

Environmental Product Declaration



In accordance with ISO 14025 for:

Taskworx™

Shaw Contract (Shaw Europe Ltd)

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01240
ECO Platform reg. number:	00000676
Issue date:	6 th April 2018
Validity date:	19 th March 2023
Geographical scope:	Europe

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

shaw contract®



1. Background

Guided by Cradle to Cradle philosophies, Shaw Contract's approach to sustainability focuses on transparency, material health, material reutilisation, efficient use of resources and social responsibility.

We employ sustainable practices throughout the lifecycle of our products. We use materials and resources efficiently. We use alternative and renewable energy sources when possible and we design and operate our facilities and manufacturing processes in accordance with widely recognised sustainability and safety standards.

This Environmental Product Declarations (EPD) of Taskworx™ carpet tiles allow all stakeholders to select products and materials based upon a full understanding of their environmental impact.

1.1. Commissioner and Author

This Life Cycle Assessment has been commissioned by Shaw Europe Ltd and is authored by Alan Best (Alan Best Sustainability Ltd, Cumbrae House, 2 Penwortham Court, Penwortham, Preston, Lancashire PR1 9YX, UK).

The LCA report is dated 8th November 2017 and complies to the requirements set in the ISO 14040 [1], ISO 14044 [2], ISO 14025 [3] and, in case of construction materials, the EN 15804 [4].

EcoChain version 2.10 has been used in the preparation of this report [5].

1.2. Publisher / program operator, name, address

EPD International AB, Box 210 60 SE -100 31, Stockholm, Sweden

1.3. Name of declared product

Taskworx™ Carpet Tiles (CPC-code 27230 - Carpets and other textile flooring, tufted)

1.4. Declaration owner

Shaw Europe Ltd, 33 Great Sutton Street, London, EC1V 0DX. A wholly owned subsidiary of the manufacturer: Shaw Industries Group Inc., 616 Walnut Avenue Dalton Georgia 30721-4409 USA.

1.5. Variability for average declaration

Based on the production and specification of 3 product types with pile weights varying from 540gsm to 710gsm. These products range from face fibre weights of 420gsm to 1450gsm with a weighted average of 610gsm. The weighted average total tile weight including the Taskworx™ backing system is 4156gsm.

1.6. Product composition

The product is a carpet tile comprising nylon face fibre with a modified bitumen backing and fibreglass layer to enhance dimensional stability.

2. Programme-related information and verification

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-01240
Published:	2018-04-06
Valid until:	2023-03-19
Product Category Rules:	PCR 2012:01. The International EPD® System PCR for Construction Products and Construction Services. Version 2.2.
Product group classification:	UN CPC 27230
Reference year for data:	2015
Geographical scope:	Europe

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2012:01 Construction products and Construction services, Version 2.2, 2017-05-30
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Massimo Marino, Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025:2006:
<input type="checkbox"/> EPD Process Certification (internal) <input checked="" type="checkbox"/> EPD Verification (external)
Third party verifier: <i>Simon Gandy, Ricardo Energy and Environment</i>
Accredited by: <i>Approved by the International EPD System</i>
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

3. Scope and reference unit

The LCA is based upon production data from the period January – December 2015 in the production of Taskworx™ at a confidential Shaw Contract manufacturing facility in the UK.

This assessment covers the production phase with demolition and waste processing ('cradle-to-gate with options') as defined in EN15804:2012 = A1 2013.

The functional unit has been defined as follows: the production of 1m² of Taskworx™ carpet tile.

4. Product Description

This declaration covers all products which comprise the Taskworx™ tile range and which feature the Taskworx™ backing system together with EcoSolution Q® nylon face fibre.

Taskworx™ is a commercial carpet tile, for use as a floor covering in accordance with manufacturer's guidelines.

The carpet tile consists of Shaw's unique face fibre, which is nylon 6 manufactured with a high percentage of recycled material on the Taskworx™ backing system; a modified bitumen compound, natural mineral filler and a fibreglass reinforcement layer.

The EcoSolution Q® face fibre is tufted into a primary backing sheet containing recycled content. Latex is added to anchor the fibre and the Taskworx™ backing system is then applied.

Taskworx™ is suitable for use in all commercial settings. It has a life span of 15 years and it comes with a 10-year warranty (subject only to installation and maintenance being carried out in line with manufacturer's guidelines).

