

Celstran[®] Thermoplastic Composites

The material of great inventions



Composites – materials with unlimited possibilities

Top Features

- + High specific mechanical properties
- + Excellent chemical resistance
- + High quality and long service life
- + Design freedom
- + Excellent corrosion resistance
- + Broad spectrum of properties
- + Fast and cost-efficient production
- + Ability to customize product and processing

Composite technology is all the rage today, as it addresses two major market requirements: light-weight materials combined with high strength. Until recently composite materials were rarely found outside of selected markets such as Formula 1 or the aircraft industry. Today product developments in the area of engineering and high performance polymers are opening up whole new fields of opportunity.

As a result, composite materials can now be used in a wide variety of applications. By varying matrix materials and additives, customers can take advantage of unique combinations of properties. The resulting new materials free the hand of developers to create designs that were never before possible.

Leading in technology and service

Ticona has been in the market as a resin and reinforced engineering polymer manufacturer for over 40 years. Many of the products it supplies are market leaders in their field and are available worldwide such as Fortron® PPS, Vectra® LCP or Celstran® LFT.

With its high-performance polymers as a matrix material for aircraft applications Ticona is already an established player in the field of composites. Broad market knowledge and continuous product development have now led to a new product innovation: Continuous fiber reinforced Celstran tapes.





Celstran® tapes – The material of great inventions

- + Low weight with high stiffness and toughness
- + Excellent impregnation technology for high-performance mechanical and thermal properties
- + Very broad product range, from standard polymers to high end products
- + High component qualities through homogeneous fiber distribution in the matrix and very good fiber-matrix adhesion
- + Eco-friendly processing and good recyclability
- + Resistant to environmental effects
- + Wide range of further processing techniques (thermoformable, weldable)

No doubt about it, a very good impregnation system improves component quality. And it also makes sense when a global market leader like Ticona bundles its experience in the manufacture of thermoplastic polymers with its extensive expertise in impregnation technology, bringing a completely new product to the market: Celstran CFT – a continuous fiber-reinforced product with a thermoplastic matrix.

The long fiber-reinforced thermoplastic Celstran has been well established on the market for some time now. Using a unique impregnation system, each filament is sheathed with a thermoplastic matrix during the manufacturing process. This gives Celstran its extraordinary property profile such as high impact resistance, strength, stiffness and fatigue resistance. That makes the products particularly at-

tractive in engine part applications or instrument panels, where other plastics such as filled or short fiber-reinforced thermoplastics are no longer able to meet certain increasingly demanding component requirements – and where metals are no longer an option.

With the manufacture of Celstran CFT tapes, Ticona is now offering a new high-performance material to meet the increasing demands of the market. Celstran CFT is ideally suited for highly stressed components in energy production, oil and gas industry, aerospace applications as well as the sport and leisure industry. Moreover, customers in the automotive and transportation sector are taking advantage of the new opportunities offered by these unidirectional tapes.

Broad Portfolio

RESINS	FIBERS	ADDITIVES
<ul style="list-style-type: none"> • PEEK • PEI • PAA/PPA • PA (6,6,46,12) • PPS • PBT/PET • PC • PC/ABS • ABS • PPO • TPU • POM • PEHD • TPE/TPO/TPV • PP 	<ul style="list-style-type: none"> • Carbon fiber • Aramid • S-glass • E-glass • ECR-glass • Stainless steel 	<ul style="list-style-type: none"> • Custom color • UV stabilization • Heat stabilization • Impact enhancement • Surface appearance • Flow enhancement • Paint adhesion • Conductive particle • Low emission • Lubricity/wear enhancement

Broad Possibilities

PELLETS

- 1/2" (~ 11-12mm)
- 1" (~ 25mm)
- Custom



UNIDIRECTIONAL FIBER REINFORCED TAPES

- 4" (~ 100 mm)
- 6" (~ 150 mm)
- 8" (~ 200 mm)
- 10" (~ 250 mm)
- Custom



Ticona offers one of the widest product range of unidirectional tapes available anywhere on the market. The comprehensive Celstran CFT portfolio enables customer-specific product solutions.

Expanding markets – growing demands

The exceptionally versatile property profile of thermoplastic composites allows them to be used in many demanding applications. Composites made from Ticona materials are suitable for many markets, including:

Aircraft construction

The requirements of the aircraft industry are highly demanding. Light weight on its own is not enough. Before they receive worldwide clearance for take-off, plastics used must also meet strict safety requirements relative to fire protection such as flame retardancy and low smoke index.

Energy production

Wind power is booming. Composites' short cycle times and cost-efficient processing make them the material of choice to meet growing demand for the manufacture of rotor blades for the new energy-generating giants. Undeniably eco-friendly, end-of-life components are easy to recycle later. But that will take a while. After all, these robust materials are able to withstand extreme loads for many, many years.

Automotive industry

CO₂ reduction is driving automakers' interest in lightweight construction.

Here fiber composites are indispensable: But low weight is just one important aspect among many. Others include safety and design freedom. Composites really play their trump cards here – as partial reinforcement in the door, bumpers or as a dashboard mount with integrated functional elements. Despite the high temperatures, they also contribute to greater performance under the hood.

Construction and bridge building

When it comes to load bearing capacity, components made from fiber composites can hold their own against conventional construction materials such as steel or concrete. They dampen vibrations better and offer impressive corrosion resistance as well as extraordinary versatility in the production and installation of very large components.

Piping systems

High pressures, aggressive chemicals, oil and gas – no problem for thermoplastic piping systems. These lightweight materials for use in pipelines also earn extra credit for their excellent corrosion resistance, highly versatile manufacturing properties and low maintenance costs.



Ticona's broad product portfolio and comprehensive market knowledge enable customers to meet different requirements in a whole range of challenging applications.

Plastics know-how at first hand

Ticona, a business of Celanese Corporation, is one of the world's leading manufacturers of engineering polymers. The company has been established for many years in the area of injection molding applications in key markets such as the automotive, electronics and telecommunications industries and medical technology. Thanks to their high-performance characteristics, the plastics successfully used there also offer promising potentials for other technologies and fields of application – especially for extrusion. In recent years the targeted development of special polymer grades

has opened up new applications in the areas of fibers and non-wovens for engineering textiles and composites.

Ticona is more than just a materials supplier. As a manufacturer of plastics, the company offers its customers comprehensive customer service. Along with intensive project consulting, this also includes support in the selection and development of materials. In the area of injection molding applications, we support our customers in the design of components and molds, CAE calculation and the optimization of production processes.

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