epddanmark

ECO PLATFORM EPD VERIFIED

Owner:	Kvadrat A/S
No.:	MD-23110-EN_rev3
Issued:	07-07-2023
Revision:	05-11-2026
Valid to:	07-07-2028

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**



Owner of declaration
Kvadrat A/S
Lundbergsvej 10
8400 Ebeltoft, Denmark
VAT no. DK-45 99 85 17

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
90% Wool, 10% Nylon – Huddersfield, United Kingdom
90% Wool, 10% Nylon – Lillehammer, Norway
92% Wool, 8% Nylon – Vestland, Norway

Number of declared datasets/product variations: 3

Production sites
- Huddersfield, United Kingdom
- Lillehammer, Norway
- Vestland, Norway

Green energy certificates are present for the electricity consumption at the production site in Vestland, Norway, representing 100% Hydro power.

Product(s) use
Kvadrat produces quality contemporary textiles for use in upholsteries and curtains.

Declared/ functional unit
1 kg of woven textile

Year of production site data (A3)
2021

EPD version
4th version: Updates to "Table of products" and results in Table 3.

Issued: 07-07-2023
Valid to: 07-07-2028

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☒Cradle-to-gate with modules C1-C4 and D
☐Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

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

☐ internal ☒ external

Third party verifier:

Guangli Du, Aalborg University, BUILD

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery, and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product
Wool	89,2 – 98%
Nylon	2 – 10,8%

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight-% of packaging
Carton	0 – 100%
PE foil	0 – 49%
Wooden pallet	0 – 38%

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 kg of woven textile on the production sites located in Huddersfield, United Kingdom and Vestland and Lillehammer in Norway, respectively. Product specific data are based on average values collected in the year 2021. Background data are based on the GaBi database version 2022.2 and the EcoInvent 3.8 database. Data are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

The products declared within this EPD do not contain substances listed on the ”Candidate List of Substances of Very High Concern for Authorisation.”

(http://echa.europa.eu/candidate-list-table)

Essential characteristics

The products in this EPD are not covered by harmonized technical specifications. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer’s website: www.kvadrat.dk/en

Reference Service Life (RSL)

Kvadrat offers 10 years guarantee for the majority of its textile products. The actual service life of Kvadrat textile depends on a wide range of various impact factors such as the allocation of the application area to the use class, maintenance, intensity of use and functional purpose. Most often Kvadrat textiles are applied for building and transportation related purposes.

Therefore, technical service life cannot be defined for Kvadrat textiles.

Kvadrat product specific textile warranty are disclosed in the Technical Specifications of each product.

