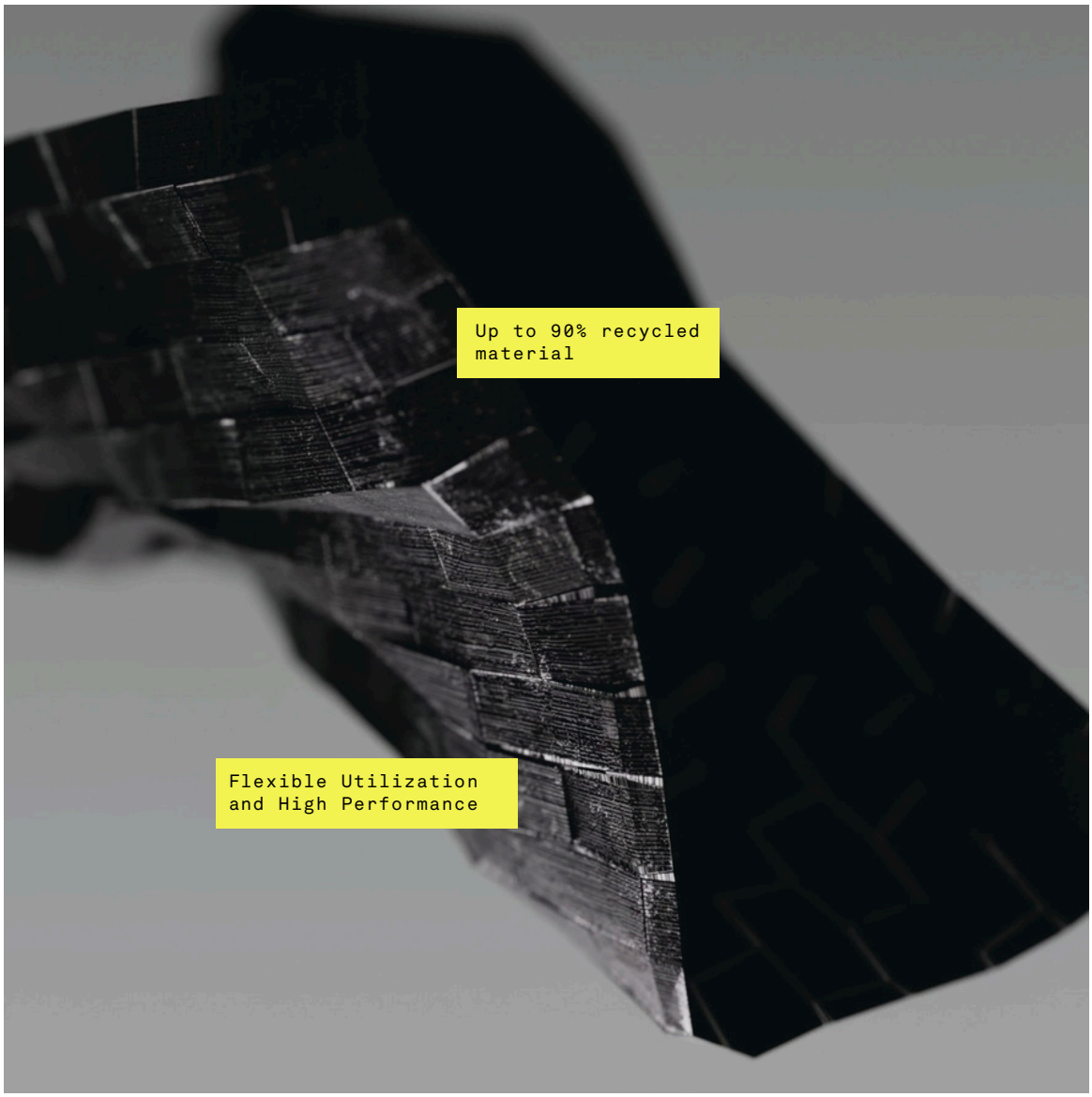
FairPly®
Material Data Sheet

FMT-PDT-EXT-0002

FAIRMAT

Description

FairPly is a versatile material that can be used across a variety of industries—from sports equipment and mobility to construction—offering unmatched performance while reducing environmental impact.



It has several key benefits:

Effortless Integration
FairPly's plug-and-play design ensures it fits seamlessly into your existing manufacturing flow without the need for process or tooling redesigns.

Flexible Compatibility
Easily combines with virgin or recycled materials such as glass fiber, carbon fiber, foams, and honeycombs, offering exceptional versatility across various applications.

