

## Environmental Product Declaration

# FiberForce Synthetic Fibers

Synthetic Monofilament, Fibrillated, and Macro Fiber Reinforcement for Concrete Applications



FiberForce synthetic fibers are varying types of fiber reinforcement designed for use as temperature and plastic shrinkage crack-control reinforcement.



Since 1993, FullForce by ABC Polymer Industries, LLC has been used and historically proven in over 200+ million cubic yards of fiber-reinforced concrete. Previously known as FiberForce, the brand evolved to FullForce in 2022 to better communicate our full line of solutions and better positions us for growth for many years to come. FullForce is a growing company that values and understands the concepts of environmental responsibility and engineered sustainable solutions for construction design and business. We also value full transparency regarding the environmental impacts of construction materials and use that information to make project design recommendations that reduce the carbon footprint of a construction project. Our synthetic fiber products are manufactured in the USA in accordance with ASTM D7508 (synthetic) and their performance in concrete has been evaluated using over 25 standard consensus tests. Many of our fibers are UL and ICC-ES listed and approved by national and international code bodies and government agencies.



# Environmental Product Declaration



## FiberForce Synthetic Fibers

Synthetic Fiber Reinforcement for Concrete Applications



According to  
ISO 14025, ISO 14040,  
and EN 15804+A2

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025, ISO 14040, and EN 15804+A2. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 PFINGSTEN RD. NORTHBROOK, IL 60062	www.ul.com www.spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	Program Operator Rules v 2.7 2022	
MANUFACTURER NAME AND ADDRESS	FullForce by ABC Polymer Industries, LLC 545 Elm St, Helena, AL 35080 USA	
DECLARATION NUMBER	4790618146.101.1	
DECLARED PRODUCT & DECLARED UNIT	FiberForce Synthetic Fibers Declared Unit = 1 kg	
REFERENCE PCR AND VERSION NUMBER	Environmental Product Declarations of Institute Construction and Environment e.V. (IBU), Part B: Requirements on the EPD for Concrete admixtures	
DESCRIPTION OF PRODUCT APPLICATION/USE	Fullforce products are primarily used in commercial settings.	
PRODUCT RSL DESCRIPTION	N/A	
MARKETS OF APPLICABILITY	Global	
DATE OF ISSUE	October 1, 2022	
PERIOD OF VALIDITY	5 Years	
EPD TYPE	Product Specific	
RANGE OF DATASET VARIABILITY	N/A	
EPD SCOPE	Cradle-to-Gate	
YEAR(S) OF REPORTED PRIMARY DATA	January 2022 - March 2022	
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.2.0.2	
LCI DATABASE(S) & VERSION NUMBER	Ecoinvent v3.5 & USLCI v2.0	
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1; CML 4.1	
The sub-category PCR review was conducted by:	Institut Bauen und Umwelt (IBU) - <a href="http://ibu-epd.com">ibu-epd.com</a>	
This declaration was independently verified in accordance with ISO 14025: 2006. The Institut Bauen und Umwelt e.V. (IBU) "Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project", based on EN 15804, serves as the core PCR, with additional considerations from CEN Norm EN 15804.	 Cooper McCollum, UL Environment	
<input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL		
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Sustainable Solutions Corporation	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	James Mellentine, Thrive ESG 	

<sup>1</sup> Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds, e.g., Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



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### General Information

#### Description of Company/Organization

FullForce by ABC Polymer Industries, LLC is a specialty products supplier that is committed to delivering systematic engineered concrete solutions for industry partners such as architects, engineers, contractors, developers, municipalities, departments of transportation, and ready-mix concrete producers with a focus on transparent, innovative, and sustainable designs.