The product meets both internal and external performance standards including those established in the EU under EN 1307 and EN 10874 for a product suitable for heavy and general commercial installations.

An end of life product collection and recycling scheme is in operation and details may be obtained at www.shawcontract.com

4.1. Product Manufacturing

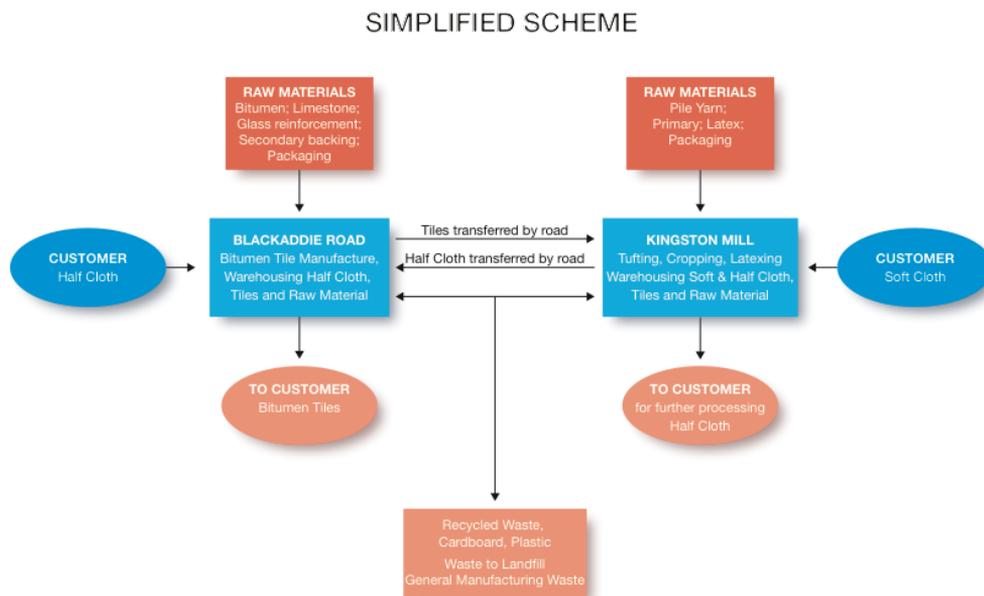
Taskworx™ is manufactured in the UK in ISO 9001 and ISO 14001 certified facilities or equivalent. Raw materials are responsibly sourced through supply chain, raw materials and waste management programmes.

Nylon 6 face fibre is produced internally by Shaw Industries in the USA through polymerisation of caprolactam. The EcoSolution Q® fibre is then passed through extrusion and finishing processes to produce yarn with the required functional and aesthetic qualities.

Waste from these processes is collected and reprocessed and blended with virgin material to give EcoSolution Q® yarn an average 25% post-industrial content.

The yarn is tufted into the primary backing layer, after which a performance latex precoat is applied to assure maximum tuft bind. A first layer of Taskworx™ modified bitumen coating is then applied, followed by the application of a fibreglass reinforcement layer providing dimensional stability. A final layer of Taskworx™ backing completes the process. The tiles are then die-cut and packaged for distribution.

Figure 1 - Taskworx™ Manufacturing Process



No co-products are produced by the manufacturing of Taskworx™

No 'green energy' is directly used in the manufacture of Taskworx™

5. Life Cycle Inventory Analysis

5.1. System boundaries and cut-off criteria

The processes and life cycle modules that are included in this study are defined by system boundaries. In this LCA of Taskworx™ Carpet tile the following stages are covered:

- Raw material supply, transport and manufacturing (A1-A3)
- Transport to and installation at the building site (A4-A5)
- De-construction, transport, waste processing and disposal (C1-C4)
- An end of life product collection and recycling scheme is in operation (details may be obtained at www.shawcontract.com). However, the products are new to market and so the scheme has not yet processed sufficient material to produce meaningful data to declare against module D at this stage

The system boundary for the purposes of this study begins with raw material supply. The system boundary with nature occur in the manufacturing of raw materials, the principal ones (nylon 6 and bitumen) being fossil fuel derivatives.

All relevant inputs and outputs - like emissions, energy and materials - have been considered in this LCA and (in accordance with EN15804) the total neglected input flows per module do not exceed 5% of energy usage and mass.

