



Environmental Product Declaration

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

Program Operator: Smart EPD®

www.smartepd.com



SmartEPD-2025-094-0631-01.3

Dynaform® Structural Shapes

Date of Issue

Nov 03, 2025

Expiration date

Nov 03, 2030

Last updated

May 07, 2026



Refer to the EPD Library at www.smartepd.com for the latest EPD listing information

General Information

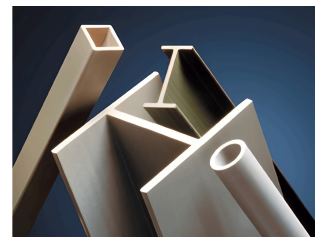
Fibergrate Composite Structures

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Product Name:	Dynaform® Structural Shapes
Declared Unit:	1 m of a pultruded fiberglass structural shape
Declaration Number:	SmartEPD-2025-094-0631-01.3
Date of Issue:	November 03, 2025
Expiration:	November 03, 2030
Last updated:	May 07, 2026
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, C1 - C4, D
Market(s) of Applicability:	North America

General Organization Information

Fibergrate Composite Structures Inc. is the leading manufacturer of fiberglass reinforced plastic (FRP) solutions for industrial and commercial use globally. Fibergrate sets the standard for high-performance composite products with such proven brands as Fibergrate® and Chemgrate® molded grating, Safe-T-Span® pultruded grating, Dynarail® railing and ladder systems, and Dynaform® structural shapes. As the originator of FRP molded grating, Fibergrate began manufacturing in 1966 in Dallas, Texas. Today, Fibergrate's ISO 9001 certified manufacturing facilities in Stephenville, Texas, and Querétaro, Mexico, manufacture a full line of FRP products and structural systems using a variety of technologies.

Further information can be found at: <https://www.fibergrate.com/>

Limitations, Liability and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services, 1000, v1.2 Date of issue: March 14, 2025 Valid until: March 14, 2030

Sub-category PCR review panel:

Contact Smart EPD for more information.

General Program Instructions:

Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

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Verification:

Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:

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External

Independent external verification of EPD, according to ISO 14025 and reference PCR(s):

Arka Pandit | pandit_arka@outlook.com

External

Product Information

Declared Unit:

1 m of a pultruded fiberglass structural shape

Mass:

5.06 kg

Product Specificity:

Product Average
Product Specific

Product Description

Fibergrate offers a wide range of pultruded Dynaform® structural profiles, including channels, beams, angles, tubes, rods, concrete embedment angles, toe plates, flat sheets, threaded rods and nuts. Dynaform structural shapes can be used in a wide array of applications replacing traditional components such as steel, aluminum and wood.

Further information can be found at: <https://www.fibergrate.com/products/dynaform-structural-shapes/>

Product Specifications

Product Classification Codes:

EC3 - OtherMaterials -> Profiles

Material Composition

Material/Component Category	Origin	% Mass
Additive	CN, USA	< 10
Base monomer	EUR	< 10
Fiberglass	USA	< 10
Fiberglass mat	CN, USA	10 - 15
Fiberglass roving	CN	39 - 59
Flame retardant	CN, USA	< 10
Pigment dispersion	MX	< 10
Polymer initiator	MX	< 10
Resin	MX	17 - 26
Rheology modifier	KR	< 10

Packaging Material	Origin	kg Mass
Plastic HDPE		0.01
Steel generic		0.01
Wood pallet		0.01

Hazardous Materials
Polymerized Resin (None)
Fiberglass (65997-17-3)
Glass Oxides (None)

EPD Data Specificity

Primary Data Year:09/01/2024 - 08/31/2025

Manufacturing Specificity:

✗ Industry Average

✗ Manufacturer Average

✓ Facility Specific

Averaging:
Averaging was not conducted for this EPD

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

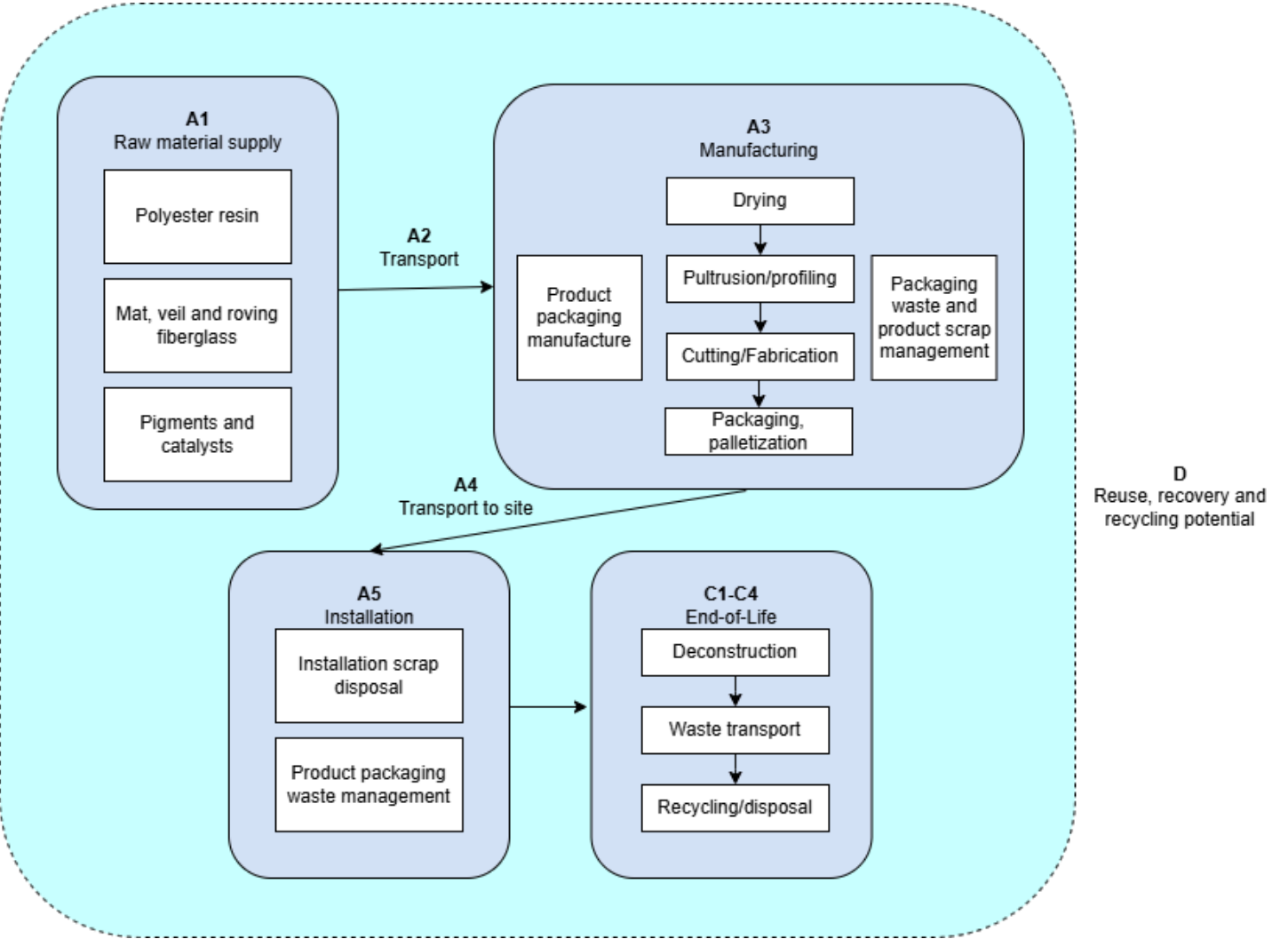
Note:

ND = Module not declared

Plants

 Queretaro Av. Las Misiones 21 76240 El Marqués Querétaro Mexico

Product Flow Diagram



Software And Database

- LCA Software: SimaPro v. 10.2
- LCI Foreground Database(s): Ecoinvent v. 3.11
- LCI Background Database(s): Ecoinvent v. 3.11

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Precision & Completeness

- **Precision:** Inventory data were directly measured, calculated, or conservatively estimated from primary sources using consistent units and QA checks. Background processes from ecoinvent v3 were adopted with their documented uncertainty/precision metadata where available, preserving a transparent record of data quality.
- **Completeness:** The product system’s mass and energy balance, as well as inventory completeness, were verified. Minor exclusions deemed immaterial under ISO 21930 § 7.1.8 were applied, including personnel impacts, R&D activities, business travel, and point-of-sale infrastructure. No data were intentionally omitted.

Consistency and Reproducibility

- **Consistency:** Primary data for all modules were consistently gathered aiming at the highest level of detail possible. Background processes were modeled mainly with the ecoinvent database. The same allocation rules, cut-off criteria, and impact assessment methods were applied throughout, ensuring methodological coherence and consistent data quality across the entire LCA model.
- **Reproducibility:** This study ensures reproducibility by providing comprehensive disclosure of input–output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness

- **Temporal:** Primary data were collected over a 12-month period representing the 2024 calendar year. Secondary data from the ecoinvent v3 database are representative of recent reference years.
- **Geographical:** Primary data reflect the actual production facilities. Where relevant, differences in electricity grid mixes were accounted for, using appropriate secondary datasets. Country-specific data were used whenever available to ensure high geographical representativeness, while proxy data were applied only when necessary.
- **Technological:** Primary and secondary data were selected to reflect the actual technologies used, ensuring high technological representativeness.