#### Production Description



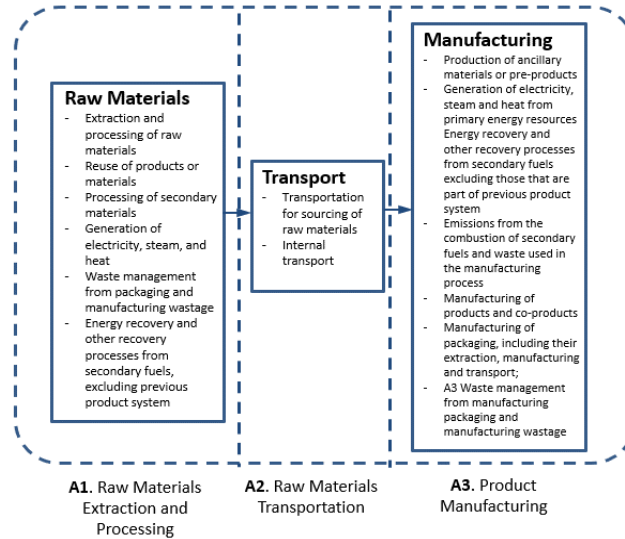
Product Name: FiberForce Synthetic Fibers (FiberForce 100, FiberForce 150, FiberForce 300, FiberForce 350, FiberForce 550, FiberForce 600, FiberForce 650, FiberForce 750)

Product Characteristic: Concrete Reinforcement

FiberForce synthetic fibers are varying types of fiber reinforcement designed for use in concrete. They range from 1/4" to 2" long. Fiber reinforcement is primarily used as temperature and plastic shrinkage crack-control reinforcement. Some benefits are:

- Reduced permeability
- Improved ductility and toughness
- Improved impact and abrasion resistance

#### Flow Diagram



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### Manufacturer Specific EPD

This product-specific EPD was developed based on the cradle-to-gate (modules A1-A3) Life Cycle Assessment. The EPD accounts for raw material extraction and processing, raw material transport, and product manufacturing. Manufacturing data were gathered directly from company personnel. For any product group EPDs, an impact assessment was completed for each product and the highest impacts were reported as conservative representations of the product group. For this document, the fibrillated and macro fibers have the highest impacts and are represented in the "LCA Results" section. Product grouping was considered appropriate if the individual product impacts differed by no more than  $\pm 10\%$  in any impact category.

### Application

The FiberForce series of synthetic fibers is ideal for a wide range of concrete construction applications, including but not limited to: slab on grade, slab on composite metal deck, paving, shotcrete, precast, topping slab, overlays, and bridge decks.

### Material Composition

The composition of the FiberForce Synthetic Fibers is as follows (mass %):

Component	Fibrillated and Macro Fibers	Monofilament Fibers
Polypropylene	96.0%	100.0%
Polyethylene	4.0%	0.0%
Total	100.0%	100.0%



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### Technical Data

For the declared product, the following technical data in the delivery status must be provided with reference to the test standard:

Category	Value	Unit
Density (ISO 758)	0.91	(g/ml)
Solids content (EN 480-8)	100	(M.-%)
pH value (ISO 4316)	N/A	(log <sub>10</sub> (aH <sup>+</sup> ))
Chloride content (EN 480-10)	0	(M.-%)
Alkali content (EN 480-12)	0	(M.-%)
Corrosion behavior (EN 934-1 / EN 480-14)	N/A	(µA/cm <sup>2</sup> )
SiO <sub>2</sub> content (EN 192-2)	0	(M.-%)
Air content of fresh concrete (EN 12350-7)	N/A	(Vol.-%)
Compressive strength (EN 12390-3)	N/A	(N/mm <sup>2</sup> )
Water reduction (EN 12350-2 / EN 12350-5) Plasticizer	N/A	(mm)
Increasing / maintaining of consistence (EN 12350-2 / EN 12350-5) Superplasticizer	N/A	(mm)
Setting time (EN 480-2) Accelerator/Retarder	N/A	(min)
Air void Characteristics in hardened concrete (EN 480-11) Air entrainer	N/A	(mm)
Capillary water absorption (EN 480-5)	N/A	(g/mm <sup>2</sup> )

### Market Placement / Application Rules

All FiberForce synthetic fibers are produced in accordance with ASTM C1116, Type III, and ASTM D7508. Select monofilament and fibrillated fibers are listed in ICC ESR 1699 and select macrofibers are listed in ICC ESR 4335.

