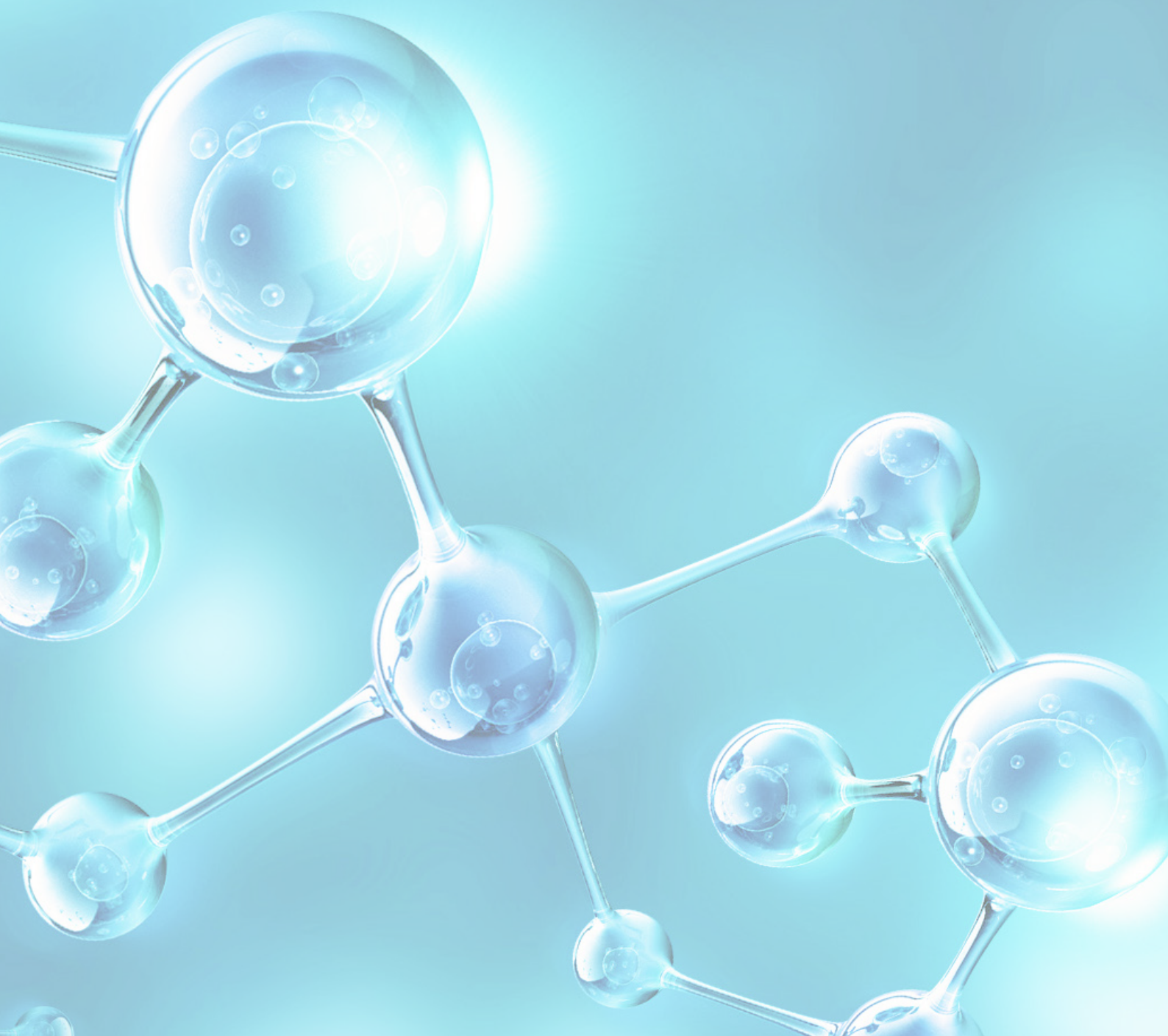




Compounds Carbon Fiber





POLYNT REICHHOLD GROUP

Carbon Fiber product overview

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Production Sites



Polynt Composites Germany GmbH
Polynt Composites Poland Sp. z o.o.