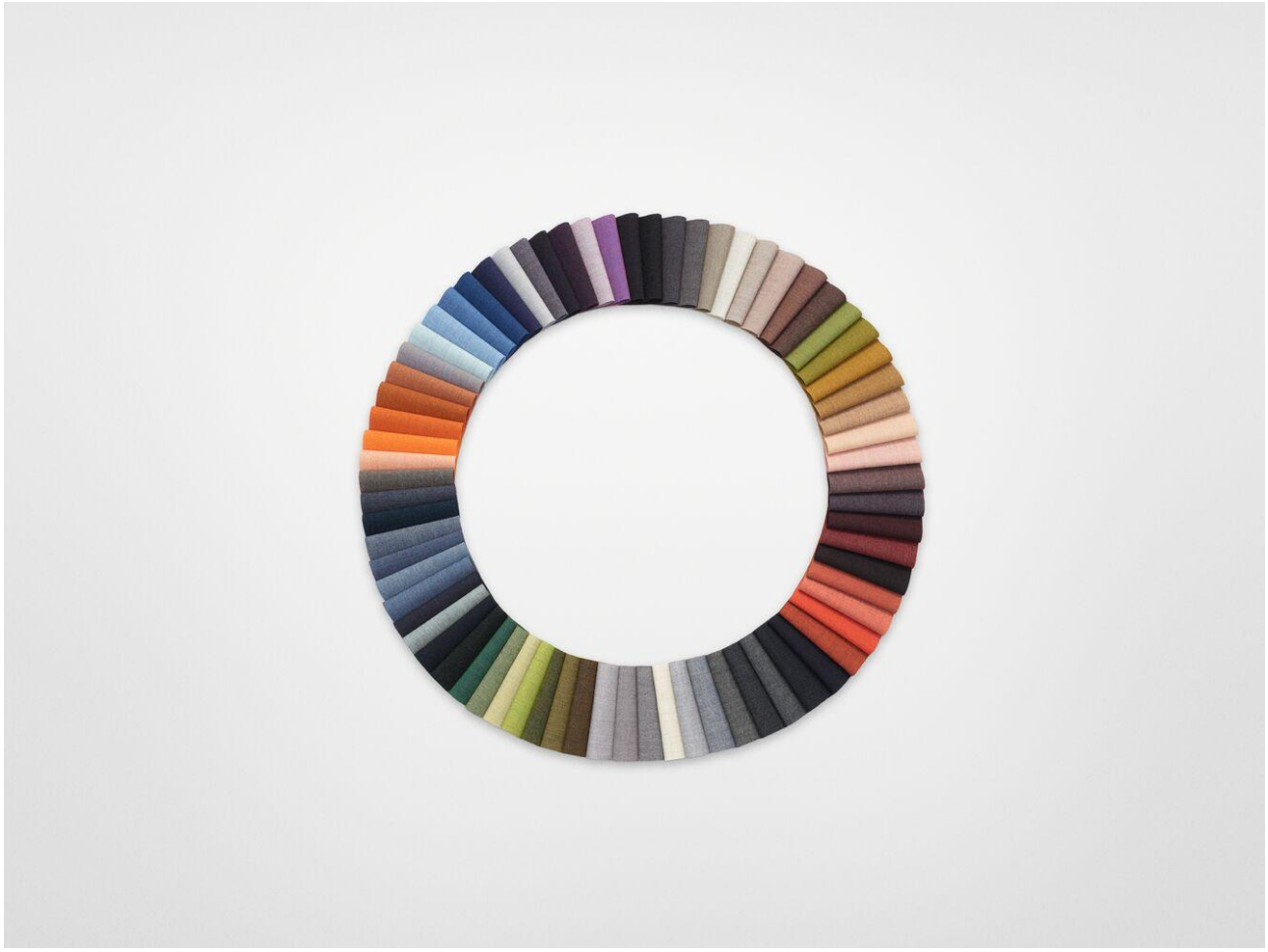
Table of products

This EPD applies to a defined range of textile products, presented in the table below. Product names are listed without colour-version numbers. All respective colour variants of the listed products are covered by this declaration.

Products from Kvadrat covered in this EPD					
Supplier	**Country**	**Product name**	**Product composition**	**kg pr m2**	**Table number**
Huddersfield	UK	Tonus	90% wool 10% nylon	0,475	1
Huddersfield	UK	Frozen	90% wool 10% nylon	0,250	1
Huddersfield	UK	Atlas	90% wool 10% nylon	0,286	1
Huddersfield	UK	Basel	90% wool 10% nylon	0,364	1
Huddersfield	UK	Canvas	90% wool 10% nylon	0,343	1
Huddersfield	UK	Recheck	90% wool 10% nylon	0,300	1
Huddersfield	UK	Remix	90% wool 10% nylon	0,300	1
Huddersfield	UK	Remix Screen	90% wool 10% nylon	0,265	1
Huddersfield	UK	Rime	90% wool 10% nylon	0,414	1
Huddersfield	UK	Steelcut	90% wool 10% nylon	0,485	1
Huddersfield	UK	Steelcut Trio	90% wool 10% nylon	0,550	1
Huddersfield	UK	Twill Weave	90% wool 10% nylon	0,686	1
Huddersfield	UK	Clara	92% wool 80% nylon	0,290	1
Huddersfield	UK	Lila	90% wool 10% nylon	0,539	1
Huddersfield	UK	Raas	92% wool 8% nylon	0,542	1
Huddersfield	UK	Melange Nap	97% wool 3% nylon	0,314	1
Huddersfield	UK	Artifabric	90% wool 10% nylon	0,489	1
Huddersfield	UK	Steelcut Quartet	90% wool 10% nylon	0,550	1
Huddersfield	UK	Audiomix 165 cm	90% wool 10% nylon	0,200	1
Huddersfield	UK	Twisted Flower	90% wool 10% nylon	0,457	1
Huddersfield	UK	Cava	90% wool 10% nylon	0,304	1
Huddersfield	UK	Hero	97% wool 3% recycled nylon	0,414	1
Huddersfield	UK	Hero Heather	97% wool 3% recycled nylon	0,400	1
Huddersfield	UK	Vanir	92% wool8% nylon	0,557	1
Lillehammer	Norway	Coda	90% wool 10% nylon	0,614	2
Vestland	Norway	Engvik	92% wool 8% nylon	0,364	3
Vestland	Norway	IDA	92% wool 8% nylon	0,371	3
Vestland	Norway	Supreme	92% wool 8% nylon	0,407	3
Vestland	Norway	Brusvik	92% wool 8% nylon	0,371	3
Vestland	Norway	Risvik	92% wool 8% nylon	0,436	3
Vestland	Norway	Ara	92% wool 8% nylon	0,358	3
Vestland	Norway	Fiord	92% wool 8% nylon	0,357	3
Vestland	Norway	Jaali	92% wool 8% nylon	0,371	3
Vestland	Norway	San	92% wool 8% nylon	0,264	3

