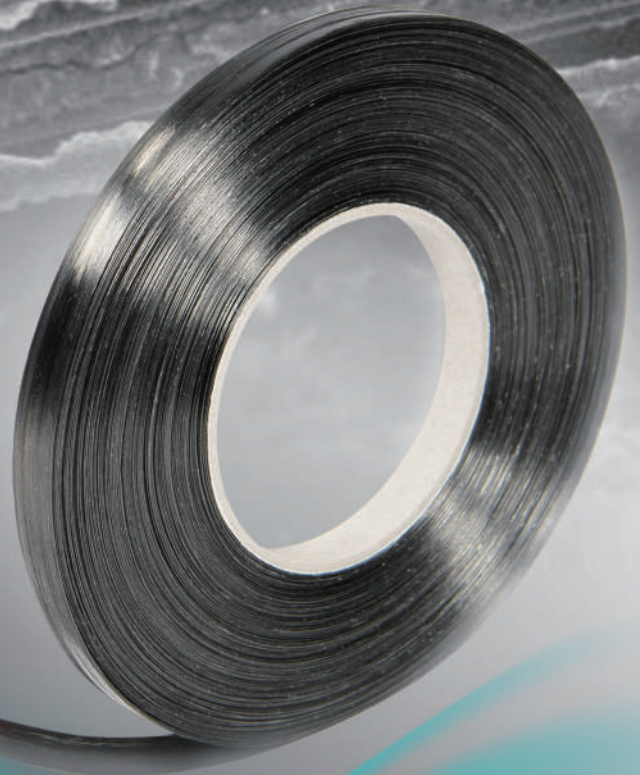




*THERMOPLASTIC UNIDIRECTIONAL
CARBON FIBER TAPE*

南亞熱塑碳纖UD-TAPE

Nan Ya Plastics Corporation

Thermoplastic Carbon Fiber UD Tape

Thermoplastic carbon fiber UD tape is a unidirectional carbon fiber prepreg impregnated with carbon fiber and

polypropylene (PP) / polycarbonate (PC) / polyamide (PA)

It can be used for applications such as thermoformed products and

Thermoplastic resin is used, allowing the material to be reprocessed and recycled.

The material contains continuous carbon fibers, providing superior mechanical properties compared with long-fiber-reinforced thermoplastics (LFRT).

Thermoplastic Resin

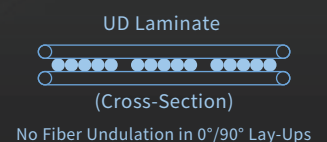
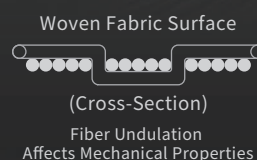
Continuous Carbon Fiber

Solvent-Free Raw Materials

Excellent Surface Flatness

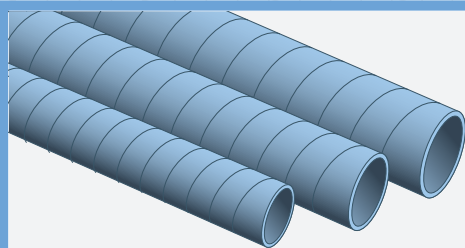
No solvents are used in the raw materials during manufacturing, reducing the environmental impact of the process.

The non-woven UD prepreg process provides excellent surface flatness and high mechanical performance per unit weight.



Ply orientations can be adjusted according to product requirements without being restricted by the warp and weft directions of woven fabrics, providing greater design flexibility.