Polynt SpA (Italy)
Polynt Composites Korea Co., Ltd.

Polynt Group

After the merger with Reichhold on May 2017 the new Polynt Group is a global Company in the Intermediates, Coating and Composite Resins, Thermoset Compounds, Gel-coats and niche Specialties.

This combination enhances the Group's leading position as a global vertically integrated specialty chemicals player, with significant global presence in Europe, North America and Asia, a strategy initiated by Polynt with the successful integration of PCCR and CCP in the last years and now further reinforced by Reichhold's global scale, extensive product portfolio and R&D competencies.

Polynt Group is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The Group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products. Product innovation is important for the Group's business and it's the reason for which it constantly works with customers to find solutions to problems. Introducing new or improved products ensures that Polynt Group continue not only to deliver what the market wants and needs, but also when it is wanted and needed.

Carbon Fiber Compounds

Polynt Group offers a wide product range to meet the needs of the Carbon Fibers market, focusing its attention on the most important product properties - high performance, good aesthetics and varied technologies.

Carbon Fiber Compounds is a product family based on vinyl ester or epoxy resins reinforced with carbon fiber, which gives the material exceptional stiffness and resistance properties.

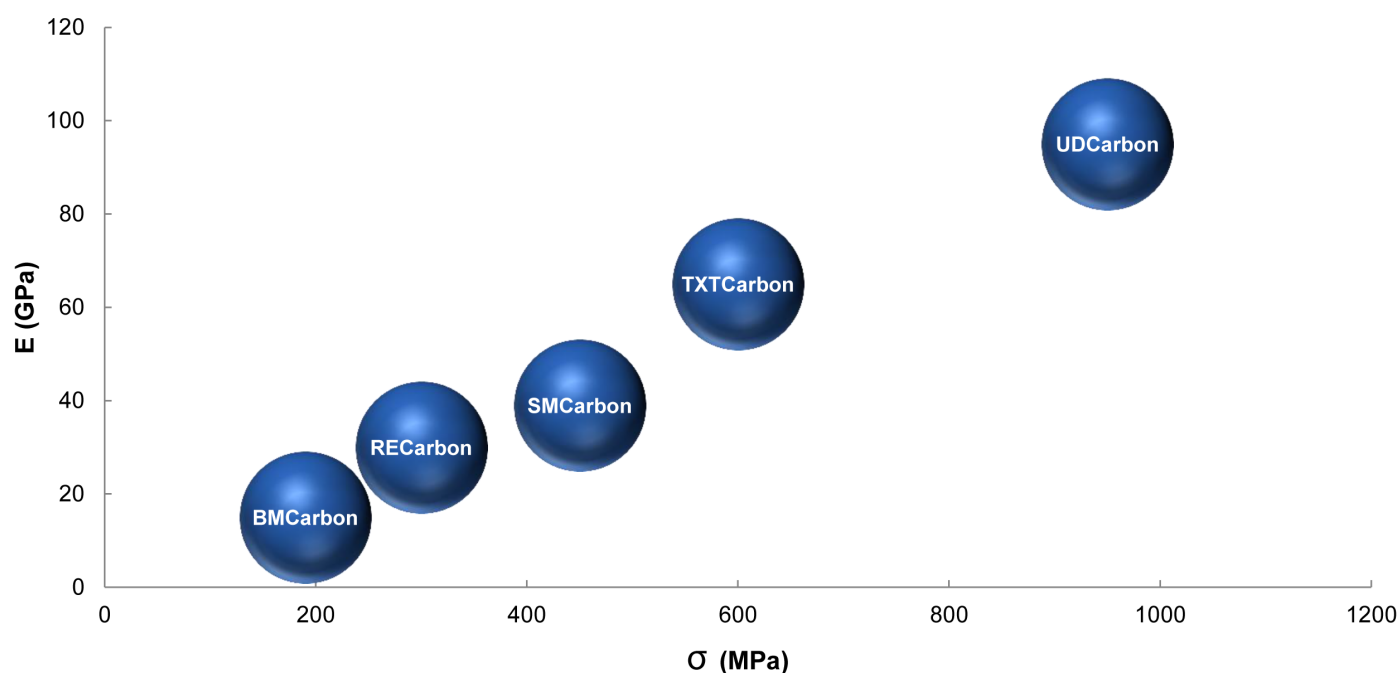
This family includes:

- Polynt-SMCarbon®
- Polynt-BMCarbon®
- Polynt-RECarbon®
- Polynt-UDCarbon®
- Polynt-TXTCarbon®



Since it is possible to use different technologies, Polynt Group's main sectors for carbon fiber reinforced compounds are automotive, aircraft, industrial, sport and leisure.

Product Mechanical Properties Overview: flexural modulus vs flexural strength



Polynt-SMCarbon®

Polynt-SMCarbon® is a sheet molding composites material reinforced with carbon fibers with lengths ranging from 12mm to 50mm. It is produced in sheets of 1000 mm width and 2-3 mm thickness and it can be packed in rolls or boxes per customer specifications.

Polynt-SMCarbon® is particularly suitable for compression molding of flat medium to large specifications.

Luggage made using carbon fiber.
Photo by Teknomonster





Photo of the
Mansory Stallone 812:
the car body is entirely
made in
Polynt-SMCarbon®.
Photo by *Mansory*



Photo of
Dallara Stradale,
the new road car
of Dallara.
Photo by *Dallara*

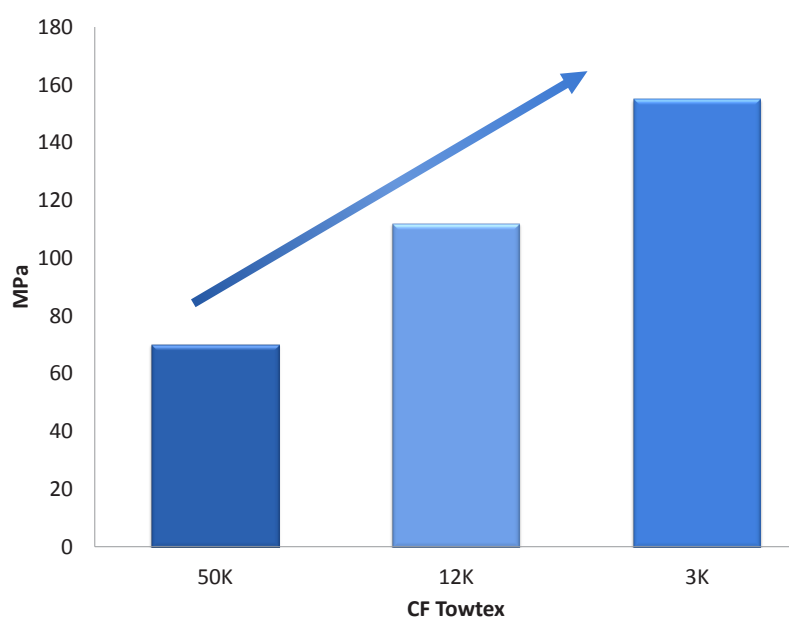
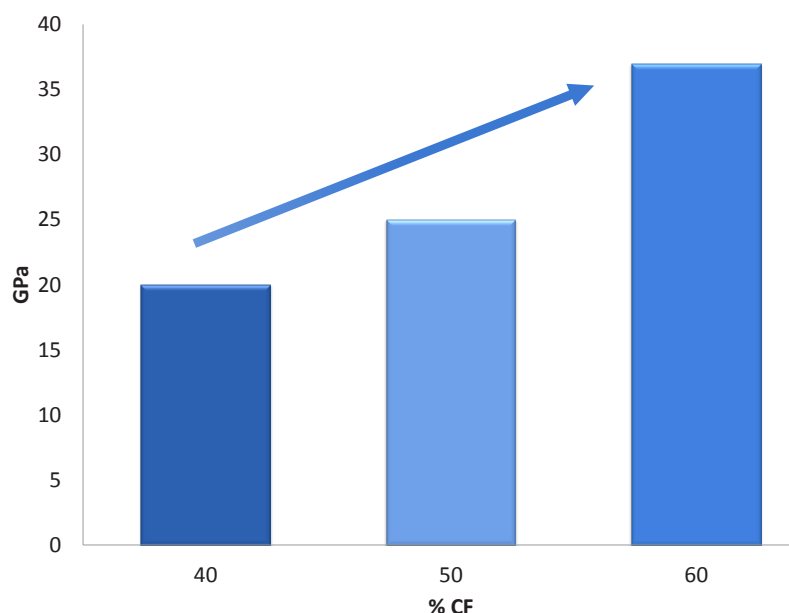
Polynt-SMCarbon® main features are:

- the new chopped aesthetic surfaces
- versatility of technology (compression molding and autoclave)
- ability to adjust the formula in order to optimize the product for specific requests.

| Polynt-SMCarbon® Family | | | | |
|-------------------------|--------------|-----------|-----------------|--------------------------------|
| Resin Type | Series | CF Towtex | CF Content | Technology |
| Vinyl Ester | 24 Series | 3K | 50% - 60% | Compression Molding |
| | | 12K | 40% - 50% - 60% | |
| | | 48K | 50% | |
| | 24 LW Series | 12K | 25% | |
| Epoxy | 80 Series | 3K 12K | 50% - 60% | Compression Molding |
| | 85 Series | | | Autoclave, Compression Molding |
| | 90 Series | | | Autoclave |

For further information please contact us

Polynt Group produces Polynt-SMCarbon® at the German site in Miehlen, by using two different resin systems: Vinyl Ester Resin and Epoxy Resin. Both charts show the most important Polynt-SMCarbon® peculiarity: modulus increases with CF content, strength increases with lower CF towtex.



The two photos hereunder show:

On the left

Chopped carbon aesthetic on Aston Martin DB11:
Polynt-SMCarbon® 90
CF60-12K processed
by *MATA Automotive*

On the right

Luxury seats produced with Polynt-SMCarbon® 90
CF60 -12K using autoclave
technology



Polynt-BMCarbon®

Polynt-BMCarbon® is a bulk molding composite material reinforced by short carbon fibers (6mm, 12mm).

It's produced in granular and homogeneous bulk using Vinyl Ester Resin or Epoxy Resin, it's packed in bags and it is particularly suitable for compression, transfer and injection molding.

Compared to the more common thermoplastic polymers, Polynt-BMCarbon® is a thermosetting compound with superior technical characteristics and performance:

- high mechanical properties in terms of rigidity and resistance
- dimensional stability at high temperatures, due to the intrinsic nature of the thermoset materials
- chemical and weathering resistance, especially formulated for outdoor applications
- countless customization possibilities for specific requests.