No Compromise on Performance and Durability
Maintain the same high performance and quality standards you expect, while replacing your current materials with FairPly.

Cost Neutral
FairPly integrates into your existing bill of materials with no additional green premium—costing the same or less than the materials it replaces.

Sustainable Advantage
FairPly is the ideal choice for manufacturers aiming to enhance sustainability without disruption. Start by replacing just one layer in your production process and see the positive environmental impact—no hassle, no sacrifice.

Simple Logistics
Easy to handle. Store at room temperature. No special equipment is needed.

Key Features

FairPly is engineered from Fairmat's innovative recycled CFRP Chips bonded together on a support film, creating a sheet that can be tailored to specific applications. This versatile material can be used in place of a prepreg layer or dry fabric, making it suitable for a wide range of industries, such as sports equipment, energy, automotive components, and electronic goods.

FairPly is:



User-Friendly
Easy to integrate



Ecological
Crafted from up to 90% recycled CFRP



Flexible and moldable



Simplified logistics
can be stored at room temperature

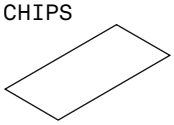


Easy to cut and customize

Product characteristics

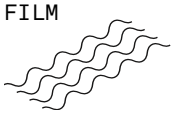
FAIRPLY
=

FAIRMAT
CHIPS



+

SUPPORT
FILM



Recycled CFRP Chips Characteristics

FIBER ORIENTATION	Unidirectional		
LENGTH (MM)	95	95	95
WIDTH (MM)	42	42	42
CONDENSED THICKNESS[1] (MM)	0.12	0.19	0.25
TOTAL AREAL WEIGHT[2] (GSM)	210	305	405

[1] Condensed Thickness is defined as the effective thickness calculated using the density, mass, and dimensions. This is not a physical thickness.

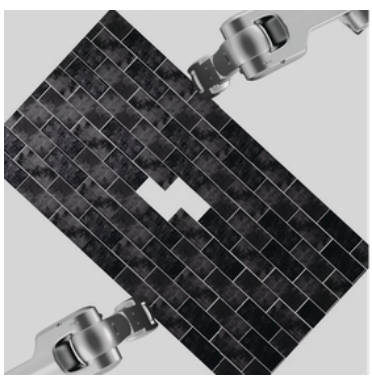
[2] Total Areal Weight = Carbon Fiber Weight + Cured Resin Weight

Support Film Characteristics

TYPE	Glass Fiber Non-woven (GFNW)	Glass Fiber Woven (GFW)
TOTAL AREAL WEIGHT (GSM)	40	35
MEASURED THICKNESS (MM)	0.15	0.05
CONDENSED THICKNESS[1] (MM)	0.10	0.05

A 'Pure Carbon' (no support film) version is also available, please contact us for more information.

[1] Condensed Thickness is defined as the effective thickness calculated using the density, mass, and dimensions. This is not a physical thickness.





FairPly Characteristics

PRODUCT VARIANT	FairPly200	FairPly300	FairPly400
SUPPORT FILM	GFNW/ GFW	GFNW/ GFW	GFNW/ GFW
CHIP CONDENSED THICKNESS (MM)	0.12	0.19	0.25
FAIRPLY LENGTH (MM)	200/800 Customized sizes on demand*		
FAIRPLY WIDTH (MM)	200/800 Customized sizes on demand*		
DENSITY (G/CC)	1.6	1.6	1.6
TOTAL AREAL WEIGHT (GSM) CHIP + SUPPORT	250/245	345/340	445/440

* For bigger FairPly dimensions, please contact our sales support.

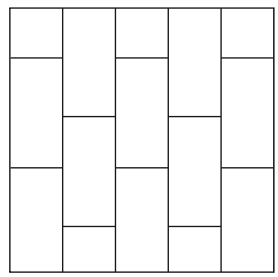
Recommendations for processing

- FairPly is a dry product that needs to be used with resin,
- It is compatible with all kinds of epoxy resins and polyurethane resins,
- It can be mixed with other virgin materials: dry glass fiber, dry carbon fiber, prepregs, foam, honeycomb
- Different impregnation methods can be used:
  - Resin films
  - Liquid resin application
  - Impregnation with resin rich prepregs
- A minimum of 100 gsm of resin is suitable for a good impregnation of FairPly
- Molding temperature is recommended to be between 20°C and 200°C
- FairPly product can be cut at shape before molding
- Recommended cutting method is using an oscillation cutting machine with following parameters:
  - Line speed: 20mm/s
  - Curves speed: 10mm/s
  - Carbon material blade

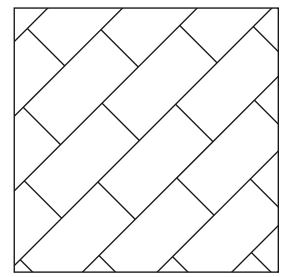
Layouts

FairPly offers full customization of both its FairPly architecture and final cutting pattern, allowing for the precise engineering of fiber orientations to achieve target properties.

