ADVANCED COMPOSITE FIBRES

ABOUT COATS

Coats Carbon Facilities are home to manufacturing of custom hybrid yarns based on specific end use structural requirements. Using our core capability in speciality thread, Coats has developed an innovative patent pending process to produce a range of enabling composite solutions, better known as Coats Synergex.

This custom range of composite fibres are manufactured using thermoplastic technology and can be commingled as well as twisted and are supported with first in class leading distribution and performance.

Synergex is processed into fabric form using many technologies, including:

- Embroidered Preform Technology
- Unidirectional Tapes
- Multi-axial Non Crimp Fabric Production
- Broad Loom Weaving
- Narrow Loom Weaving
- Hollow Braiding
- Warp Knitting
- Continuous Pipe Winding

Synergex is typically used to mold parts for industries, including:

- Automotive
- Sports & Leisure
- Aerospace
- Wind Energy
- RTP (Reinforced Thermoplastic Pipes)

Find out more. Email marketing@coats.com

Thermoplastic composites have advantages over the more common thermoset composite material. Compared to more established methods, thermoplastic composites can reduce the manufacturing process, eliminating the need for resin and autoclave heating, which provides efficiencies and helps to eliminate cost as well as material waste.

COMMINGLING

Coats proprietary technology intimately commingles carbon reinforcement fibres with thermoplastic yarns to produce a single mixed roving of uniform dispersion across its cross section. This unique technique minimizes filamentation of the reinforcement fibre and ensures parallel alignment of the fibre mix as well as a homogenous distribution resulting in an excellent consolidation.

Reinforcement Fibre	Tow Size
Carbon	3K
	6K
	12K
	24K
	50K
Reinforcement Fibre	**Tex Size**
Para-aramid	164
Fibreglass	600

Matrix Polymer	Tg Temperatue		Melting Point	
	Fahrenheit	Celcius	Fahrenheit	Celcius
UHWPE	-185	-120	270	132
PP	15	-9	340	171
Nylon 12	105	40	360	182
Nylon 6	140	60	425	218
PET	155	68	475	246
PPS	185	85	535	279
PEEK	290	143	650	343

TWISTING

Reinforcement fibres can be customised to meet end use application demands by twisting one or more fibre types together. Coats proprietary technology can twist 1-5 ply constructions making a stronger, more controllable composite fibre which can be used to create fabrics containing unique hybrid properties.

Fibre	Tex Range	Construction
Carbon	100-4800	1-5 ply
Para-aramid	75-4000	1-5 ply
Fibreglass	150-7000	1-5 ply

COATINGS

Coatings can be applied to the composite fibres to improve their abrasion resistance, adhesion levels and durability. Coats offers a range of coatings that are all friendly to the environment.

Coatings include:

- Adhesion Promoters
- Lubricants
- Sizing
- Anti-wick
- Anti-stat

WINDING SERVICES

Manufacturing processes can be optimized through Coats converting services. A great way to eliminate scrap, Coats can wind put-ups to customer specifications easily and quickly.

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