On the left
Watch-case and cover
made of
Polynt-BMCarbon®.
Photo given by
15.48 WATCHES

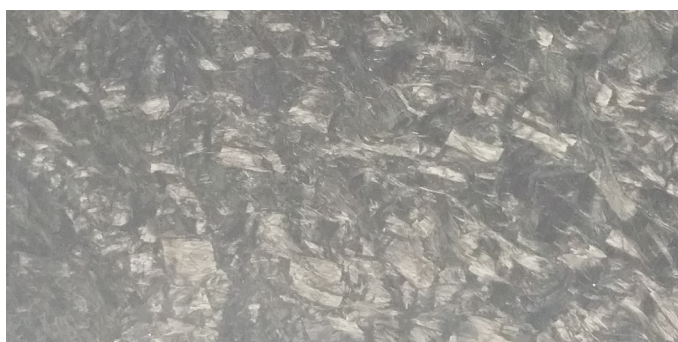


On the right
Scuba diving regulator
made of
Polynt-BMCarbon®.
Photo given by
Mares

Polynt-BMCarbon® Family

| Resin Type | CF Type | CF Content and Length | Technology |
|-------------|-----------------|-----------------------|------------------------|
| Vinyl Ester | Virgin Fibers | 60% - 6mm | Compression Molding |
| | | 60% - 12mm | |
| | Recycled Fibers | 60% - 12mm | |
| Epoxy | Virgin Fibers | 45% - 6mm | |
| | | 45% - 12mm | |

For further information please contact us



The two photos on the top show details of Polynt-BMCarbon® production and a chopped random aesthetic.

Polynt-RECarbon®

Polynt-RECarbon® is the family of composites reinforced with fleece made of recycled carbon fiber with different surface weights (from 20 to 400 gr/m²).

These materials have been developed in response to the growing need for sustainability and recycling. Recycling is achieved by reusing carbon fiber residue from various sources.

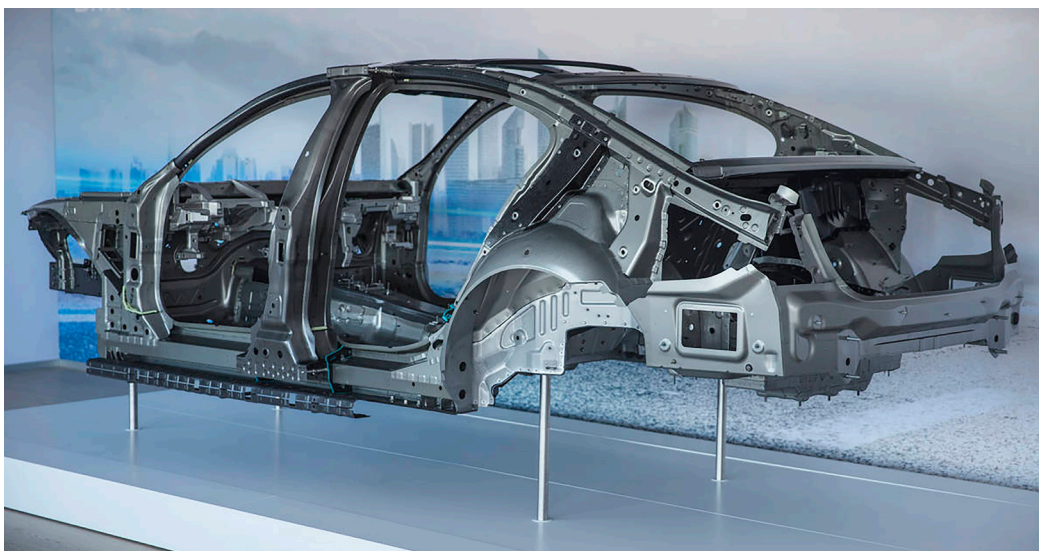
Polynt-RECarbon® can be used as semi-structural materials and veil for optimized surfaces, and it is available for Compression Molding and Autoclave technologies.