Data Sources

Material/ProcessModule Category	Material/ProcessInventory Name	Dataset Dataset Name	Dataset Geographic Region	Reporting Period/Year Dataset Represents	Reference	Amount (if relevant)	Unit
Ecoinvent 3.11							

Life Cycle Module Description

Modules A1–A3:The LCA model covers the manufacture of raw materials and components for the products (A1), followed by transport to production or assembly facilities primarily by truck (A2). The manufacturing stage (A3) begins with receipt of these materials and includes operations such as cutting, forming, molding, machining, surface preparation, and final assembly into finished components or systems.

Modules A4–A5: Once manufacture is completed, products are shipped to distribution centers and then to the end user by truck (A4). For installation (A5), no material installation loss was assumed, conservatively. This module includes disposal of that waste and of the product packaging.

Modules C1–C4 and D: At end of life (C1–C4), the product is assumed to be collected, and landfilled (as per the PCR regional default. Loads and benefits beyond the system boundary are considered in Module D (e.g., displacement of virgin materials from packaging waste recycling).

LCA Discussion

Allocation Procedure

Allocation of co-products was avoided, to the extent possible, based on the guidance given in ISO 14044:2006, 4.3, and in ISO 21930:2019. Utilities used at the facility level were allocated by mass. The manufacturing process does not consume water or generate wastewater or air emissions, other than those from fuel combustion. Solid waste was estimated using packaging masses and material losses and allocated following the polluter pays principle.

Cut-off Procedure

For the processes within the system boundary, all available energy and material flow data have been included in the model. Cut-off criteria, however, were applied to exclude capital goods and infrastructure, personnel impacts, R&D activities, business travel, and point-of-sale infrastructure, as these are assumed to not significantly affect LCA results nor conclusions.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results: ✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Truck and Trailer
Transport Distance:	755 km
Capacity Utilization:	33 %
Packaging Mass:	0.0198 kg
Weight of products transported:	5.08 kg
Capacity utilization volume factor:	1
Assumptions for scenario development:	Transport distance includes finished product to distribution center and distribution center to point of sale.

Installation in to the building/construction site (A5)

A5 Module

Mass of Packaging Waste Specified by Type:	0.0198 kg
Biogenic Carbon Contained in Packaging (kg C):	0.002913 kg
Assumptions for scenario development:	

End of Life (C1 - C4)

C1 - C4 Modules

Collection Process

Collected with Mixed Construction Waste: 5.06 kg

Recovery

Landfill: 5.06 kg

Reuse, Recovery and / or Recycling Potentials & Relevant Scenario Information (D)

D Module

Results

Environmental Impact Assessment Results

TRACI 2.2

per 1 m of product of a pultruded fiberglass structural shape.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Unit	Method	A1 - A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	TRACI 2.2	2.04e+1	3.54e-1	2.02e-3	0	1.80e-2	0	1.47e-2	-9.57e-3
GWP-fossil	kg CO2 eq	TRACI 2.2	2.04e+1	3.53e-1	1.99e-3	0	1.80e-2	0	1.47e-2	-9.75e-3
GWP-biogenic	kg CO2 eq	TRACI 2.2	1.69e-2	1.56e-4	3.23e-5	0	4.21e-6	0	1.97e-6	1.85e-4
GWP-luluc	kg CO2 eq	TRACI 2.2	1.13e-2	2.43e-4	5.50e-8	0	8.14e-6	0	1.60e-6	-2.34e-6
ODP	kg CFC-11 eq	TRACI 2.2	4.24e-5	4.87e-9	2.30e-12	0	2.56e-10	0	2.17e-10	-6.81e-11
AP	kg SO2 eq	TRACI 2.2	1.16e-1	1.17e-3	1.05e-6	0	5.64e-5	0	1.18e-4	-2.95e-5
SFP	kg O3 eq	TRACI 2.2	1.71e+0	2.52e-2	3.00e-5	0	1.26e-3	0	3.66e-3	-4.33e-4
EP-freshwater	kg P eq	TRACI 2.2	2.86e-3	3.13e-5	8.20e-7	0	1.28e-6	0	4.21e-7	-1.13e-6
EP-marine	kg N eq	TRACI 2.2	1.48e-2	2.17e-4	3.63e-7	0	1.08e-5	0	3.07e-5	-3.84e-6

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different

product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

per 1 m of product of a pultruded fiberglass structural shape.