Vestland	Norway	Sisu	99% wool 1% nylon	0,754	3
Vestland	Norway	Vidar	94% wool 6% nylon	0,514	3
Vestland	Norway	Pisces	92% wool 8% nylon	0,600	3
Vestland	Norway	Krus 1964	92% wool 8% nylon	0,500	3
Vestland	Norway	Jensen Essential	92% wool 8% nylon	0,364	3
Vestland	Norway	Majestic Design	92% wool 8% nylon	0,360	3
Vestland	Norway	Fiord Wonderland	92% wool 8% nylon	0,371	3
Vestland	Norway	Norvik	92% wool 8% nylon	0,329	3
Vestland	Norway	Bondevik	92% wool 8% nylon	0,457	3
Vestland	Norway	Bella	92% wool 8% nylon	0,543	3
Vestland	Norway	Balloon	92% wool 8% nylon	0,467	3
Vestland	Norway	Kiki-Patchwork	92% wool 8% nylon	0,479	3
Vestland	Norway	Uni flettet	92% wool 8% nylon	0,436	3
Vestland	Norway	Mai	95% wool 5% nylon	0,457	3
Vestland	Norway	Supreme Design	96% wool 4% nylon	0,493	3
Vestland	Norway	Alle	92% wool 8% nylon	0,486	3
Vestland	Norway	Torsvik 2017 - 1926	92% wool 8% nylon	0,343	3
Vestland	Norway	Risvik - 1096	92% wool 8% nylon	0,400	3
Vestland	Norway	Brusvik 2016 - 1862	92% wool 8% nylon	0,371	3
Vestland	Norway	Serpentine	98% wool 2% nylon	0,607	3
Vestland	Norway	Abelia	94% wool 6% nylon	0,407	3
Vestland	Norway	Vidar Duo	94% wool 6% nylon	0,514	3
Vestland	Norway	Glimt	92% wool 8% nylon	0,467	3
Vestland	Norway	Gudrun Nostalgic Big Stripe	92% wool 8% nylon	0,376	3
Vestland	Norway	Gudrun Nostalgic Small Stripe	92% wool 8% nylon	0,400	3
Vestland	Norway	Gudrun Summernights	92% wool 8% nylon	0,483	3
Vestland	Norway	Gudrun Uni Stripe	92% wool 8% nylon	0,379	3
Vestland	Norway	Måneskinn	92% wool 8% nylon	0,467	3
Vestland	Norway	Mørketid	92% wool 8% nylon	0,467	3
Vestland	Norway	Mosaic	92% wool 8% nylon	0,467	3
Vestland	Norway	Regn	92% wool 8% nylon	0,467	3
Vestland	Norway	Saga Nature	95% wool 5% nylon	0,436	3
Vestland	Norway	Forestview	96% wool 4% nylon	0,541	3
Vestland	Norway	Zen	92% wool 8% nylon	0,547	3

Picture of product(s)



LCA background

Declared unit.