Detail of recycled carbon fiber veil for surface improvement (20 gr/m)

| <i>Polynt-RECarbon® Family</i> | | | |
|---------------------------------------|---------------|-----------------------|-----------------------------------|
| Resin Type | CF Type | CF Surface weight | Technology |
| Vinyl Ester | Pyrolized | 200 gr/m ² | Compression Molding |
| | Not Pyrolized | 400 gr/m ² | |
| | Veil | 20 gr/m ² | |
| Epoxy | Pyrolized | 200 gr/m ² | Compression Molding and Autoclave |
| | | 400 gr/m ² | |
| | Not Pyrolized | 200 gr/m ² | |
| | | 400 gr/m ² | |

For further information please contact us

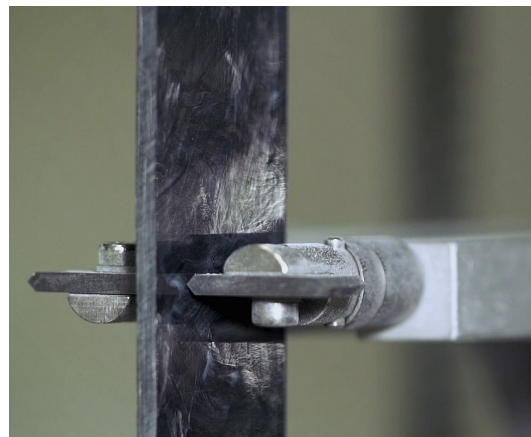


Example of BMW recycled carbon fiber.

Polynt-UDCarbon®

Polynt-UDCarbon® is the family of composites reinforced by continuous and aligned carbon fibers, characterized by extreme mechanical properties, high stiffness on 0° direction and the possibility to combine with Polynt-SMCarbon®.

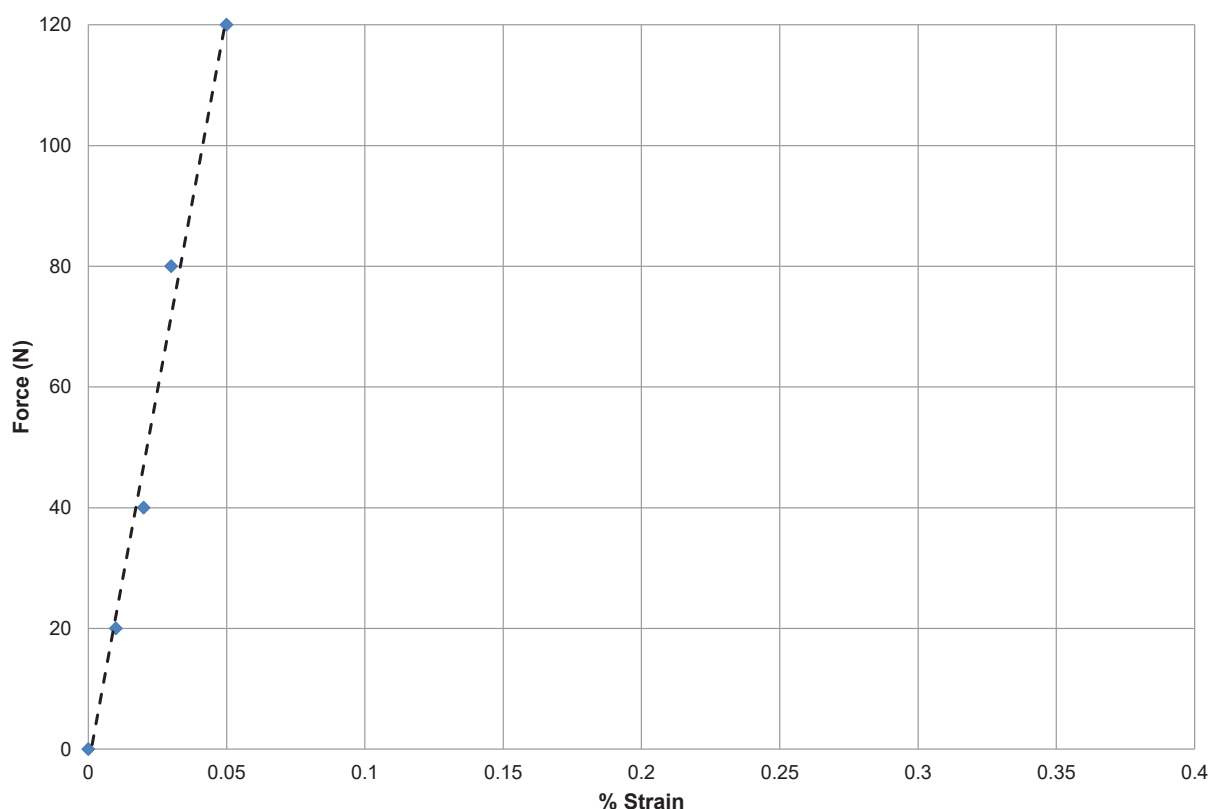
Because of its high mechanical properties (modulus and strength), Polynt-UDCarbon® composites are used in purely structural applications in the automotive and industrial sectors.



