Environmental Product Declaration

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

Biobased Xorel® Unbacked Textile

from

Carnegie Fabrics

Carnegie

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB, as provided by EPD North America
EPD registration number:	S-P-12334
EPD type	EPD of multiple products, based on the average of the product group
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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

General information

Programme information

Programme:	The International EPD® System As provided by EPD North America
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): Construction Products, 2019:14 v1.3.1
PCR review was conducted by: Claudia A. Peña, info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Matt Van Duinen, WAP Sustainability
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: James Mellentine, Thrive ESG Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ 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.

Company information

EPD Owner: Carnegie Fabrics

Contact: Charles Griffin, cgriffin@carnegiefabrics.com

Address: Carnegie Headquarters – 110 North Centre Avenue, Rockville Centre, NY 11570
Product Manufacturing in Belgium and Denmark

Description of the organization: Founded on the principle that great design goes deeper than aesthetics, Carnegie has championed responsible innovation for over 70 years, developing durable and healthy alternatives to PVC textiles. The nation's only B-Corp certified textile manufacturer and forever PVC-free company, we lead the industry with our authentic commitment to sustainability, using education and advocacy in service of our mission: galvanize the A&D community to make business a force for good.

Product information

Product name: Biobased Unbacked Xorel® Fabric

Product coverage: The following product designs are included in the scope of this EPD:

6089, 6091, 6095, 6097, 6099, 6111, 6113, 6115, 6121, 6123, 6125, 6129, 6131, 6135, 6187, 6207, 6209, 6211, 6213, 6215, 6217, 6263, 6265, 6269, 6271, 6279, 6281, 6283, 6285, 6287, 6289, 6299, 6305, 6423, 6425, 6603, 6615, 6721, 6727, 6729, 6731, 6785, 6787, 6925

The assessment considers a weighted average weight of all products.

Product description: Biobased Xorel is a high-performance polyethylene textile made from sugarcane instead of petroleum. Woven from 100% solution-dyed polyethylene yarns, Xorel has always been free of chlorine, plasticizers, heavy metals, toxic dyes, and ozone-depleting chemicals, and is inherently stain-resistant, antimicrobial, durable, non-absorbent, and easily cleaned. This unbacked textile can be used in a variety of applications, such as furniture systems, wall panels, and upholstered walls.

UN CPC code: Class 2671 Woven fabrics of man-made filament yarn

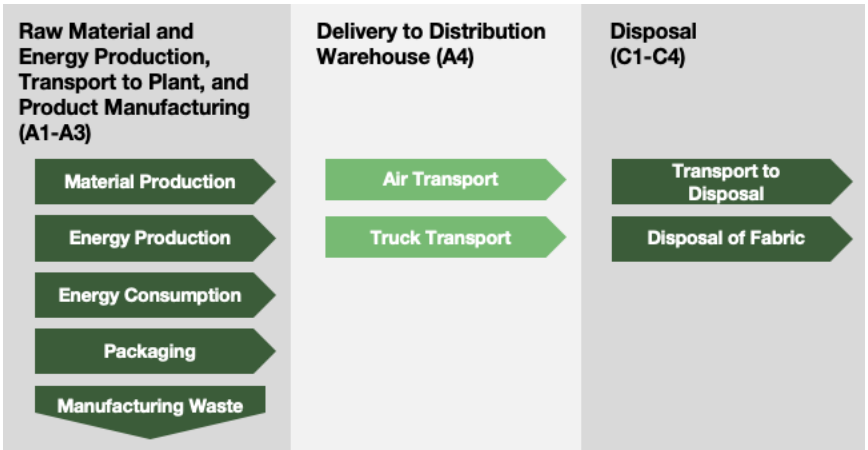
Geographical scope: Manufacturing in Denmark and Belgium, shipped to the United States for warehousing, use, and end-of-life

More product information can be found at https://carnegiefabrics.com/resources/bio-based-xorel