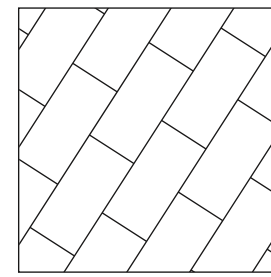
0°/90°



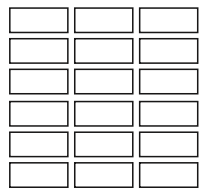
45°/-45°



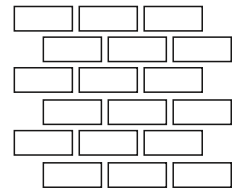
30°/-30°



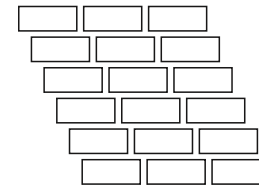
UD Grid



UD Brickwall

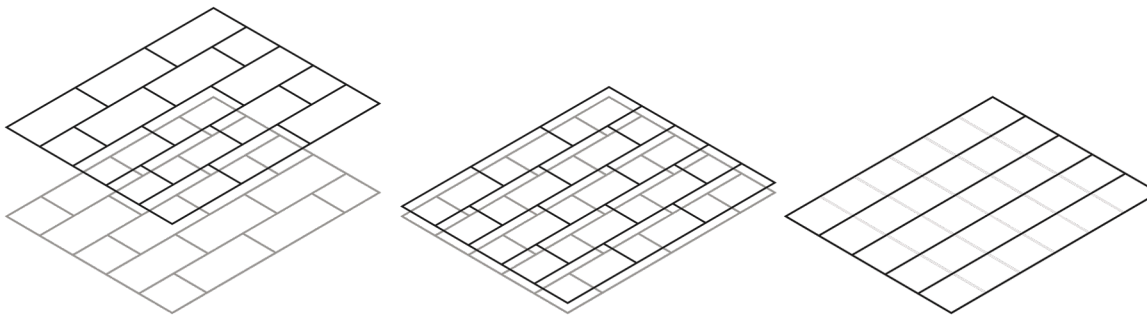


UD Staircase



Layups

During the layup design process, users can strategically position discontinuities to deliver the required performane at the desired location.



Our technical team can help define the best FairPly configuration for any application.

Mechanical properties

[0/0/0/0/0] UD laminates

2mm thickness, 1.4g/cc, 65% chips by vol

	Tensile 0°	Flexural 0°	ILSS 0°	Compression 0°
MODULUS (GPA)	96	81	-	105
ULTIMATE STRENGTH (MPA)	580	800	50	636
STANDARDS	ISO 527	ISO 14125	ASTM D2344	ISO 14126

[0/90/0/90/0] UD laminates

2mm thickness, 1.4g/cc, 65% chips by vol

	Tensile 0°	Flexural 0°	ILSS 0°	Compression 0°
MODULUS (GPA)	60	65	-	-
ULTIMATE STRENGTH (MPA)	350	500	-	-
STANDARDS	ISO 527	ISO 14125	ASTM D2344	ISO 14126

Data was generated from several tests on cured laminates. The nominal values provided are averages.

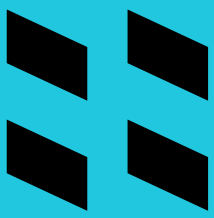
STORAGE & HANDLING

FairPly products should be stored in dry conditions (with air humidity below 70%) and at ambient temperatures between 0°C and 40°C, avoiding any direct exposure to sunlight.

When handling these materials, follow the standard safety precautions applicable to cured carbon fiber-reinforced composites and fibrous materials.

HEALTH & SAFETY

Fairmat certifies that our products are compliant with the European Union Regulation (EC) 1907/2006 governing the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and do not contain substances above 0.1% weight of a Substance of Very High Concern (SVHC) listed in Annex XIV. Advised precautions for safe handling are general PPE (gloves, safety goggles, mask and protective clothing).



All data given is based on representative samples of the materials in question. Since the method and circumstances under which these materials are tested are key to their performance, and Fairmat has no assurance of how its customers will use the material, Fairmat cannot guarantee their properties. Fairmat® is a registered trademark of Fairmat SAS.