On the right
Detail of mechanical test.

Below

The graph shows the high stiffness of Polynt-UDCarbon®.



Polynt-UDCarbon® Family

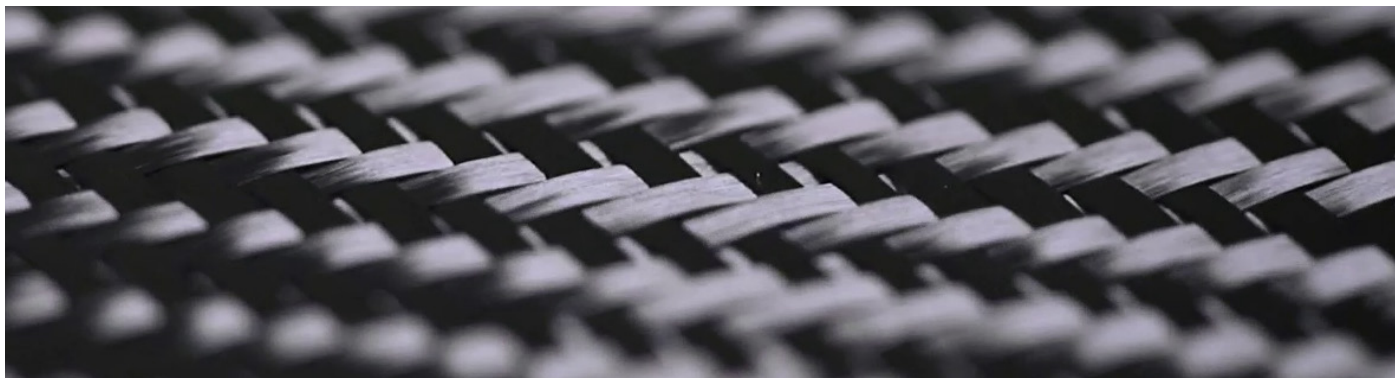
| Resin Type | CF Towtex | CF Content | Technology |
|-------------|-----------|------------|--------------------------------|
| Vinyl Ester | 12 K | 60% | Compression Molding |
| Epoxy | 12 K | 60% | Compression Molding; Autoclave |

For further information please contact us

Polynt-TXTCarbon®

Polynt-TXTCarbon® is the family of carbon reinforced materials developed for the prepregs market. They are used in autoclave and low compression molding; they feature good aesthetics, good mechanical properties and fast curing with Vinyl Ester Resin.

They are cured by applying heat and pressure to provide quality laminates with high stiffness and strength at low weights and they are supplied in rolls.