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
RPRE	MJ	1.43e+1	1.22e-1	3.57e-5	0	3.45e-3	0	1.57e-3	-2.55e-3
RPRM	MJ	1.93e-1	0	0	0	0	0	0	0
RPRT	MJ	1.45e+1	1.22e-1	3.57e-5	0	3.45e-3	0	1.57e-3	-2.55e-3
NRPRE	MJ	2.62e+2	4.89e+0	1.87e-3	0	2.54e-1	0	1.85e-1	-1.01e-1
NRPRM	MJ	0	0	0	0	0	0	0	0
NRPRT	MJ	3.10e+2	4.89e+0	1.87e-3	0	2.54e-1	0	1.85e-1	-1.22e-1
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
RE	MJ	0	0	0	0	0	0	0	0
ADP-fossil	MJ	3.10e+2	4.89e+0	1.87e-3	0	2.54e-1	0	1.85e-1	-1.22e-1
FW	m3	4.20e+0	3.02e-2	-2.37e-5	0	1.35e-3	0	4.21e-4	-1.02e-3

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 m of product of a pultruded fiberglass structural shape.

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0
NHWD	kg	8.52e-1	0	6.94e-3	0	0	0	5.06e+0	0
HLLRW	kg	0	0	0	0	0	0	0	0
ILLRW	kg	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0
MR	kg	1.29e-2	0	1.07e-2	0	0	0	0	0
MER	kg	0	0	1.58e-3	0	0	0	0	0
EE	MJ	0	0	2.44e-2	0	0	0	0	0

Note:

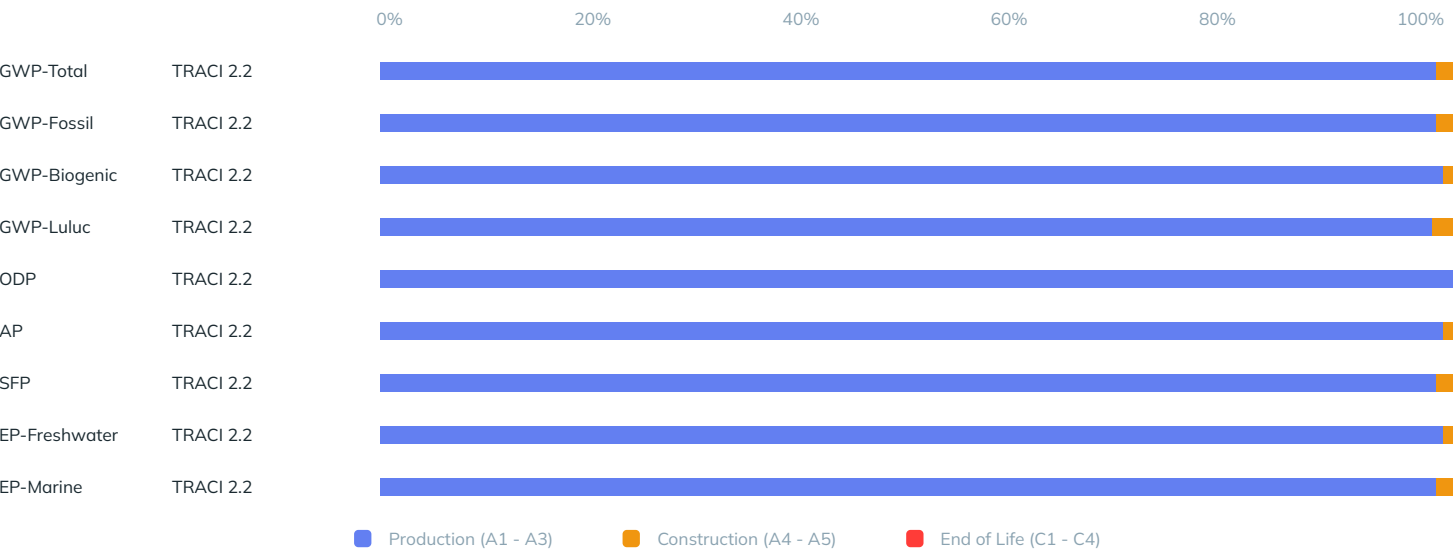
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Interpretation

- The manufacturing of the products in this analysis involves the direct procurement of raw materials from suppliers. These materials are then transported to manufacturing facilities where they are stored, processed, and combined to produce finished products. Notably, the product stage (stage 1) has the highest impact contribution, mainly attributed to the combined environmental impacts associated with raw material manufacturing and energy used in manufacturing the products.
- For products with significant manufacturing energy impacts, the shift to renewable energy sources is recommended.
- Given that the raw materials used in product manufacturing have a significant impact, exploration of opportunities to substitute these materials with alternatives that have a lower environmental impact. Additionally, consideration should be given to collaborating with suppliers who employ sustainable manufacturing techniques or integrate more renewable energy into their production processes. Such initiatives can lead to more environmentally friendly products and further enhance the sustainability of the products in this analysis.



Additional Environmental Information

None

References

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European Committee for Standardization (CEN). (2019). EN 15804:2012+A2:2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. Brussels: CEN. (Including AC:2021)

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