STYLIGHT®
THERMOPLASTIC COMPOSITE FOR AESTHETIC LIGHTWEIGHT APPLICATIONS
STRUCTURAL STIFFNESS

Existing thermoplastic composite materials based on carbon or glass-fibre have mostly been used so far in structural applications requiring a very high mechanical resistance to replace metal or thermoset composites. StyLight is matching the current competitive thermoplastic composite products in stiffness and strength. Thanks to the amorphous nature of StyLight based on SAN, the high glass transition temperature (TG) of SAN and its stability in humid conditions and heat add on a special product to our portfolio. StyLight can be reinforced with back injection moulded ABS, ASA or blends.

DIMENSIONAL STABILITY

Precise and stable dimensions are required in most technical applications, in automotive interior parts for a better fit and finish as well as in high performance electronic or sport equipment. StyLight based on SAN offers the best-in-class dimensional stability thanks to the low shrinkage, post shrinkage and the low water absorption of its styrenic matrix compared to PA based composites. Low shrinkage and low coefficient of thermal expansion (CLTE) reduce the risk of part warpages with temperature.

PROCESSABILITY

The manufacturing process of thermoplastic composite is complex and requires a lot of expertise. StyLight based on SAN and PP offer an advantage in this field versus other thermoplastics. StyLight’s material processing temperature is lower than for PA, PC or PMMA. It results in shorter cycle times compared to thermoset composites (Autoclave or RTM). Moreover, the decoration with foils or the painting of StyLight SAN parts takes advantage of the surface quality and the polarity of its styrenic matrix.

AESTHETIC

While the fibre fabric plays a key role in the mechanical performances of the material, the polymer matrix has a great influence on the part surface aesthetics. StyLight based on SAN and PP offers an outstanding aesthetic when compared with existing composite thermoplastics available on the market. StyLight not only offers the lowest "surface waviness" allowing high gloss surfaces direct from the mould, but also the polarity of styrenics makes it easy to paint or decorate. For the foil decoration INEOS Styrolution validated different solutions. The translucency of natural StyLight is also an interesting feature for backlighted surfaces.

STYLIGHT® IS AN INNOVATIVE THERMOPLASTIC COMPOSITE FOR LIGHTWEIGHT AESTHETIC DESIGN. THIS UNIQUE COMBINATION OF STRUCTURAL STIFFNESS, AESTHETICS, PROCESSABILITY AND DIMENSIONAL STABILITY MAKES THE STYLIGHT PRODUCT PORTFOLIO THE BEST SOLUTION FOR YOUR HIGH PERFORMANCE AESTHETIC APPLICATIONS.

STYLIGHT PROPERTIES PROFILES COMPARED TO ALTERNATIVE THERMOPLASTIC COMPOSITES

<table>
<thead>
<tr>
<th>Properties</th>
<th>Mechanical performance</th>
<th>Impact strength</th>
<th>Easy manufacturing*</th>
<th>Secondary operation**</th>
<th>Heat resistance at 100°C</th>
<th>Chemical resistance</th>
<th>Dimensional stability</th>
<th>Surface waviness</th>
<th>Low density</th>
<th>Low water uptake</th>
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<td>PC StyLight</td>
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*Includes drapability and formability. **Includes paintability, decoration, gluing, welding.

STYLIGHT – THE PRODUCTION PROCESS
HIGH PERFORMANCE COMPOSITE FOR CUSTOMISED SOLUTIONS

NEW NEEDS, NEW OPPORTUNITIES
As the industry requirements are becoming more stringent, new design and high performance materials are necessary. The automotive industry is one of the most demanding. Currently driven by energy and resource efficiency, it needs lightweight solutions at low cost without compromising on aesthetics, safety, and performance. StyLight combines structure and aesthetics, offering opportunities for part integrations and cost savings. The material characteristics appeal also to the electronics, sports and leisure industry requiring lightweight and robust equipment with an attractive look.

SHAPING THE FUTURE
StyLight based on SAN and PP offers a unique combination of aesthetic and structural stiffness at an affordable price without any equivalent on the market. It is a new solution for designers looking for weight reductions in decorative applications with semi-structural stiffness. Finally, its excellent processability allows a cost-efficient production.

THANKS TO ITS OUTSTANDING MIX OF PROPERTIES, STYLIGHT IS IDEAL FOR HIGH PERFORMANCE APPLICATIONS ACROSS MULTIPLE INDUSTRIES.

AUTOMOTIVE
- CARBON DECORATIVE TRIMS
- SEAT COMPONENT
- STRUCTURAL REINFORCEMENT
- DOOR COMPONENT
- CENTRE CONSOLE
- BODY PANELS

TOYS, SPORTS & LEISURE
- SPORT HELMETS
- SPORT PROTECTION, BRACES
- BICYCLE PARTS
- LUGGAGE
- SPORT SHOES

ELECTRONICS
- BACKCOVER FOR TABLETS, NOTEBOOKS, MOBILE PHONES
- MOBILE PHONE CASING
- LOUDSPEAKER CONES
- DRONES
INEOS STYROLUTION AT A GLANCE

INEOS Styrolution is the leading styrenics supplier with a focus on styrene monomer, polystyrene, ABS Standard and styrenic specialties. With a rich heritage and a unique business model, INEOS Styrolution helps its customers succeed by offering the best possible solution, designed to give them a competitive edge in their markets.

FROM STYLIGHT TO YOUR APPLICATION

STYLIGHT GRADES ARE BROUGHT TO OUR CUSTOMERS AS SEMI-FINISHED GOODS (THERMOPLASTIC SHEETS), READY FOR PROCESSING VIA THERMOFORMING AND OVERMOULDING.

PROCESSING VIA THERMOFORMING AND BACKMOULDING

Processing our StyLight grades is easy and efficient: In a thermoforming process, the sheet is heated up to its softening point and handled to the mould. Then the softened sheet conforms to the shape of the mould during the “draping” phase. StyLight is relatively easy to shape with a minimum risk of wrinkles and tears. During this phase StyLight can be decorated with a preformed insert placed in the mould (IMD). The sheet can then also be back- or overmoulded with short glass-fibre reinforced injection moulded grades (“SL” grades) or coated “in-mould” with polyurea resins without any transfer to a different mould and is held in place until it cools down and ejected.

OUR SIMULATION SUPPORTS CAPABILITIES

Simulations of the draping and the back injection moulding process facilitate the design of components based on organosheets. INEOS Styrolution have developed material cards for all our StyLight SAN based grades allowing customers to optimise their mould design, processing parameters and structural stiffness and surface appearance. INEOS Styrolution offers support to their customers to run these simulation in partnership with ESI and Cikoni for structural simulations, dimensional stability and even crash behaviour at room temperature.

LET’S COLLABORATE

If you would like further details, need assistance in creating your applications, or are curious to explore new possibilities with styrenics, please contact us! Please also refer to: ineos-styrolution.com

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