The LCI and LCIA results in this EPD relates to environmental impacts caused by the production and end-of-life of 1 kg of woven textiles.

Name	Value	Unit
Declared unit	1	Kg
Conversion factor to 1 kg.	1	-

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2:2019.

Guarantee of Origin – certificates

Foreground system:

"Guarantee of Origin" certificates are used in the production at the supplier in Vestland, Norway. Here electricity is modelled as 100% hydro power.

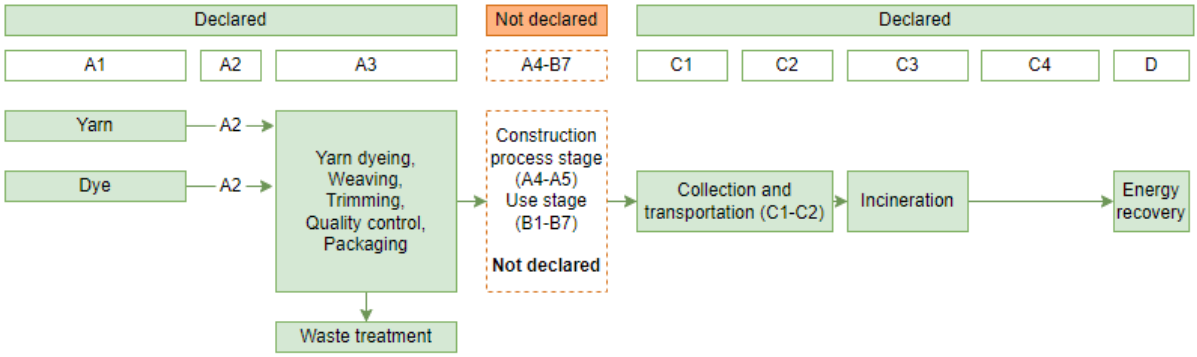
At the other production sites, no "Guarantee of Origin" certificates are used in the manufacturing. Consumption of electricity is modelled with residual electricity grid mix. Consumption of heat is modelled with average data, representative for the geographical area.

Background system:

Other processes upstream and downstream from the production is modelled with processes from the GaBi background database that is based on average data.

Flowdiagram

The flow diagram below presents the main processes included in the life cycle of the woven textiles.



System boundary

This EPD is based on a cradle-to-gate LCA with modules C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging, and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The manufacturing of the woven textiles is handled by suppliers located in Norway and the United Kingdom, respectively.

The yarns used for the textiles are prepared and assembled prior to the weaving. In this step, the warp yarns are wrapped around a rotating drum, creating a warp with the desired length. In the weaving process, the woven fabrics are formed using a loom, interlacing the lengthwise threads, known as warp yarns, and the crosswise threads, known as weft yarns. Subsequently, the fabric is trimmed, quality controlled, rolled-up, packaged, and transported to Kvadrat headquarters in Ebeltoft, Denmark.

The yarns used in the products are dyed using roughly four different dyeing methods, with some yarns being delivered pre-dyed others being dyed inhouse.
(1) For some of the synthetic textiles, dyestuff is added directly during the manufacturing of the yarn and before the yarn has been extruded (dope dyed). In other cases, (2) the dyestuff is added to the fibres before they are spun into a yarn Dyestuff is either added to the loose fibres (stock dyed) or to combed wool sliver (top dyed). A third option used in both the production of synthetic and natural textiles includes the (3) dyeing of the finished yarns (yarn dyed), which are either sent to an external dyeing house before they arrive at the production sites of the suppliers of this EPD or which are dyed inhouse at the production sites of this EPD. Alternatively, (4) the dyestuff is applied to the finished woven textile (piece dyed).

In the case of the yarn dyeing technology the yarn is wound on perforated cores. From here, the dye flows through the yarn package, penetrating the fibres into the core of the yarn. The yarn dyeing method is both handled internally and externally, depending on the specific supplier. This process requires a significant amount of steam and water.

End of Life (C1-C4) includes:

C1 – Deconstruction: There are no impacts associated with C1 as the textiles – once they are incorporated into either a curtain or upholstery – are deconstructed manually and without the need for any additional materials and/or machinery. This lifecycle stage is set to 0.