### Properties of Declared Product as Delivered

Characteristics		
Product	FiberForce Synthetic Fibers	-
Thickness	N/A	cm
Density	0.91	Specific Gravity



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## Methodological Framework

### Declared Unit

The declaration refers to the functional unit of 1 kg of FiberForce Synthetic Fibers.

Name	Value	Unit
Declared Unit	1.0	kg
Gross Density	910	kg/m <sup>3</sup>
Coverision Factor	1.0	-

### System Boundary

This is a cradle to grave Environmental Product Declaration. The following life cycle phases were considered:

Product Stage			Construction Process Stage		Use Stage							End of Life Stage*				Benefits and Loads Beyond the System Boundaries
Raw material supply	Transport	Manufacturing	Transport from gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Description of the System Boundary Stages Corresponding to the PCR

(X = Included; MND = Module Not Declared)

\*This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

### Reference Service Life and Building Estimated Service Life

The Reference Service Life is determined by the guidance from the Product Category Rules and varies by product type and use phase scenario. Since the use phase is not included in this study, no Reference Service Life is declared.

### Allocation

The LCI data was collected from the Helena, AL manufacturing facility from January 2022 to March 2022. The manufacturing for all products made at this facility have similar energy, waste, and water input requirements. Allocation was done on a mass basis. There were no co-products in production.



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### Cut-off Criteria

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Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass of the considered impact categories. For that a documented assumption is admissible.

For Hazardous Substances - as defined by the U.S. Occupational Health and Safety Act the following requirements apply:

- The Life Cycle Inventory (LCI) of hazardous substances will be included, if the inventory is available.
- If the LCI for a hazardous substance is not available, the substance will appear as an input in the LCI of the product, if its mass represents more than 0.1% of the product composition.
- If the LCI of a hazardous substance is approximated by modeling another substance, documentation will be provided.

This EPD is in compliance with the cut-off criteria. No processes were neglected or excluded. Capital items for the production processes (machine, buildings, etc.) were not taken into consideration.

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### Data Sources/Background Data

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For life cycle modeling, the SimaPro v9.2.0.2 Software, a recognized LCA modeling software program, was used. All background data sets relevant for production and disposal were taken from this software. Datasets include those from Ecoinvent v3.5 and the US LCI database.

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### Data Quality

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For the data used in this LCA, the data quality is considered to be good to high quality. The data and data sets cover all relevant process steps and technologies over the supply chain of the represented fiber products. The majority of secondary data sets are from the Ecoinvent v3.5 database and the US LCI database, the study adopts critically reviewed data wherever possible for consistency, precision, and reducibility to limit uncertainty. The data used are complete and representative of North America in terms of the geographic and technological coverage and is of a recent vintage, i.e. less than ten years old.

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### Period Under Review

The data used for the Life Cycle Assessment refer to the production processes from January 2022 to March 2022. The quantities of raw materials, energies, auxiliary materials, and supplies used have been ascertained as average monthly values.

### Comparability

A comparison or an evaluation of EPD data is only possible if all data sets to be compared were created according to EN 15804+A2 and the building context, respectively the product-specific characteristics of performance, are taken into account. Environmental product declarations from different programs may not be comparable. Full conformance with the PCR for concrete admixture products allows EPD comparability only when all stages of a product's life cycle have been considered. However, variations and deviations are possible.

### Estimates and Assumptions

A significant majority of sales of the panel products in this LCA occur within North America, specifically within the continental USA and Canada. As such the assumptions below follow the guidance for the Part B: Concrete Admixtures PCR.

