilities includes warehousing, yarn preparation (warping and beaming), along with a range of tufting machines. They operate from their production unit in Poynton, Cheshire with a shared group warehouse facility in Winsford, Cheshire. Yarn and primary backings are received from their suppliers which is delivered into Winsford, and from which they draw these off according to their production schedule. Yarns and primary backings are allocated and delivered into Poynton in the amounts required and checked and prepared to be converted into soft-cloth product. The required yarns for specific products are warped and held on beams ready for tufting. In accordance with the manufacturing specification and production schedule, the carpet is tufted and the soft-cloth rolls stored on racks until finishing is required. Gradus Carpets works with third party finishers to back their tufted cloth and to convert it into either Bitumen backed tiles, Impervious PVC sheet or Textile secondary backed broadloom carpet.

Process flow diagram



Construction Installation

Carpet tiles should be removed from their boxes and conditioned on site for at least 24 hours before fitting. An arrow on the back of the tile indicates the pile direction. Tiles can be laid with the arrows in the same direction to create a broadloom effect or in a chequer board effect by laying tiles at right angles to each other. Before setting out for the installation, it is essential to ensure that the sub floor is clean, dry, level, smooth and free from contaminants. To obtain a high standard of installation it is necessary to plan your setting out carefully. The correct starting point for setting out is the centre of the area to be tiled. It should be noted however that the final starting point for the installation might be offset from the centre line to ensure the correct size and balance of the side cuts.

Use Information

It is recommended to vacuum daily to remove surface soil using a heavy duty upright vacuum cleaner with a brush or a tub vacuum cleaner with a power head.

To maintain a good visible standard, the carpet will require deep cleaning on a weekly / monthly / as required basis (depending on weather conditions and volume of traffic). Deep cleaning can be carried out using various methods, depending on equipment availability.

In all cases, deep cleaning must follow brushing and vacuuming. Attention must be given to stains by using a pre-treatment of carpet spot and stain remover and chewing gum remover if required.
A) Preferred method: The use of a conventional jet extraction machine, using a conventional floor tool, scrubbing the carpet and continuing to extract as much water as possible. This method leaves the carpet as dry as possible.
B) Deep Soiled Matting: As with all other maintenance methods, always prepare the carpet by vacuum cleaning prior to treatment. The cleaning professional may consider a combination of a rotary scrubbing machine fitted with a carpet brush and extraction equipment to get improved results.

End of Life

Although Gradus does not operate a collection and disposal policy for the End-of-Life of its product range, its various sheet and tile products can be easily disposed of through three main disposal routes, namely Landfill, Municipal Waste Incineration (MWI) and recycling in the cement industry.

In each of these scenarios, the product may be disposed of either intact or by partial separation for which the product is separated down into its main input materials with some or all of them recycled.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m^2 (4.585 kg/m^2) Stratus/Stratus Stripe loop pile tufted bitumen backed carpet tile

System boundary

This is a cradle-to-gate LCA, reporting all production life cycle stages of modules A1 to A3 in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

The Stratus/Stratus Stripe loop pile carpet declared unit is 1 m^2 of product with a weight of 4.585 kg/m^2.

The carpet manufacturing data supplied relates to the Poynton and Winsford sites and covers the working period 1st January to 31st December 2020. Poynton is the main manufacturing site and Winsford is the storage warehouse. The Poynton site manufactures other products in addition to Stratus/Stratus Stripe. Allocations

have been made according to the following table, and according to the provisions of the BRE PCR PN514 and EN 15804 standard:

Raw materials	Production by mass x % of product formulation
Packaging	% of total production by m^2
Energy, water, waste	% of total production by m^2

Energy and water usage at Winsford have also been additionally allocated at 41% of total usage based on the area taken up by Gerflor products within the facility.

The Bitumen tile backing is applied by various other manufacturers. A generic dataset has been created based on data supplied by TFI for the Green Guide in 2007 to represent the bitumen application process used for this study. Allocations have been made on a per m^2 basis according to the provisions of the BRE PCR PN514 and EN 15804 standard. Average transport distances of soft cloth from Poynton to the backing plants and of backed carpet from the backing plants to Winsford have been included. Average quantities and transport distances of packing materials have also been calculated for the finished products from data previously supplied by the backing plants.

Secondary data have been drawn from the BRE LINA database v2.0.87 and the background LCI datasets are based on ecoinvent v3.2 (2015).

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e. identical technology)	n/a
Fair	n/a	n/a	Less than 10 years of difference between the reference year according to the documentation, and the time period for which data are representative

The quality level of geographical and technical representativeness is 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, and so there is less than 10 years between the reference year according to the documentation, and the time period for which data are representative.

Cut-off criteria

All raw materials and energy input to the manufacturing process have been included, except for direct emissions to air, water and soil, which are not measured. The inventory process in this LCA includes all data related to raw material, packaging material, ancillary and consumable items. Process energy, water use, water discharge and waste are included.

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	1.01E+01	7.66E-07	4.48E-02	1.35E-02	6.02E-03	6.59E-05	1.83E+02
	Transport	A2	4.34E-01	7.99E-08	1.46E-03	3.83E-04	2.53E-04	1.14E-06	6.55E+00
	Manufacturing	A3	8.77E-02	2.27E-08	1.37E-03	8.11E-04	3.49E-04	9.31E-07	5.23E+00
	Total (of product stage)	A1-3	1.06E+01	8.69E-07	4.77E-02	1.47E-02	6.62E-03	6.79E-05	1.95E+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	4.90E+00	7.40E-02	4.97E+00	1.63E+02	2.30E+01	1.86E+02
	Transport	A2	8.71E-02	3.24E-07	8.71E-02	6.51E+00	0.00E+00	6.51E+00
	Manufacturing	A3	3.28E+00	1.34E-06	3.28E+00	5.94E+00	0.00E+00	5.94E+00
	Total (of product stage)	A1-3	8.26E+00	7.41E-02	8.33E+00	1.76E+02	2.30E+01	1.99E+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	0.00E+00	0.00E+00	0.00E+00	1.18E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.42E-03
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	2.45E-03
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	1.22E-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

Other environmental information describing waste categories

			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	1.31E-01	4.74E-01	4.85E-04
	Transport	A2	2.75E-03	3.05E-01	4.52E-05
	Manufacturing	A3	3.02E-03	2.35E-02	1.98E-05
	Total (of product stage)	A1-3	1.37E-01	8.03E-01	5.50E-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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.56E-02	0.00E+00	0.00E+00
	Total (of product stage)	A1-3	0.00E+00	3.56E-02	0.00E+00	0.00E+00

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

Interpretation

Analysis of the results shows that the following raw materials have the highest and second highest impacts for the selected indicators:

Indicator	Highest impact	2nd highest impact
GWP	Nylon 6 yarn (76.9%)	Bitumen backing (16.9%)
ODP	Bitumen backing (76.4%)	Nylon 6 yarn (13.5%)
AP	Nylon 6 yarn (72.5%)	Bitumen backing (19.7%)
EP	Nylon 6 yarn (64.9%)	Bitumen backing (24.5%)
POCP	Nylon 6 yarn (65.6%)	Bitumen backing (23.6%)
ADPE	Nylon 6 yarn (67.3%)	Bitumen backing (25.5%)
ADPF	Nylon 6 yarn (54.8%)	Bitumen backing (36.4%)

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.

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