C2 – Transport to waste processing: A general scenario for the transport of waste to waste handling site is used, and this single transport scenario is applied to the end-of-life for all textiles unaffected by their site of origin or material composition.

This transport distance is set to 40 km, based on average distance to waste handling sites.

C3 – Waste processing: The textiles are modelled as one homogenous product that will/cannot be separated at the end-of-life, instead they are all modelled as 1 kg of textile being sent to municipal waste incineration, with each product falling under the same scenario regardless of material composition or site of origin.

End-of-life is modelled using a 100% incineration scenario.

Re-use, recovery, and recycling potential (D) includes:

Module D includes the potential in energy recovery arising from the incineration of the textiles at the end-of-life. Modelled with average European data for electricity and district heating.

LCA results

Table 1: Huddersfield, UK - 90% wool, 10% nylon

Huddersfield - 90% wool, 10% nylon

ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO2 eq.]	1,51E+01	0,00E+00	4,75E-03	1,74E+00	0,00E+00	-6,85E-01
GWP-fossil	[kg CO2 eq.]	9,62E+00	0,00E+00	4,71E-03	4,71E-01	0,00E+00	-6,80E-01
GWP-bio	[kg CO2 eq.]	5,46E+00	0,00E+00	4,92E-07	1,27E+00	0,00E+00	-4,60E-03
GWP-luluc	[kg CO2 eq.]	2,74E-02	0,00E+00	4,36E-05	5,19E-06	0,00E+00	-1,43E-04
ODP	[kg CFC 11 eq.]	1,64E-10	0,00E+00	6,13E-16	1,98E-13	0,00E+00	-4,67E-12
AP	[mol H+ eq.]	5,21E-02	0,00E+00	6,45E-06	1,42E-03	0,00E+00	-1,39E-03
EP-fw	[kg P eq.]	6,87E-04	0,00E+00	1,72E-08	5,39E-08	0,00E+00	-2,63E-06
EP-mar	[kg N eq.]	6,91E-03	0,00E+00	2,26E-06	6,47E-04	0,00E+00	-3,68E-04
EP-ter	[mol N eq.]	2,28E-01	0,00E+00	2,70E-05	7,33E-03	0,00E+00	-3,82E-03
POCP	[kg NMVOC eq.]	1,66E-02	0,00E+00	5,60E-06	1,66E-03	0,00E+00	-9,77E-04
ADPm[1]	[kg Sb eq.]	2,28E-06	0,00E+00	3,10E-10	1,82E-09	0,00E+00	-1,06E-07
ADPf[1]	[MJ]	1,12E+02	0,00E+00	6,41E-02	6,71E-01	0,00E+00	-9,67E+00
WDP[1]	[m3]	7,24E+00	0,00E+00	5,69E-05	1,99E-01	0,00E+00	-1,09E-01
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						

Huddersfield - 90% wool, 10% nylon

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	4,15E-07	0,00E+00	4,71E-11	4,41E-09	0,00E+00	-1,12E-08
IRP[2]	[kBq U235 eq.]	4,19E-01	0,00E+00	1,80E-05	3,89E-03	0,00E+00	-1,57E-01
ETP-fw[1]	[CTUe]	3,97E+01	0,00E+00	4,56E-02	2,28E-01	0,00E+00	-3,56E+00
HTP-c[1]	[CTUh]	8,09E-09	0,00E+00	9,32E-13	5,06E-11	0,00E+00	-1,19E-10
HTP-nc[1]	[CTUh]	8,35E-07	0,00E+00	4,98E-11	4,88E-09	0,00E+00	-5,69E-09
SQP[1]	-	1,50E+03	0,00E+00	2,68E-02	1,36E-01	0,00E+00	-9,58E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

Huddersfield - 90% wool, 10% nylon

RESSOURCE CONSUMPTION PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2,00E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PERM	[MJ]	7,01E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,07E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PENRE	[MJ]	1,11E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
PENRM	[MJ]	1,23E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,12E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m3]	5,60E-01	0,00E+00	5,11E-06	4,70E-03	0,00E+00	-4,07E-03
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water						
Disclaimer	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						