No secondary materials or secondary fuels as raw materials are allocated

The life cycle inventory comprises of data gathering and calculation procedures to quantify all relevant environmental impacts (inputs and outputs) of the product system. In this analysis, the following impacts are included:

- Emissions to air when using thermal energy of CO₂, CO, NO_x (NO₂ and N₂O), SO₂, C₂H₂ and particulate matter (PM10: particles < 10 µm);
- Emissions to water of Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), P-total, N-total and solid matter (PM10: particles < 10 µm);
- Emissions to the soil of Polycyclic Aromatic Hydrocarbons (PAHs) and heavy metals.

5.2. Data collection procedures

Primary production data was gathered during an audit by BRE in 2015 has been used, and this remains representative of production processes. Where electricity use was not sub-metered for the individual extrusion and finishing processes, they were allocated based on estimates by industry experts. As such, these are the only instances where value decision or expert opinion may have influenced project outcomes.

The LCA data collected does not specifically include data from the use or end of line stages of the Taskworx™ lifecycle but any assumptions made are clearly stated

All suppliers to Shaw Contract have been requested to send environmentally-relevant product information for this assessment. All suppliers have, in case it was present, delivered this data in the shape of an EPD, safety data sheets, certification and energy documentation. Based on this information, representative background data (process sheets) have been selected.

When this input from suppliers was not available, the data for the upstream supply chain derives from Ecoinvent (version 3.2) and, when possible, are modelled according to the EN15804 in the EcoChain application. According to the Ecoinvent standards, the background process data ("Process charts") includes infrastructure and capital goods.

5.3. Data sources

The data of products, by-products and the waste in this report were derived from energy and resource administrations at the production site. Primary production data from the year 2015 has been used. Emissions to air, water and soil and other environmental impacts associated with the production of Taskworx™ carpet tile were derived from emission registrations.

5.4. Inventory and allocation

In this section the quantity, quality and allocation of various materials, energy streams and emissions by processes and products are outlined. The system boundaries that have been adopted are in accordance with modular approach of EN 15804.

5.5. Materials (Module A1)

All relevant resources, materials and services in production phase A1 have been included in this study. The composition of Taskworx™ carpet tile per sq metres is given in the table below. The compositions are based on the Bills of Materials supplied by Shaw Contract manufactured in 2015.

Table 1: The composition of the product per declared unit

Material	Weight of material in Taskworx™, 1 m ²
Bitumen	863 g
Cardboard	117 g
Fibreglass	12 g

Eco Solution Q nylon 6 face fibre	524 g
SBR Latex	726 g
Limestone (calcium carbonate)	2,220 g
Non-woven Primary Backing	92 g
Pallets - wood	166 g
Secondary backing, non-woven polyester	52 g
Shrink Wrap	6 g
Waste Treatment per m2	176 g

5.6. Transport (Module A2)

All relevant transport to Shaw Contract's production plant has been included in this study.

The materials of a Taskworx™ Carpet Tile are transported from various locations to the main tile manufacturing site in the United Kingdom. Transport distances are always calculated from the origin of the material. Whenever materials are transported via distribution centres, then transport between those distribution centres are also included.

The distances, as entered in EcoChain, are used as the basis of the calculation of impact by EcoChain. This applies to freight per truck, as well as cargo per container ship or other transportation method.

5.7. Production (Module A3)

The production processes are modelled using specific values from primary data collection at the production site.

All relevant production processes in module A3, such as packaging and production losses, have been included in this assessment. Table 2 illustrates which processes are present at the production site of Shaw Contract. In addition, it is illustrated how the total energy usage on the site is distributed over the individual production processes.

Primary production data from the period January – December 2015 has been used.

Table 2: Utilities usage of the processes at Shaw Contract

Processes	Grey Power (average)	Diesel	Electricity (mixed medium voltage UK)	LPG	Water treatment	Water supply
	kWh	litre	kWh	litre	litre	litre
Tile Production	0	34,185	417,202	64,449	826,000	892,460
Total	0	34,185	417,202	64,449	826,000	892,460

Where electricity use was not sub-metered for the individual extrusion and finishing processes, they were allocated based on estimates by industry experts. The electricity that is used for the office building, which is also on the production site, is perceived as overhead and omitted from this study.

The production site does not have any dangerous waste streams.

All other substances and emissions that are released during the production process are included in this assessment.