Raw material transport from supplier to manufacturer:	Mode: 90% Diesel-powered train 10% Diesel-powered truck/trailer Distance: 650 miles
Product transport from manufacturing site to waste	Mode: Diesel-powered truck/trailer Distance: 50 miles



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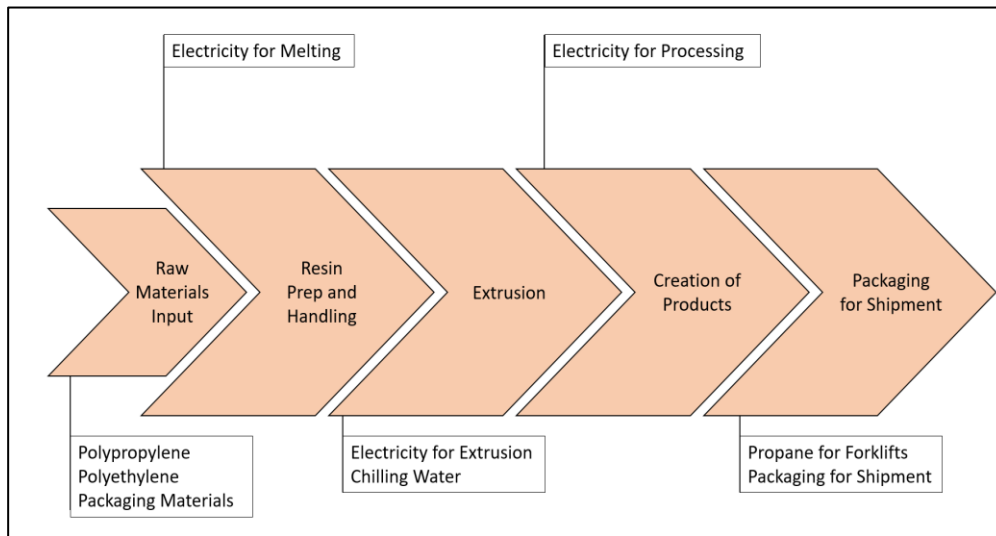
According to  
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### Technical Information and Scenarios

#### Manufacturing

The FiberForce series of Fibers is manufactured in Helena, AL. The raw material plastic resin is loaded into a melting tank connected to an extruder. The material is stretch extruded through a die, then cut to achieve the correct specifications of the product. The lengths of the fibers can vary between one quarter to two inches, depending on product. The fibers are finally packed into water-soluble paper bags, in an amount that also serves the consumer's application.

Manufacturing Location: Helena, AL



#### Biogenic Carbon Content

Name	Value	Unit per declared unit
Biogenic Carbon Content in product	0	kg C
Biogenic Carbon Content in accompanying packaging	0.0605	kg C
NOTE 1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub> .		

#### Packaging

These products are packaged with cardboard, wood, plastic, and paper.

Component	Percentage in Mass (%)
Wood Pallets	28.29%
Plastic Wrap (LDPE)	1.41%
Paper (Labels and bags)	1.98%
Cardboard	68.32%
Total	100.00%



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## LCA Results

Results shown below were calculated using TRACI 2.1 Methodology.

TRACI 2.1 Impact Assessment						
Parameter	Parameter	Unit	A1	A2	A3	Total
GWP	Global warming potential	kg CO <sub>2</sub> -Eq.	2.48E+00	6.51E-02	4.03E-03	2.55E+00
ODP	Depletion potential of the stratospheric ozone layer	kg CFC-11 Eq.	4.26E-08	9.72E-09	3.15E-11	5.24E-08
AP Air	Acidification potential for air emissions	kg SO <sub>2</sub> -Eq.	9.65E-03	5.90E-04	3.58E-06	1.02E-02
EP	Eutrophication potential	kg N-Eq.	4.25E-03	9.41E-05	2.14E-05	4.37E-03
SP	Smog formation potential	kg O <sub>3</sub> -Eq.	1.17E-01	1.73E-02	1.07E-04	1.35E-01
FFD	Fossil fuel depletion	MJ-surplus	1.02E+01	1.08E-01	2.71E-04	1.03E+01

Results shown below were calculated using methodologies prescribed in EN 15804+A2.