LCA information

Declared unit	1 m^2 of unbacked fabric (0.32 kg/m^2)
Reference service life	Not declared as use phase is not included in the study
Description of the system boundaries	Cradle to Gate with Options, including A1-A3, A4, C1-C4, and D Since Xorel fabric is an intermediate product and has a variety of potential in-use applications, the A5 (installation) and B1-B7 (use) modules are not included in this assessment.
Geographical representativeness	A1-A2: global, A3: Belgium and Denmark, A4: Global, C1-C4, D: United States
Time representativeness	Primary data collected for calendar year 2021
Cut-off rules	All flows for which data were provided are included in the assessment, accounting for at least 99% of the energy or mass flows and at least 99% of the environmental impacts from the product system. Production of capital equipment is excluded from this assessment.
Database and LCA software used	LCA FE 10.7 (formerly GaBi) MLC Database 2023.1 (formerly GaBi Database)
LCA Report	LCA of Bio Xorel Fabric, WAP Sustainability, December 2023
Scenario Description: A2	Weighted average of transportation from suppliers: 250 km by truck Fuel Efficiency (full vehicle): 56.2 L/100km, Capacity Utilization: 61%
Scenario Description: A3	Electricity Source: country-specific residual mix with an average GHG-GWP of 0.341 kg CO_2e/kWh, along with on-site solar PV electricity production.
Scenario Description: A4 Transport to Building Site	Weighted Average of Products Sold Into European Market (500km by EU truck) and Products Sold into the US Market (50 km by EU truck, 6147 km by air, 1000 km by US truck). Fuel Efficiency (full vehicle): EU truck = 76.4 L diesel/100km, Air = 848 L jet fuel/100km, US truck = 42 L diesel/100km Capacity Utilization: EU truck = 61%, Air = 66%, US truck = 67% Volume capacity utilization factor: 1
Scenario Description: C1-C4 End-of-Life	0.32 kg collected with mixed construction waste and sent 100km by truck to end-of-life (15% recycled, 26% combusted with energy recovery, 59% landfilled per EPA) Fuel Efficiency (full vehicle): 56.2 L/100km, Capacity Utilization: 61%
Scenario Description: D Burdens/Benefits Beyond System Boundary	Recycling: impacts and losses from plastic recycling process, credit from polyethylene granulate Combustion with Energy Recovered: credit from produced steam and electricity

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	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	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Global		BE,DK	Global	ND	ND	ND	ND	ND	ND	ND	ND	US	US	US	US	US
Share of specific data	8%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-34% to 23%*			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Product variation is due to the differences in product weights (kg/m^2) caused by variations in design.

Content information

Product components	**Weight*, kg**		**Post-consumer material, weight-%**	**Biogenic material, weight-% and kg C/kg**
Polyethylene	0.30	(0.19-0.37)	0%	69% biogenic, 0.59 kg bio. C/kg
Polypropylene	0.016	(0.010-0.020)	0%	0%
Filler	0.0030	(0.0019-0.0037)	0%	0%
Pigments	0.0030	(0.0019-0.0037)	0%	0%
Stabilizer	0.0023	(0.0014-0.0028)	0%	0%
TOTAL	0.32	(0.20-0.40)	0%	0%
Packaging materials	**Weight, kg**		**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Cardboard	0.0082		2.6%	0.44 kg bio. C/kg
Wood	0.011		3.5%	0.44 kg bio. C/kg
LDPE Film	0.0042		1.3%	0
TOTAL	0.024			

*Weights of the representative product are provided along with a range of all included products.

No substances in the product are on the Candidate List of Substances of Very High Concern (SVHC) which exceed the limits for registration with the European Chemicals Agency.

Results of the environmental performance indicators

The results presented here are for 1 declared unit, which is 1 m^2 of Biobased Xorel® Unbacked Textile.