5.8. Transport to and installation at the building site (Modules A4-A5)

The average distance of Taskworx™ Carpet tile has to travel from the manufacturing plant in the UK to the use site is 150km, by road. The assumed means of transport is a truck with the carrying capacity that is greater than 16 tonnes (Ecoinvent process: Transport, lorry >16t, fleet average/RER).

This process assumes a load factor of 50%. In other words, the truck is assumed to be fully loaded on the way to the construction site and empty upon return.

No energy use is allocated to the installation process because the fitting of Taskworx™ on site is manual work. During the installation process approximately 90ml of adhesive is used per installation.

5.9. Use of the installed product (Module B1)

The applied materials do not cause significant emissions in use.

5.10. Maintenance (Module B2)

This EPD includes impacts associated with the cleaning of a Taskworx™ carpet tile across its 15-year lifetime. Actual cleaning regimes will vary according to use, but for the purposes of the calculations it is assumed that each tile will be wet-cleaned 1.5 times per year (using 2.7 kg of water per clean), vacuum-cleaned 208 times per year (using 0.31kWh of electricity) and cleaned with 6.7ml of non-soap cleaning agent, diluted 1:25 in water, which leads to a requirement of 6.7 litres of waste water treatment.

5.11. In use energy and water use (Module B3-B7)

There is no in-use energy or water consumption by the product

5.12. Demolition and waste processing phases (Module C1-C4)

The demolition and waste processing stages C1-C4 of Taskworx™ Carpet tile are considered in the study.

These phases encompass demolition (C1), transport to the waste processing site (C2), waste processing (until waste status is lost; C3) and waste disposal (C4).

It is assumed that no materials or energy is used for de-constructing Taskworx™. Removal of tiles is a manual process requiring no energy or chemical use as a release bond adhesive or loose lay is the normal installation method

To model a representative scenario, it is assumed that 100% will go to landfill and that the transport distance is 250km by road.

5.13. Environmental loads and benefits of recycling and product reuse (Module D)

The product was introduced to the market in 2017 and given the life span of the product (15 years), no meaningful data is yet available on collection and post-consumer recycling. However, an end of life product collection and recycling scheme is in operation (details may be obtained at www.shawcontract.com).

6. Life Cycle Impact Assessment Results and Interpretation

The LCA profile of the Taskworx™ Carpet tile is presented in **Table 3**.

All environmental emissions from the inventory are multiplied by the characterisation factors from the CML-VLCA impact assessment method, after which these values are added up to provide the total environmental impact per impact category. These LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

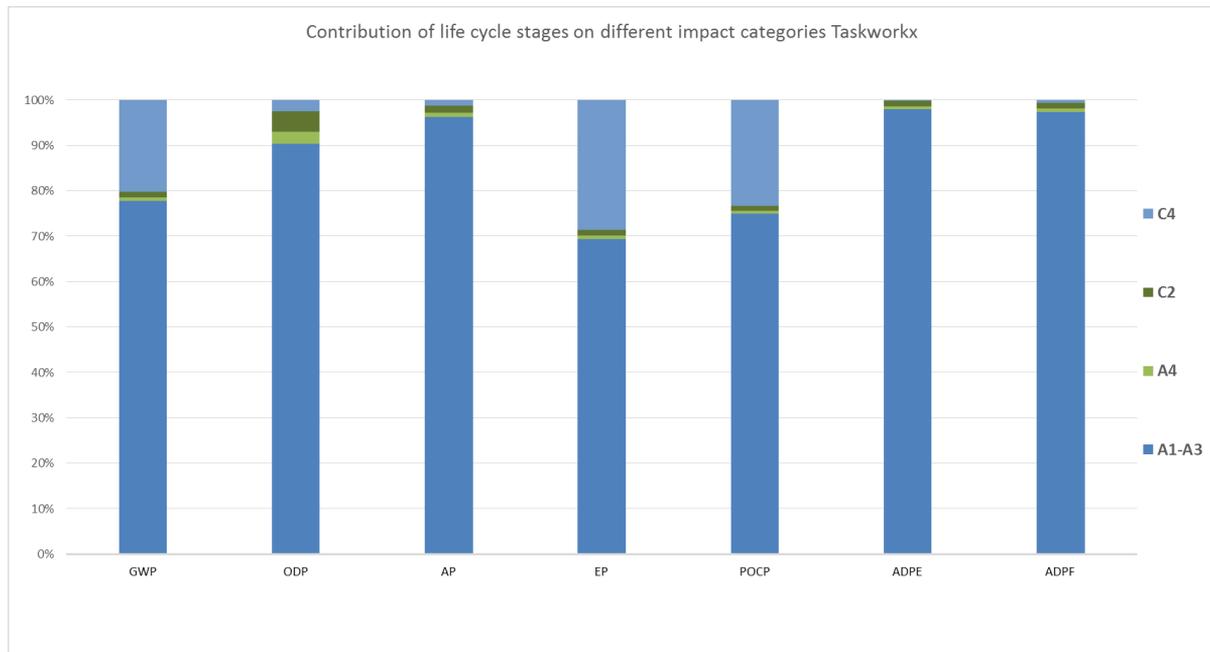
Table 3: Environmental profile of 1 m² Taskworx™ Carpet tile