Huddersfield - 90% wool, 10% nylon

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,44E-05	0,00E+00	1,99E-13	5,35E-11	0,00E+00	-1,34E-09
NHWD	[kg]	3,66E-01	0,00E+00	9,81E-06	2,27E-02	0,00E+00	-1,86E-02
RWD	[kg]	4,24E-03	0,00E+00	1,20E-07	2,49E-05	0,00E+00	-9,29E-04
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,06E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	3,69E-02	0,00E+00	0,00E+00	3,11E+00	0,00E+00	0,00E+00
EET	[MJ]	8,42E-02	0,00E+00	0,00E+00	5,59E+00	0,00E+00	0,00E+00
Disclaimer	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy						

Huddersfield - 90% wool, 10% nylon

BIOGENIC CARBON CONTENT PER 1 KG TEXTILE		
Parameter	**Unit**	**Value**
Biogenic carbon content in product	kg C	4,50E-01
Biogenic carbon content in accompanying packaging	kg C	1,40E-05

Table 2: Gudbrandsdalen - 90% wool, 10% nylon

Gudbrandsdalen - 90% wool, 10% nylon

ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	1,67E+01	0,00E+00	4,75E-03	1,74E+00	0,00E+00	-6,85E-01
GWP-fossil	[kg CO_2 eq.]	1,16E+01	0,00E+00	4,71E-03	4,71E-01	0,00E+00	-6,80E-01
GWP-bio	[kg CO_2 eq.]	5,14E+00	0,00E+00	4,92E-07	1,27E+00	0,00E+00	-4,60E-03
GWP-luluc	[kg CO_2 eq.]	2,49E-02	0,00E+00	4,36E-05	5,19E-06	0,00E+00	-1,43E-04
ODP	[kg CFC 11 eq.]	4,14E-11	0,00E+00	6,13E-16	1,98E-13	0,00E+00	-4,67E-12
AP	[mol H^+ eq.]	5,27E-02	0,00E+00	6,45E-06	1,42E-03	0,00E+00	-1,39E-03
EP-fw	[kg P eq.]	6,33E-04	0,00E+00	1,72E-08	5,39E-08	0,00E+00	-2,63E-06
EP-mar	[kg N eq.]	1,00E-02	0,00E+00	2,26E-06	6,47E-04	0,00E+00	-3,68E-04
EP-ter	[mol N eq.]	2,26E-01	0,00E+00	2,70E-05	7,33E-03	0,00E+00	-3,82E-03
POCP	[kg NMVOC eq.]	2,07E-02	0,00E+00	5,60E-06	1,66E-03	0,00E+00	-9,77E-04
ADP-mm[1]	[kg Sb eq.]	2,26E-06	0,00E+00	3,10E-10	1,82E-09	0,00E+00	-1,06E-07
ADP-fos[1]	[MJ]	1,94E+02	0,00E+00	6,41E-02	6,71E-01	0,00E+00	-9,67E+00
WDP[1]	[m^3]	2,89E+00	0,00E+00	5,69E-05	1,99E-01	0,00E+00	-1,09E-01
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use						
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.						

Gudbrandsdalen - 90% wool, 10% nylon

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	4,34E-07	0,00E+00	4,71E-11	4,41E-09	0,00E+00	-1,12E-08
IRP[2]	[kBq U235 eq.]	2,82E+00	0,00E+00	1,80E-05	3,89E-03	0,00E+00	-1,57E-01
ETP-fw[1]	[CTUe]	1,07E+02	0,00E+00	4,56E-02	2,28E-01	0,00E+00	-3,56E+00
HTTP-c[1]	[CTUh]	8,99E-09	0,00E+00	9,32E-13	5,06E-11	0,00E+00	-1,19E-10
HTTP-nc[1]	[CTUh]	8,11E-07	0,00E+00	4,98E-11	4,88E-09	0,00E+00	-5,69E-09
SQP[1]	-	1,37E+03	0,00E+00	2,68E-02	1,36E-01	0,00E+00	-9,58E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.						
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

Gudbrandsdalen - 90% wool, 10% nylon

RESSOURCE CONSUMPTION PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1,95E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PERM	[MJ]	5,83E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,01E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PENRE	[MJ]	1,92E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
PENRM	[MJ]	2,38E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,95E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	5,05E-01	0,00E+00	5,11E-06	4,70E-03	0,00E+00	-4,07E-03
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water						
Disclaimer	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^{2}$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.						