EN 15804+A2 Impact Categories						
Parameter	Parameter	Unit	A1	A2	A3	Total
GWP	Climate change, Total	kg CO <sub>2</sub> eq	2.52E+00	6.65E-02	5.43E-03	2.59E+00
ODP	Ozone depletion	kg CFC-11 eq	3.82E-08	9.18E-09	2.73E-11	4.75E-08
IRP	Ionising radiation	kBq U-235 eq	5.05E-02	3.51E-03	1.63E-05	5.41E-02
POCP	Photochemical ozone formation	kg NMVOC eq	8.64E-03	8.01E-04	5.19E-06	9.45E-03
PM	Particulate matter	disease inc.	9.53E-08	5.56E-09	1.60E-11	1.01E-07
HTP-nc	Human toxicity, non-cancer	CTU <sub>h</sub>	1.58E-08	7.67E-10	8.06E-12	1.66E-08
HTP-c	Human toxicity, cancer	CTU <sub>h</sub>	7.03E-10	5.84E-11	2.83E-13	7.62E-10
AP	Acidification	mol H <sup>+</sup> eq	1.12E-02	6.30E-04	3.74E-06	1.18E-02
EP-freshwater	Eutrophication, freshwater	kg P eq	4.78E-04	6.39E-06	8.30E-08	4.84E-04
EP-marine	Eutrophication, marine	kg N eq	2.03E-03	2.74E-04	7.08E-06	2.31E-03
EP-terrestrial	Eutrophication, terrestrial	mol N eq	2.05E-02	2.99E-03	1.85E-05	2.35E-02
ETP-fw	Ecotoxicity, freshwater	CTU <sub>e</sub>	3.28E+01	1.03E+00	1.86E-02	3.38E+01
SQP	Land use	Pt	1.54E+01	4.26E-01	2.08E-03	1.58E+01
WDP	Water use	m <sup>3</sup> depriv.	9.01E-01	3.60E-03	2.52E-03	9.07E-01
ADPF	Resource use, fossils	MJ	7.94E+01	8.56E-01	2.63E-03	8.03E+01
ADPE	Resource use, minerals and metals	kg Sb eq	1.52E-05	1.90E-07	5.00E-10	1.54E-05
GWP- Fossil	Climate change - Fossil	kg CO <sub>2</sub> eq	2.65E+00	6.63E-02	2.65E-03	2.72E+00
GWP- Biogenic	Climate change - Biogenic	kg CO <sub>2</sub> eq	-1.32E-01	1.75E-04	2.77E-03	-1.29E-01
GWP-luluc	Climate change - Land use and LU change	kg CO <sub>2</sub> eq	1.30E-03	2.73E-05	1.74E-07	1.33E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for nonfossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential  
PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index



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Results below contain the resource use throughout the life cycle of the product.

Resource Use						
Parameter	Parameter	Unit	A1	A2	A3	Total
PERE	Renewable primary energy as energy carrier	MJ, lower calorific value	6.08E-01	1.10E-02	1.10E-04	6.19E-01
PERM	Renewable primary energy resources as material utilization	MJ, lower calorific value	2.50E+00	6.29E-03	2.31E-05	2.51E+00
PERT	Total renewable primary energy use	MJ, lower calorific value	3.11E+00	1.72E-02	1.33E-04	3.13E+00
PENRE	Nonrenewable primary energy as energy carrier	MJ, lower calorific value	8.53E+01	9.09E-01	2.79E-03	8.62E+01
PENRM	Nonrenewable primary energy as material utilization	MJ, lower calorific value	4.64E+01	0.00E+00	0.00E+00	4.64E+01
PENRT	Total non-renewable primary energy use	MJ, lower calorific value	1.32E+02	9.09E-01	2.79E-03	1.33E+02
SM	Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of nonrenewable secondary fuels	MJ, lower calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	m <sup>3</sup>	2.17E-02	1.09E-04	5.86E-05	2.18E-02

*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 nonrenewable 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 = Use of net fresh water*

Results below contain the output flows and wastes throughout the life cycle of the product.