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5, B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**	**Variation in Total Impacts[1]**
Core Environmental Impact Indicators										
GWP-GHG[2]	kg CO_2 eq.	1.76E+00	1.05E+00	ND	0.00E+00	2.59E-05	2.08E-01	4.08E-03	-1.49E-01	-35% to 23%
GWP-total	kg CO_2 eq.	1.12E+00	1.05E+00	ND	0.00E+00	2.59E-05	4.73E-01	3.80E-01	-1.49E-01	-35% to 23%
GWP-fossil	kg CO_2 eq.	1.05E+00	1.05E+00	ND	0.00E+00	2.58E-05	2.08E-01	4.06E-03	-1.49E-01	-34% to 22%
GWP-biogenic	kg CO_2 eq.	-6.12E-01	1.25E-03	ND	0.00E+00	1.88E-08	2.65E-01	3.76E-01	0	-34% to 23%
GWP-luluc	kg CO_2 eq.	6.80E-01	7.78E-05	ND	0.00E+00	2.91E-08	2.21E-06	1.49E-06	-9.83E-06	-37% to 25%
ODP	kg CFC 11 eq.	4.83E-10	5.81E-14	ND	0.00E+00	3.14E-18	7.36E-15	9.16E-15	-2.41E-13	0%
AP	mol H^+ eq.	8.29E-03	4.25E-03	ND	0.00E+00	7.70E-08	3.37E-05	2.42E-05	-2.21E-04	-36% to 24%
EP-freshwater	kg P eq.	3.34E-05	2.91E-07	ND	0.00E+00	1.26E-10	3.10E-09	4.88E-06	1.91E-08	-36% to 24%
EP-marine	kg N eq.	1.32E-02	1.93E-03	ND	0.00E+00	3.79E-08	7.19E-06	6.07E-06	-7.55E-05	-37% to 25%
EP-terrestrial	mol N eq.	2.67E-02	2.12E-02	ND	0.00E+00	4.18E-07	1.54E-04	6.64E-05	-8.28E-04	-36% to 24%
POCP	kg NMVOC eq.	7.67E-03	5.44E-03	ND	0.00E+00	7.50E-08	1.98E-05	1.84E-05	-2.25E-04	-36% to 24%
ADP-minerals&metals[3]	kg Sb eq.	2.01E-07	1.19E-08	ND	0.00E+00	1.68E-12	3.11E-10	2.27E-10	-1.59E-08	3% to -2%
ADP-fossil[2]	MJ	1.86E+01	1.42E+01	ND	0.00E+00	3.36E-04	1.01E-01	6.16E-02	-4.09E+00	-33% to 22%
WDP[2]	m^3	-9.67E-02	2.81E-03	ND	0.00E+00	1.49E-06	1.63E-02	2.10E-04	-2.79E-02	-1% to 0%
Resource Use Indicators										
PERE	MJ	2.94E+01	6.13E-02	ND	0.00E+00	1.44E-05	1.78E+00	7.35E-03	-2.25E-01	-27% to 18%
PERM	MJ	1.04E+01	0.00E+00	ND	0.00E+00	0.00E+00	-1.77E+00	0.00E+00	0.00E+00	-37% to 25%
PERT	MJ	3.99E+01	6.13E-02	ND	0.00E+00	1.44E-05	5.82E-03	7.35E-03	-2.25E-01	-29% to 20%
PENRE	MJ	1.32E+01	1.43E+01	ND	0.00E+00	3.61E-04	1.04E+00	6.28E-02	-4.16E+00	-32% to 21%
PENRM	MJ	5.45E+00	0.00E+00	ND	0.00E+00	0.00E+00	-9.36E-01	0.00E+00	0.00E+00	-37% to 25%
PENRT	MJ	1.86E+01	1.43E+01	ND	0.00E+00	3.61E-04	1.01E-01	6.28E-02	-4.16E+00	-33% to 22%
SM	kg	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
RSF	MJ	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
NRSF	MJ	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
FW	m^3	-3.24E-03	1.11E-04	ND	0.00E+00	4.93E-08	3.81E-04	7.78E-06	-8.13E-04	-47% to 32%
Waste and Output Flow Indicators										
Hazardous waste disposed	kg	1.06E-06	2.80E-11	ND	0.00E+00	1.04E-15	3.59E-12	1.57E-12	-1.47E-10	1% to -1%
Non-hazardous waste disposed	kg	1.35E-01	1.28E-03	ND	0.00E+00	3.14E-08	1.83E-02	1.87E-01	4.02E-03	-37% to 24%
Radioactive waste disposed	kg	1.10E-03	1.32E-05	ND	0.00E+00	1.03E-09	1.77E-06	6.95E-07	-1.06E-04	-23% to 15%
Components for re-use	kg	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
Material for recycling	kg	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	4.80E-02	0.00E+00	0.00E+00	-38% to 25%
Materials for energy recovery	kg	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	8.45E-02	0.00E+00	0.00E+00	-38% to 25%
Exported energy, electricity	MJ	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	4.60E-01	0.00E+00	-37% to 25%
Exported energy, thermal	MJ	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	1.85E-01	0.00E+00	-37% to 25%
Acronyms	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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption, 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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of modules A1-A3 shouldn't be used without considering the results of module C. A1-A3 results include the "balancing-out reporting" of biogenic CO_2 of packaging, traditionally released in A5. Additional optional indicators per EN 15804+A2 are not declared, including: particulate matter emissions; ionizing radiation, human health; eco-toxicity (freshwater); human toxicity, cancer effects; human toxicity, non-cancer effects; land use related impacts/soil quality.