Gudbrandsdalen - 90% wool, 10% nylon

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,32E-05	0,00E+00	1,99E-13	5,35E-11	0,00E+00	-1,34E-09
NHWD	[kg]	3,72E-01	0,00E+00	9,81E-06	2,27E-02	0,00E+00	-1,86E-02
RWD	[kg]	2,43E-02	0,00E+00	1,20E-07	2,49E-05	0,00E+00	-9,29E-04
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	3,00E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	4,78E-01	0,00E+00	0,00E+00	3,11E+00	0,00E+00	0,00E+00
EET	[MJ]	1,21E+00	0,00E+00	0,00E+00	5,59E+00	0,00E+00	0,00E+00
Disclaimer	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy						

Gudbrandsdalen - 90% wool, 10% nylon

BIOGENIC CARBON CONTENT PER 1 KG TEXTILE		
Parameter	**Unit**	**Value**
Biogenic carbon content in product	kg C	4,50E-01
Biogenic carbon content in accompanying packaging	kg C	4,39E-02

Table 3: Vestland, Norway: 89,2 – 98% wool, 2 – 10,8% nylon

Vestland - 89,2 – 98% wool, 2 – 10,8% nylon

ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO2 eq.]	1,64E+01	0,00E+00	4,75E-03	1,74E+00	0,00E+00	-6,85E-01
GWP-fossil	[kg CO2 eq.]	1,05E+01	0,00E+00	4,71E-03	4,71E-01	0,00E+00	-6,80E-01
GWP-bio	[kg CO2 eq.]	5,86E+00	0,00E+00	4,92E-07	1,27E+00	0,00E+00	-4,60E-03
GWP-luluc	[kg CO2 eq.]	2,97E-02	0,00E+00	4,36E-05	5,19E-06	0,00E+00	-1,43E-04
ODP	[kg CFC 11 eq.]	5,06E-11	0,00E+00	6,13E-16	1,98E-13	0,00E+00	-4,67E-12
AP	[mol H+ eq.]	5,56E-02	0,00E+00	6,45E-06	1,42E-03	0,00E+00	-1,39E-03
EP-fw	[kg P eq.]	7,13E-04	0,00E+00	1,72E-08	5,39E-08	0,00E+00	-2,63E-06
EP-mar	[kg N eq.]	9,66E-03	0,00E+00	2,26E-06	6,47E-04	0,00E+00	-3,68E-04
EP-ter	[mol N eq.]	2,39E-01	0,00E+00	2,70E-05	7,33E-03	0,00E+00	-3,82E-03
POCP	[kg NMVOC eq.]	1,92E-02	0,00E+00	5,60E-06	1,66E-03	0,00E+00	-9,77E-04
ADPm[1]	[kg Sb eq.]	1,01E-05	0,00E+00	3,10E-10	1,82E-09	0,00E+00	-1,06E-07
ADPf[1]	[MJ]	1,34E+02	0,00E+00	6,41E-02	6,71E-01	0,00E+00	-9,67E+00
WDP[1]	[m3]	4,91E+00	0,00E+00	5,69E-05	1,99E-01	0,00E+00	-1,09E-01
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use							
Disclaimer	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						

Vestland - 89,2 – 98% wool, 2 – 10,8% nylon

ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	4,41E-07	0,00E+00	4,71E-11	4,41E-09	0,00E+00	-1,12E-08
IRP[2]	[kBq U235 eq.]	3,38E-01	0,00E+00	1,80E-05	3,89E-03	0,00E+00	-1,57E-01
ETP-fw[1]	[CTUe]	6,14E+01	0,00E+00	4,56E-02	2,28E-01	0,00E+00	-3,56E+00
HTP-c[1]	[CTUh]	9,17E-09	0,00E+00	9,32E-13	5,06E-11	0,00E+00	-1,19E-10
HTP-nc[1]	[CTUh]	8,74E-07	0,00E+00	4,98E-11	4,88E-09	0,00E+00	-5,69E-09
SQP[1]	-	1,53E+03	0,00E+00	2,68E-02	1,36E-01	0,00E+00	-9,58E+00
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality						
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						
Disclaimers	[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.						
	[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.						

