

Environmental Product Declaration

Polypropylene staple fibres



from Beaulieu Fibres International



Fibers

Programme: The International EPD® System, www.environdec.com

Programme operator: EPD International AB

EPD registration number: S-P-09689

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Valid until : 2028-07-20

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

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

1. Company information

Beaulieu Fibres International (BFI), member of the Beaulieu International Group, is the largest European manufacturer of polyolefin and bicomponent fibres. BFI is active in a wide range of industries, such as Geotextiles, Hygiene & Wipes, Flooring, Automotive, Upholstery, Filtration, RTM and Construction. BFI has three production sites in Europe, two in Belgium and one in Italy, supplying MONO/BICO staple and shortcut fibres, in round and trilobal cross sections with linear densities of 1.3 to 500 dtex.

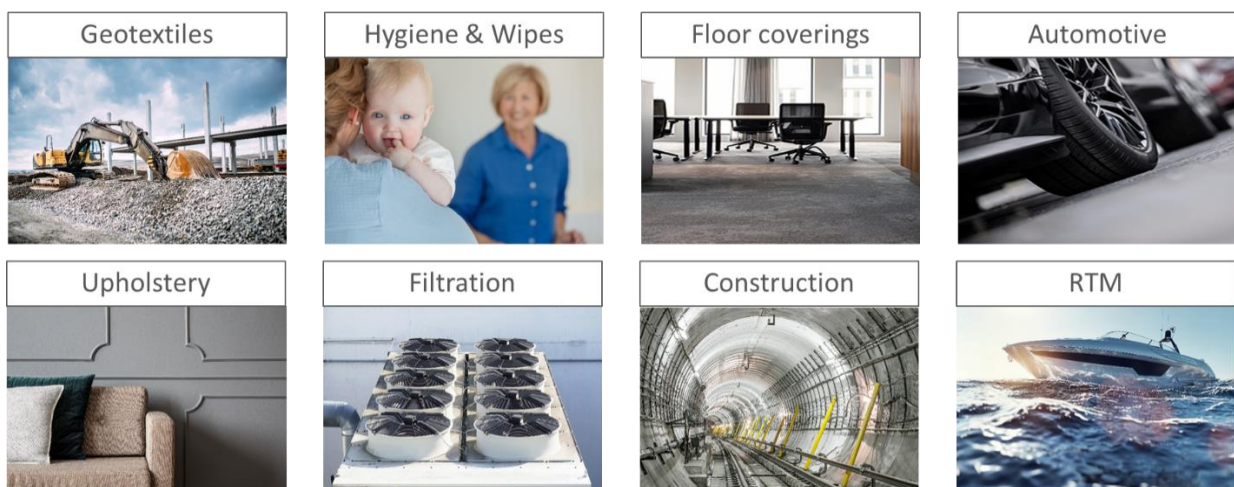


Figure 1: Polypropylene staple fibre applications

EPD owner

Beaulieu Fibres International, Ooigemstraat 2b, 8710 Wielsbeke – Belgium

Contact person

Simon De Meyer (Simon.De.Meyer@bintg.com) – Product Manager

Name and location of production sites included in the EPD

Beaulieu Fibres International Wielsbeke
Ooigemstraat 2b
8710 Wielsbeke
Belgium

Beaulieu Fibres International Kruisem
Groenedreef 15 A
9770 Kruisem
Belgium

Product-related or management system-related certifications

ISO 9001 – Quality Management System

ISO 14001 – Environmental Management System

2. Product information

Product composition

Product components	Weight % of declared product
Polypropylene (PP)	96,0 %
Masterbatch	1,7 %
Polyethylene (PE)	1,1 %
Spinfinish	1,2 %

Reference composition is based on the average of one production year (2022). The amount of masterbatch and spinfinish is customer specific and can vary slightly, less than 1% for every material input. Customer specific compositions will vary less than 5% from the declared composition.

No post-consumer recycled or biogenic material is present in the fibre.

Packaging materials	kg packaging/kg PP fibre
PE	0,001
PP	0,002
PET	0,002

No post-consumer recycled material, neither biogenic material is present in the fibre.

Technical specifications

Parameter	Range	Unit
Dtex	1,3 – 500	dtex
Crimps	0 – 6	1/cm
Cutting length	36 – 120	mm
Tenacity	15 - 60	cN/tex
Elongation	≥40	%
Cross shape	Round – Trilobal	n.a.
Additives	UV, FR, Spinfinish,...	n.a.