[1] The variation in total impacts is due to variations in product weight from a minimum of 0.2 kg/m^2 to a maximum of 0.4 kg/m^2 and is calculated as the percent difference from the total impacts (modules A-C) of the representative product with a product weight of 0.32 kg/m^2. Values in this column should be read in the following way: -15% to 10% means the minimum weight product has 15% less total impact than the representative product while the maximum weight product has 10% more total impact than the representative product.

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

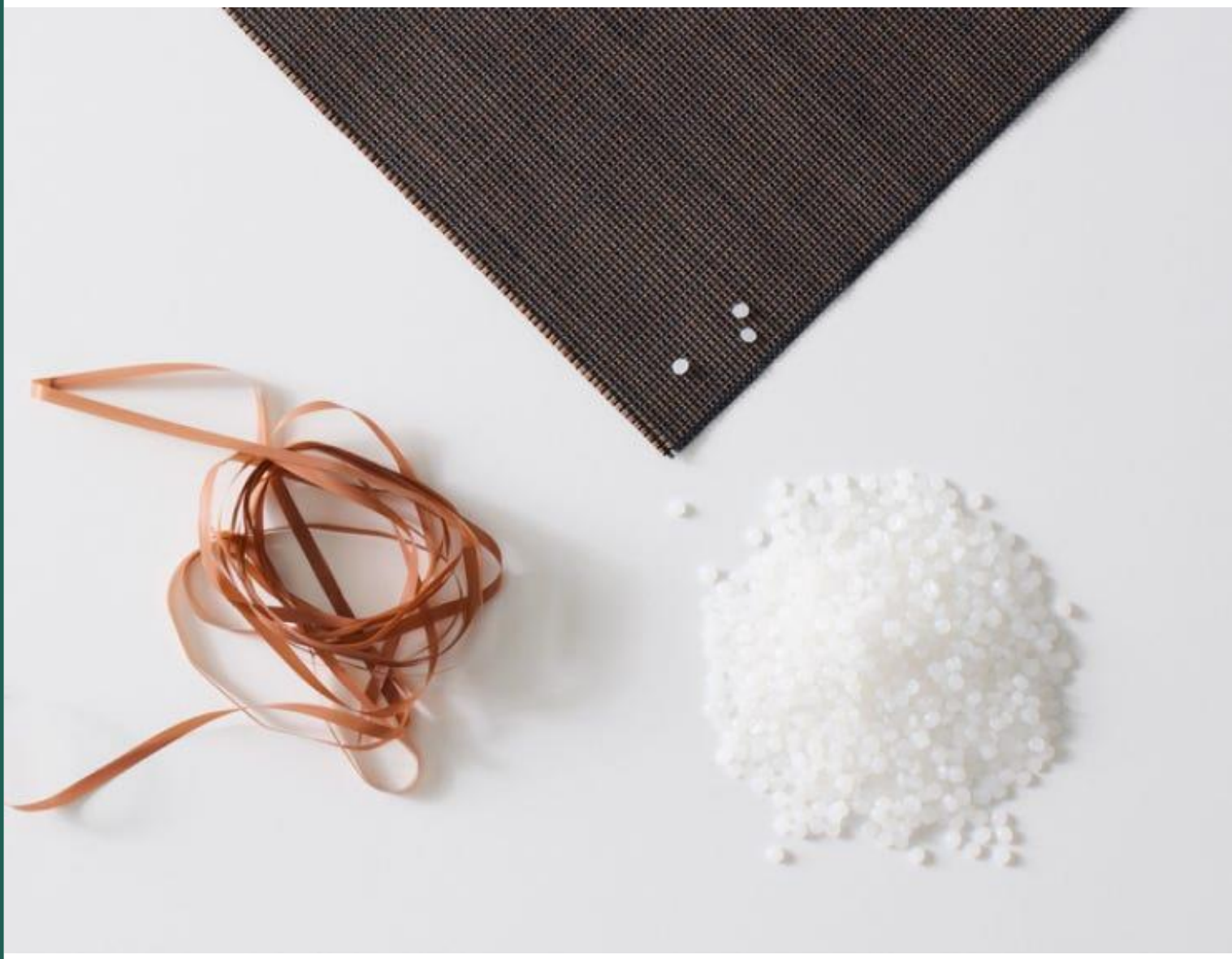
[3] Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional information

No additional environmental, social, or economic information is declared in this EPD.

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. Construction Products. Version 1.3.1.
- EN 15804:2012+A2:2019/AC:2021. European Committee for Standardization.
- Life Cycle Assessment for Biobased Xorel Unbacked Textile, Carnegie. WAP Sustainability. July 2023



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