Available Manufacturing Processes



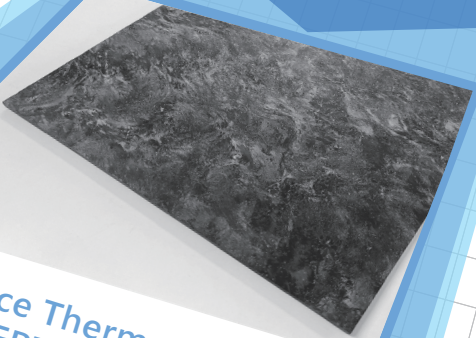
Carbon Fiber Tubes

Winding Process



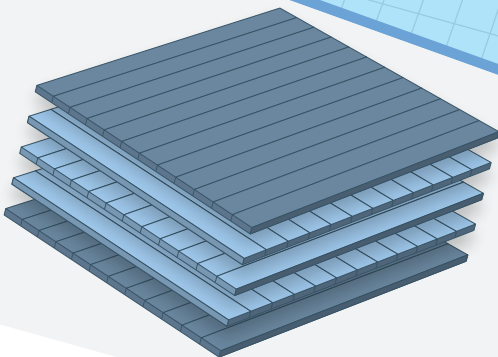
Surface Thermoplastic
CFRT UD-Tape

Strand Compression
Molding



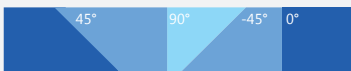
Surface Thermoplastic
CFRT UD-Tape

Foam PanelLaminating



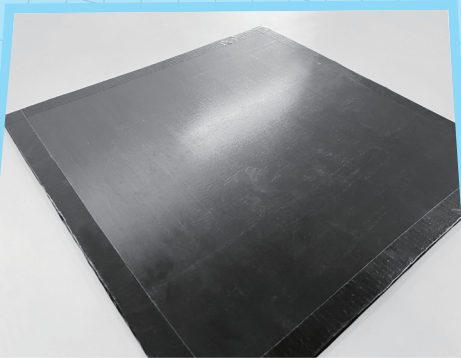
Sandwich Panels

Fabric Layup



Multi-Angle Ply Lay-Up

Compression Molding

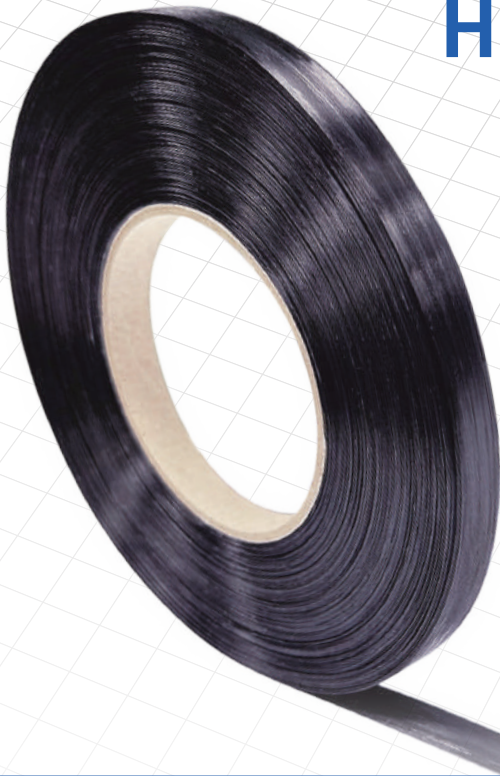


UD Laminates

LIGHTWEIGHT

HIGH STRENGTH

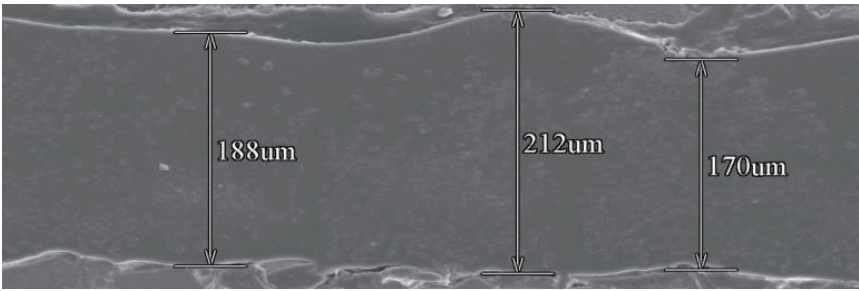
HIGH HEAT RESISTANCE



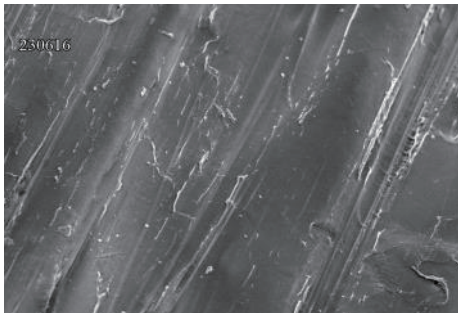
Thermoplastic carbon fiber UD Tape is made of carbon fiber and resin, with a specific gravity of 1/6 that of steel and 1/2 that of aluminum alloy.

It features high flexural strength and modulus, and utilizes a special surface treatment for the bonding of carbon fiber and PP.

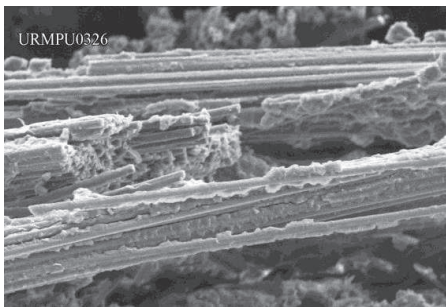
Complete Resin Impregnation, No Voids



No Exposed Surface Fibers



Excellent Compatibility Between Carbon Fiber and Resin



Physical Properties of Thermoplastic Carbon Fiber UD Tape (PP Resin)

Item / Property	Value
Fiber/Resin Type	Carbon Fiber/PP
Flexural Strength (kgf/cm ²)	7,800
Flexural Modulus (kgf/cm ²)	900,000
Tensile Strength (kgf/cm ²)	4,200
Tensile Modulus (kgf/cm ²)	610,000

Item / Property	Value
Impact Strength	65
Resin Content (wt%)	50%
Specific Gravity	1.27
Width (mm)	15
Thickness (mm)	0.3

Comparison of Physical Property Enhancement

Item	Flexural Strength (kgf/cm²)	Flexural Modulus (kgf/cm²)
Thermoplastic Carbon Fiber / PP Resin UD Tape	7,800	900,000
PP Resin	380	20,000

Material Property Comparison Table

Product	Specific Gravity	Flexural Modulus(kgf/cm²)
CF/PP UD Tape	1.27	900,000
Aluminum Alloy	2.70	710,000
Steel	7.83	2,100,000
PVC	1.4	28,000
SMC (25% Fiber Content)	1.80	64,000

Comparison Table of Thermoplastic/Thermoset Composite Properties

Product	Nan Ya Plastics Corporation(NPC) Thermoplastic Carbon Fiber UD Tape	Conventional Thermoset Carbon Fiber Prepreg
Resin Type	Thermoplastic Composites	Thermoset Composites
Reprocessability	Multiple	Once
Recycling	Exelleit	Difficult
Shelf Life	Long-term	Short-term
Storage Environment	Room Temperature	Low-Temperature
VOC Emissions (Compression Molding)	None	Yes

Product Applications

Product Goods

- Drones
- Seats
- Tubing
- Telescopic poles
- Safety helmets



Sports Equipment

- Bicycles
- Running shoes
- Protective gear



Automotive Components

- Modules
- Cross-Members
- Panels
- Seats
- Bumpers
- Battery Enclosures
- Reinforcement Materials for Injection-Molded Parts





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