UN CPC code

262 – Man made textile staple fibres processed for spinning

355 – Man-made fibres



Figure 1: Polypropylene short-cut staple fibres

To the best of our knowledge, PP fibres don't contain any materials or substances included in the Candidate List of Substances of Very High Concern (SVHC) for authorization issued by the European Chemicals Agency. Under normal storage and use conditions, these fibres can be handled with no particular precautions or special protective equipment

3. LCA information

Declared unit: 1 kg of polypropylene fibres with packaging on top

Reference service life: RSL is not included in the EPD

Database(s) and LCA software used:

Product specific data was provided by Beaulieu Fibres International and within limits (Age < 5 years for specific data). This primary data refers to the period January 2022 to December 2022 and a quality check has been carried out on this data. Other production technology was delivered by suppliers or LCI datasets from the LCA software, GaBi.

System boundary

This LCA is published as a cradle-to-gate EPD, according to the EN 15804+A2 and includes the modules A1, A2 and A3:

- A1 - Extraction/production of raw materials, packaging and auxiliaries
- A2 - Transport of the raw materials to the plant
- A3 - Production, including energy, auxiliaries, packaging and waste treatment

Type D system boundary (of PCR 2019:14 v1.2.5) was chosen since the LCA study fulfils all 3 requirements in section 2.2.2 of the PCR at the same time.

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	EU 27	EU 27	BE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Specific data used	70%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = included in the EPD

ND = module not declared

Process information

After, dosing and mixing the raw materials (polymers, additives, etc.) in the hopper, the mixture is extruded through a die plate which results in the production of individual mono- or bicomponent fibre filaments. These filaments are directly cooled by air-based cooling or water cooling. Next, the filaments are directly guided to the stretching line after addition of spinnish. At the stretching line, the filaments are stretched to the desired specifications. Afterwards, an oven can be used to remove the rest shrinkage within the filaments. The last step consists of cutting the filaments to fibres and pressing the fibres into bales. These bales are then transported to the customer.

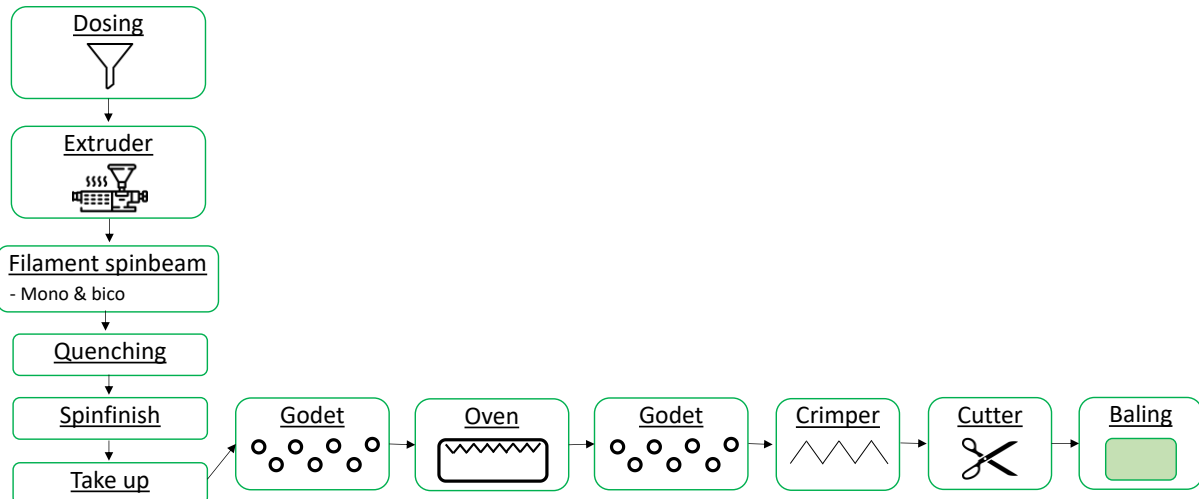


Figure 2: Production steps

Assumptions, allocation and estimates

- For the amount of masterbatch, an average is used. Since there is no LCA data available for most pigments, titanium dioxide and carbon black were used as a substitute for inorganic and organic pigments.
- Colour transition, produced during an order change, is seen as a co-product. Economical allocation has been applied on the overall environmental impact categories.
- If no supplier LCA data was available, generic data from the GaBi software has been taken.
- Internal transport of bales has been neglected because the displacement of these objects is very short.
- Spinnish cleaning process is excluded since the impact is negligible compared to the produced fibre volume.

Taking into account the assumptions and cut-off described above, it is assumed that the percentage of total environmental impact that might have been excluded does not exceed 1%.