Description of the system boundary (X = Included in LCA; MND = Module Not declared)																
Product stage			Construction process stage		Use Stage							End of life stage			Benefits and loads beyond the system boundaries	
Raw material supply	Transport	Manufacturing	Transport	Construction installation process	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	MND	MND	X	MND	MND	MND	MND	MND	MND	X	MND	X	MND

Impact Category	Unit	A1-A3	A4	B2	C2	C4
Global warming potential	kg CO ₂ eq	9.729	0.085	2.44	0.142	2.34
Ozone depletion	Kg CFC11 eq	0.000000561	0.000000016	0.00000023110	0.000000026	0.000000014
Acidification	kg SO ₂ eq	0.040500000	0.000373975	0.00087831100	0.000623585	0.000496535
Eutrophication potential	kg PO ₄ ³ eq	0.00638000	0.000067298	0.01317466900	0.000112217	0.002489015
Tropospheric ozone photochemical oxidants	Kg Ethene eq	0.001990000	0.000015123	0.00309753800	0.000025217	0.000562722
Abiotic depletion – non-fossil	Kg Sb eq	0.000035900	0.000000232	0.00050376400	0.000000387	0.000000084
Abiotic depletion – fossil	MJ	193.000	1.369	29.2990804900	2.28	1.170
Primary renewable energy (resource)	MJ	8.810	0.0178	10.9740000000	0.0298	0.0986
Primary renewable energy (material)	MJ	0	0	0.00	0	0
Primary renewable energy (total)	MJ	8.810	0.0178	10.9740000000	0.0298	0.0986
Primary non-renewable energy (resource)	MJ	204.000	1.392	50.135	2.321	1.489
Primary non-renewable energy (material)	MJ	0	0	0	0	0

Impact Category	Unit	A1-A3	A4	B2	C2	C4
Primary non-renewable energy (total)	MJ	204.000	1.392	50.135	2.3213	1.489
Use of secondary material	kg	0	0	0	0	0
Use of fresh water	m ³	0.0133	0.0001	0.1315	0.0001	0.0002
Use of renewable secondary fuels	MJ	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0
Hazardous waste	kg	0.000915000	0.000000804	0.000386	0.000001341	0.000003946
Non-hazardous waste	kg	0.6290	0.0794	0.195330	0.1324	4.2074
Radioactive waste	kg	0.000334000	0.000008933	0.000312863	0.000014896	0.000010902

Figure 2 – Contribution of lifecycle stages



7. Interpretation Table

The following table provides an identification of the most significant contributors to a selection of the parameters presented above:

Impact category	Most significant contributor
Global Warming Potential	The most significant contribution comes from A1 – A3, with 89% of that impact deriving specifically from the production of raw materials, principally the nylon 6 facing material. However, Shaw minimise this impact through the use of 25% recycled material.
Total use of non-renewable primary energy resources	Non-renewable primary energy sources are predominately used in the production of raw materials (A1)
Eutrophication potential	The assumption made in this study is that the product may be consigned to landfill in its disposal phase (C4). However, this will be significantly reduced if local infrastructure exists that will enable the collection and recycling of principal materials

8. References

[1] 'ISO 14040: Environmental management - Life cycle assessment – Principles and Framework', International Organization for Standardization, ISO14040:2006.

[2] 'ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines', International Organization for Standardization, ISO14044:2006.

[3] 'ISO 14025: Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures', International Organization for Standardization, ISO14025:2006.

[4] 'NEN-EN 15804: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products', NEN-EN 15804:2012+A1:2013.

[5] EcoChain, 2017, web: <http://app.ecochain.com>.