Output Flows and Waste Categories						
Parameter	Parameter	Unit	A1	A2	A3	Total
HWD	Hazardous waste disposed	kg	9.21E-06	1.85E-06	4.73E-09	1.11E-05
NHWD	Non-hazardous waste disposed	kg	1.42E-01	8.14E-03	3.11E-03	1.54E-01
RWD	Radioactive waste Disposed	kg	1.91E-05	4.22E-06	8.30E-09	2.33E-05
CRU	Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	Exported energy, electrical	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*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; EEE = Exported thermal energy*



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### EN 15804 Disclaimers on Select Impact Categories

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 – 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.		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.		

### Results Methodology

As stated previously, the results above represent the impacts off all products included in this study. This is permissible due to the impacts of the products being similar, within +/-10%. The product with the highest impacts has been selected to represent all products in this study as a conservative assumption.

The many impact categories presented above represent multiple different calculation methodologies. TRACI is produced by the EPA and is widely used in the United States. CML impact categories were created by the University of Leiden in the Netherlands, and is used in Europe (OpenLCA). While some categories are named the same, such as "Global Warming Potential" or "Ozone Depletion Potential", these impacts are calculated slightly differently in each methodology, creating small variances between results. Each methodology is used in different contexts, and should be referenced when stating results.



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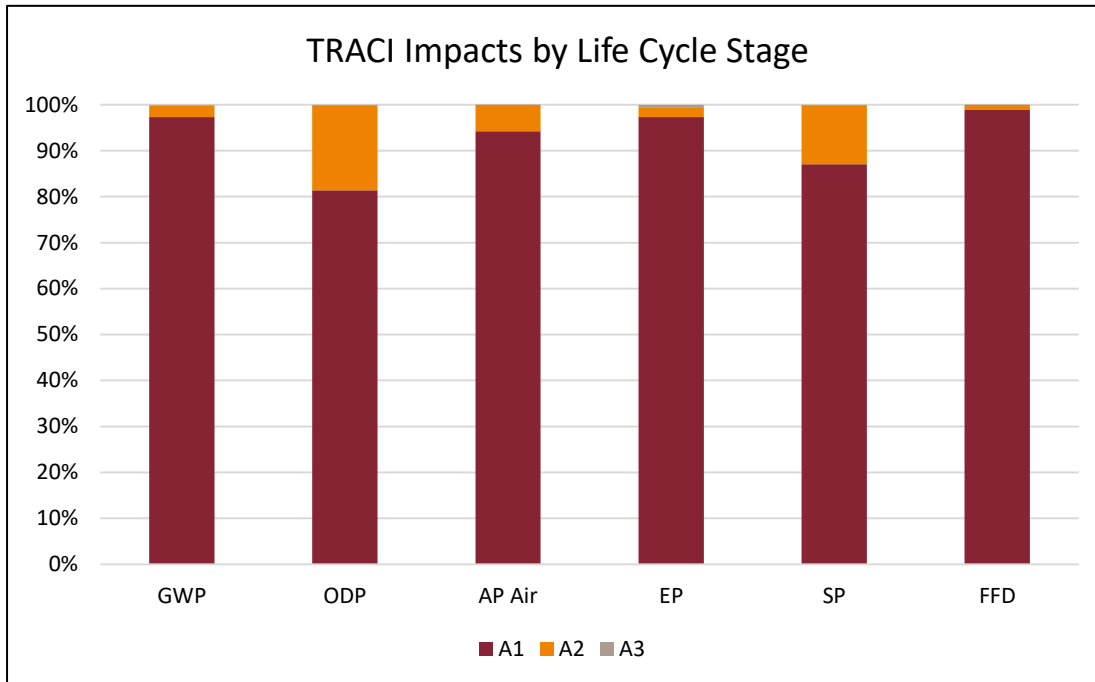
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### Interpretation

The raw material life cycle stage (A1) dominates the impacts across all impact categories. This is due to the upstream production of polypropylene and polyethylene used in the product, along with electricity use in the manufacturing of the product. The raw material transportation stage (A2) has a notable impact to the ozone depletion and smog formation impact categories due to the diesel burned in transport.