4. Environmental Performance

Potential environmental impact – mandatory indicators according to EN 15804 + A2

Indicator	Unit	A1	A2	A3	A1 – A3
Global Warming Potential –fossil	Kg CO ₂ eq.	1,37E+00	9,21E-03	8,66E-02	1,47E+00
Global Warming Potential – biogenic	Kg CO ₂ eq.	9,59E-03	-1,15E-05	8,52E-05	9,66E-03
Global Warming Potential – luluc	Kg CO ₂ eq.	1,25E-04	4,87E-05	1,25E-05	1,87E-04
Global warming Potential – total	Kg CO ₂ eq.	1,38E+00	9,25E-03	8,67E-02	1,48E+00
Depletion potential of the stratospheric ozone layer (ODP)	Kg CFC 11 eq.	3,09E-12	5,49E-16	5,26E-11	5,57E-11
Acidification potential (AP)	Mol H ⁺ eq.	3,00E-03	4,28E-05	1,10E-04	3,15E-03
Eutrophication potential freshwater	Kg P eq.	2,08E-06	2,61E-08	1,21E-07	2,23E-06
Eutrophication potential marine	Kg N eq.	8,19E-04	1,67E-05	3,29E-05	8,69E-04
Eutrophication potential terrestrial	Mol N eq.	8,70E-03	1,86E-04	3,54E-04	9,24E-03
Formation potential of tropospheric ozone (POCP)	Kg NMVOC eq.	3,32E-03	3,62E-05	9,67E-05	3,45E-03
Abiotic depletion potential for non-fossil resources (ADP _m *)	Kg Sb eq.	3,30E-07	7,46E-10	5,66E-07	8,97E-07
Abiotic depletion for fossil resource potential (ADP _f *)	MJ	6,90E+01	1,22E-01	1,38E+00	7,05E+01
Water deprivation potential (WDP)	m ³	2,15E-01	7,90E-05	1,03E-02	2,26E-01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Indicator	Unit	A1	A2	A3	A1 – A3
Global Warming Potential –Greenhouse Gas ¹ (GWP-GHG)	Kg CO ₂ eq.	1,37E+00	9,26E-03	8,66E-02	1,47E+00

¹The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

Use of resources

Indicator	Unit	A1	A2	A3	A1 – A3
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1,78E+00	6,65E-03	9,12E+00	1,09E+01
Use of renewable primary energy resources used as raw material (PERM)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT)	MJ	1,78E+00	6,65E-03	9,12E+00	1,09E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	6,91E+01	1,22E-01	1,38E+00	7,06E+01
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy re-sources (PENRT)	MJ	6,91E+01	1,22E-01	1,38E+00	7,06E+01
Use of secondary material (SM)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	MJ	9,39E-03	7,53E-06	2,93E-04	9,69E-03

Waste production

Indicator	Unit	A1	A2	A3	A1 – A3
Hazardous waste disposed	Kg	4,35E-09	5,81E-13	1,47E-09	5,83E-09
Non-hazardous waste disposed	Kg	1,86E-02	1,72E-05	5,50E-03	2,41E-02
Radioactive waste disposed	Kg	7,29E-04	1,50E-07	2,02E-05	7,49E-04

Output flows

Indicator	Unit	A1 – A3
Components for re-use	Kg	0,00E+00
Material for recycling	Kg	8,74E-03
Materials for energy recovery	Kg	0,00E+00
Exported energy, electricity	MJ	0,00E+00
Exported energy, thermal	MJ	0,00E+00

Information on biogenic carbon content

Indicator	Unit	Value
Biogenic carbon content in product	Kg C	0
Biogenic carbon content in packaging	Kg C	0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 'Construction products' version 1.2.5
PCR review was conducted by: The Technical Committee of the International EPD® System. PCR review chair is Claudia A. Peña.
Life Cycle Assessment (LCA)
LCA accountability: Simon De Meyer, Product Manager, Beaulieu Fibres International
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Elisabet Amat, LCA expert and EPD verifier, GREENIZE PROJECTS - Spain Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

References

ISO 14040: 2021

Environmental management - Life cycle assessment - Principles and framework

ISO 14044: 2021

Environmental management - Life cycle assessment - Requirements and guidelines

ISO 14025: 2010

Environmental labels and declarations - Type III environmental declarations – Principles and procedures

EN 15804:2012+A2: 2019

Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

The International EPD® System

www.environdec.com

The International EPD® System

The General Programme Instructions v4.0

The International EPD® System

PCR 2019:14 Construction products v1.2.5 (EN 15804:A2)

Sphera®

GaBi software 10.6.1 with GaBi Content Version 2022.1

LCA report

LCA background report for polypropylene short-cut staple fibres Version 2.0, July 2023