Vestland - 89,2 – 98% wool, 2 – 10,8% nylon

RESSOURCE CONSUMPTION PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2,30E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PERM	[MJ]	6,45E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,32E+02	0,00E+00	4,67E-03	1,20E-01	0,00E+00	-5,86E+00
PENRE	[MJ]	1,34E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
PENRM	[MJ]	1,62E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,34E+02	0,00E+00	6,44E-02	6,72E-01	0,00E+00	-9,67E+00
SM	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m3]	5,53E-01	0,00E+00	5,11E-06	4,70E-03	0,00E+00	-4,07E-03
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources 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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water						
Disclaimer	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*102 or 195, while 1,12E-11 is the same as 1,12*10-11 or 0,0000000000112.						

Vestland - 89,2 – 98% wool, 2 – 10,8% nylon

WASTE CATEGORIES AND OUTPUT FLOWS PER 1 KG TEXTILE							
Parameter	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1,91E-05	0,00E+00	1,99E-13	5,35E-11	0,00E+00	-1,34E-09
NHWD	[kg]	5,82E-01	0,00E+00	9,81E-06	2,27E-02	0,00E+00	-1,86E-02
RWD	[kg]	2,86E-03	0,00E+00	1,20E-07	2,49E-05	0,00E+00	-9,29E-04
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,50E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	2,01E-01	0,00E+00	0,00E+00	3,11E+00	0,00E+00	0,00E+00
EET	[MJ]	3,12E-01	0,00E+00	0,00E+00	5,59E+00	0,00E+00	0,00E+00
Disclaimer	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy						

Vestland - 89,2 – 98% wool, 2 – 10,8% nylon

BIOGENIC CARBON CONTENT PER 1 KG TEXTILE		
Parameter	**Unit**	**Value**
Biogenic carbon content in product	kg C	4,69E-01
Biogenic carbon content in accompanying packaging	kg C	1,58E-02

Additional information

LCA interpretation

Across all the products and all the sites, the trend is the same: Yarns and fibres used in the production are the most impactful parameter, in part due to the significant contributions of waste arising during production, followed closely by the dyeing/finishing setup in question, and lastly the end-of-life incineration. The exception is at the supplier in Huddersfield, (UK) where the consumption of natural gas outweighs the other components.

Technical information on scenarios

Reference service life

RSL information	Unit
Reference service Life	10 years
Declared product properties	Technical specifications and guidance can be obtained from the company's website www.kvadrat.dk/en or from direct contact to Kvadrat at +45 8953 1866 or kvadrat@kvadrat.org
Design application parameters	
Assumed quality of work	
Outdoor environment	
Indoor environment	
Usage conditions	
Maintenance	

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	0	kg
For energy recovery	1	kg
For final disposal	0	kg
Assumptions for scenario development	Assumed to be 100% incineration.	-

Re-use, recovery, and recycling potential (D)

Scenario information/Materiel	Value	Unit
Displaced material	3,11	MJ
Energy recovery from waste incineration	5,59	MJ

Indoor air

The products covered in the EPD are **GREENGUARD®** certified and comply with respective Indoor climate minimum requirements.

The **GREENGUARD®** certification ensures products do not exceed limits for dangerous substance emissions (VOCs) and thereby contribute to a healthier indoor climate.

The certificates and standards as well as the EU Ecolabel are available at the following link, by choosing a textile and selecting the Downloads section, after which the certificates are presented:

https://www.kvadrat.dk/en/products

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

However, selected Kvadrat products are EU Ecolabel certified, which guarantees limited use of substances harmful to the environment and health and reduced water and air pollution.

References

Publisher	epddanmark www.epddanmark.dk Template version 2022.2
Programme operator	Danish Technological Institute Sustainable Construction Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	Danish Technological Institute Sustainable Construction Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA software /background data	GaBi version 10.6, Database 2022.2 www.gabi-software.com EcoInvent version 3.8 www.ecoinvent.org
3rd party verifier	Guangli Du BUILD – The Department of the Built Environment, Aalborg University

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental.
product declarations – Core rules for the product category of construction products"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business."

ISO 14025
DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

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ISO 14044
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