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### Additional Environmental Information

#### Environment and Health During Manufacturing

Fullforce by ABC Polymer Industries, LLC manufactured products are not listed by the EPA as hazardous waste (40 CFR, Part261D), nor are they formulated to contain materials that are listed as hazardous waste. Our products do not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and are not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

#### Environmental and Health During Use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product. Our polypropylene products are not a hazardous substance or mixture according to the Globally Harmonized System (GHS). FullForce products do not require any hazard warnings on the label under OSHA criteria. See specific product SDS documents for specific environmental and health details.

#### Extraordinary Effects

**Fire**  
Incomplete burning can produce carbon monoxide and/or carbon dioxide and other harmful products. Avoid generating dust; fine dust dispersed in air in sufficient concentration and in the presence of ignition source is a potential dust explosion hazard.

Name	Value
Building material class	N/A
Burning droplets	N/A
Smoke gas development	N/A

**Water**

None

**Mechanical Destruction**

None

#### Delayed Emissions

Global warming potential is calculated using the TRACI 2.1 and CML 4.1 impact assessment methodologies. Delayed emissions are not considered.

#### Environmental Activities and Certifications

FullForce by ABC Polymer Industries, LLC is leading the nation in environmental transparency in our product market, as this EPD is evidence of. We participate in the activities of construction and industry associations all across the United States and Canada. This helps us gain an understanding of the importance of health and safety for our employees and customers, and the importance of environmental responsibility and sustainability. FullForce uses 100% of all eligible waste products back into our process. FullForce by ABC Polymer Industries, LLC will support our efforts to reduce waste and our environmental impact through continuous process and technology improvement.

#### Further Information

FullForce by ABC Polymer Industries, LLC  
<https://FullForceSolutions.us>  
545 Elm St,  
Helena, AL 35080 USA



# Environmental Product Declaration

## FiberForce Synthetic Fibers

Synthetic Fiber Reinforcement for Concrete Applications



According to  
ISO 14025, ISO 14040,  
and EN 15804+A2

## References

- PCR Part A Product Category Rules for Building-Related Products and Services, Institut Bauen und Umwelt e.V. (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report
- PCR Part B Environmental Product Declarations of Institute Construction and Environment e.V. (IBU), Part B: Requirements on the EPD for Concrete admixtures
- ISO 14025 ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
- ISO 14040 ISO 14044 Amd 1:2017/amd 2:2020 Environmental management — Life cycle assessment — Requirements and guidelines
- ISO 14044 ISO 14044:2006-10, Environmental management — Life cycle assessment — Requirements and guidelines.
- EN 15804 EN 15804+A2:2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction product.
- TRACI 2.1 US EPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI).
- CML 2001 Center of Environmental Science of Leiden University impact categories and characterisation methods for impact assessment (CML).
- Life Cycle Assessment FullForce Synthetic Fibers Life Cycle Assessment, Sustainable Solutions Corporation, September 2022.
- IBU 2016 Institut Bauen und Umwelt e.V.: General Programme, Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 1., Berlin: Institut Bauen und Umwelt e.V., 2016. [www.ibu-epd.com](http://www.ibu-epd.com)
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- LCIA Methods - Open LCA <https://www.openlca.org/wp-content/uploads/2016/08/LCIA-METHODS-v.1.5.5.pdf>

# Environmental Product Declaration

## FiberForce Synthetic Fibers

Synthetic Fiber Reinforcement for Concrete Applications



According to  
ISO 14025, ISO 14040,  
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### Contact Information

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#### Study Commisioner

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For sustainability related questions regarding this EPD, please contact Dan Corneau at [Dan@FullForceSolutions.us](mailto:Dan@FullForceSolutions.us).

#### LCA Practitioner

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