Detail of fabric twill 2/2 - 200 gr/m²

| <i>Polynt-TXTCarbon® Family</i> | | | |
|--|-------------|-----------------------|-----------------------------------|
| Resin Type | Fabric Type | CF Surface weight | Technology |
| Vinyl Ester | Twill 2/2 | 200 gr/m ² | Compression Molding |
| | | 400 gr/m ² | |
| | | 600 gr/m ² | |
| Epoxy | Twill 2/2 | 200 gr/m ² | Compression Molding, Autoclave |
| | | 400 gr/m ² | |
| | | 600 gr/m ² | |

For further information please contact us

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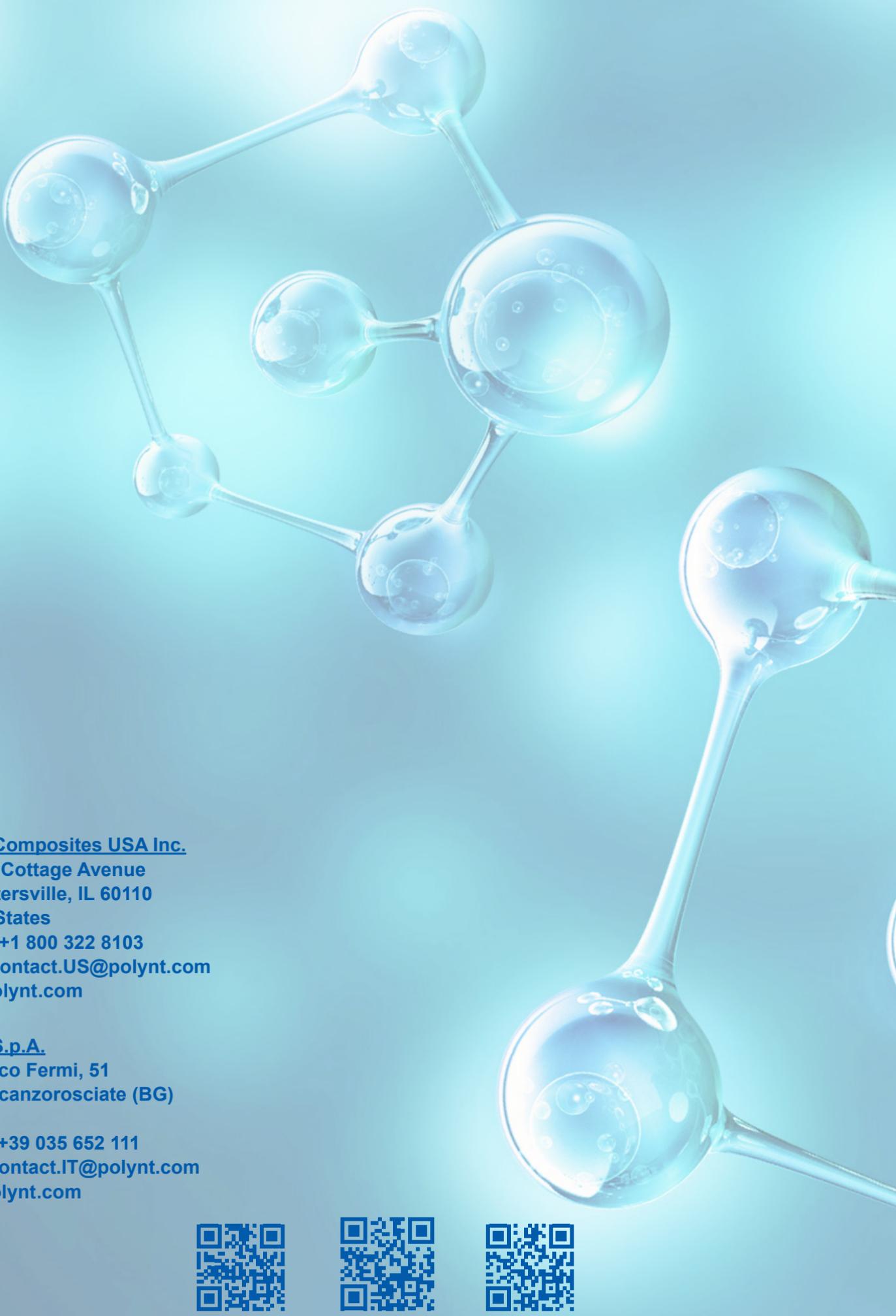
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