

# WINDFORM<sup>®</sup> XT 2.0

**CLASS OF MATERIAL:** Composite polyamide based material carbon filled

**TECHNOLOGY:** Selective Laser Sintering

Windform<sup>®</sup> XT 2.0 is a ground breaking carbon fiber reinforced composite 3D printing material known for its mechanical properties. It is particularly suitable in demanding applications such as motorsports, aerospace, and UAV sectors.

Windform<sup>®</sup> XT 2.0 is an innovative material which replaces the previous formula of Windform<sup>®</sup> XT in the Windform<sup>®</sup> family of materials.

Windform<sup>®</sup> XT 2.0 features improvements in mechanical properties including +8% increase in tensile strength, +22% in tensile modulus, and a +46% increase in elongation at break.

The material allows for the creation of accurate, reliable, and durable prototypes and is perfect for functional applications.

## **APPLICATIONS:**

Windform<sup>®</sup> XT 2.0 is the material of choice for those working in the Motorsports (end plates and fences for F1 and IndyCar, alternator covers), Automotive (functioning cooling ducts, mirrors, headlight covers), Aerospace (UAV structures, small satellites, and spacecraft components), and Design fields. The material allows for fully functional applications, as well as test fitting or “proof of concept” pieces for testing on and off the racetrack.

These applications indicated are just an example. The versatility of the product combined with the technology used allows for endless possibilities.

## **WHERE TO FIND WINDFORM<sup>®</sup> PRODUCTS**

CRP Technology produces items in Windform<sup>®</sup> XT 2.0 and distributes the material in Europe and ROW. CRP USA produces items in Windform<sup>®</sup> XT 2.0 and distributes the material in the US and North America.

Both CRP Technology and CRP USA offer individually customized services for timing and method of delivery depending on the needs of the customer, anywhere in the world.

## **HOW TO GET WINDFORM<sup>®</sup> PRODUCTS**

For any further information, requests for quotation, or to check delivery times, please visit our website [www.windform.com](http://www.windform.com) or send an inquiry to [info@windform.com](mailto:info@windform.com) (for Europe and ROW markets) or [info@crp-usa.net](mailto:info@crp-usa.net) (for US market).

We will be in contact to answer all inquiries.



*Energica Eva electric motorbike 3D printed front nose finished and used for pre-production series*

# WINDFORM® XT 2.0

WINDFORM® XT 2.0	Test Method	SI Unity	Windform® XT 2.0
<b>GENERAL PROPERTIES</b>			
Density (20° C)		g/cc	1,097
Colour			BLACK
<b>THERMAL PROPERTIES</b>			
Melting point	ISO 11357-2	°C	179,30
HDT, 1.82 Mpa	ISO 75-2 TYPE A	°C	173,40
Vicat 10N	ISO 306 TYPE A50	°C	176,10
<b>MECHANICAL PROPERTIES</b>			
Tensile Strength	UNI EN ISO 527-1	Mpa	83,84
Tensile Modulus	UNI EN ISO 527-1	Mpa	8928,20
Elongation at break	UNI EN ISO 527-1	%	3,80
Flexural Strength	UNI EN ISO 178	Mpa	133,00
Flexural Modulus	UNI EN ISO 178	Mpa	7338,20
Impact Strength Unnotched (Charpy 23°C)	UNI EN ISO 179	KJ/m <sup>2</sup>	22,43
Impact Strength Notched (Charpy 23°C)	UNI EN ISO 179	KJ/m <sup>2</sup>	4,72
Impact Strength Unnotched (Izod 23°C)	UNI EN ISO 180	KJ/m <sup>2</sup>	19,26
Impact Strength Notched (Izod 23°C)	UNI EN ISO 180	KJ/m <sup>2</sup>	5,30
<b>ELECTRICAL PROPERTIES</b>			
Resistivity, Volume	ASTM D257	ohm * cm	< 10 <sup>8</sup>
Resistivity, Surface	ASTM D257	ohm	< 10 <sup>8</sup>
<b>SURFACE FINISH</b>			
After SLS Process		Ra µm	6,00
After finishing		Ra µm	1,8
<b>PROPERTIES PER DENSITY UNIT</b>			
UTS per density unit		Mpa/(g/cc)	76,43
Tensile Modulus per density unit		Mpa/(g/cc)	8138,74
Flexural Strength per density unit		Mpa/(g/cc)	121,24
Flexural Modulus per density unit		Mpa/(g/cc)	6689,33

**Note: these are all indicative values.** Data was generated from the testing of parts produced with Windform® XT 2.0 material under optimal processing conditions.

**Standard Technical Details for Accuracy versus Tolerance:**

For parts up to 6" (150 mm) the standard tolerance is: +/- 0.012 inches (0,3 mm)

For parts more than 6" (150 mm) the standard tolerance is: +/- 0.002 inches per inch (0,05 mm per 25 mm)

Example: For a 9" (229 mm) part, the standard tolerance would be: +/- 0.018 inches (0,46 mm).

# WINDFORM® XT 2.0

WINDFORM® XT 2.0	Test Method	US Unit	Windform® XT 2.0
<b>GENERAL PROPERTIES</b>			
Density (68° F)		g/cc	1.097
Colour			BLACK
<b>THERMAL PROPERTIES</b>			
Melting point	ISO 11357-2	°F	355
HDT, 1.82 Mpa	ISO 75-2 TYPE A	°F	344
Vicat 10N	ISO 306 TYPE A50	°F	349
<b>MECHANICAL PROPERTIES</b>			
Tensile Strength	UNI EN ISO 527-1	psi	12200
Tensile Modulus	UNI EN ISO 527-1	ksi	1290
Elongation at break	UNI EN ISO 527-1	%	3.80
Flexural Strength	UNI EN ISO 178	psi	19300
Flexural Modulus	UNI EN ISO 178	ksi	1060
Impact Strength Unnotched (Charpy 73.4°F)	UNI EN ISO 179	ft-lb/in <sup>2</sup>	10.7
Impact Strength Notched (Charpy 73.4°F)	UNI EN ISO 179	ft-lb/in <sup>2</sup>	2.25
Impact Strength Unnotched (Izod 73.4°F)	UNI EN ISO 180	ft-lb/in <sup>2</sup>	9.16
Impact Strength Notched (Izod 73.4°F)	UNI EN ISO 180	ft-lb/in <sup>2</sup>	2.52
<b>ELECTRICAL PROPERTIES</b>			
Resistivity, Volume	ASTM D257	ohm * cm	< 10 <sup>8</sup>
Resistivity, Surface	ASTM D257	ohm	< 10 <sup>8</sup>
<b>SURFACE FINISH</b>			
After SLS Process		Ra µm	6.00
After finishing		Ra µm	1.8
<b>PROPERTIES PER DENSITY UNIT</b>			
UTS per density unit		psi/(g/cc)	11100
Tensile Modulus per density unit		ksi/(g/cc)	1180
Flexural Strength per density unit		psi/(g/cc)	17600
Flexural Modulus per density unit		ksi/(g/cc)	970

**Note: these are all indicative values.** Data was generated from the testing of parts produced with Windform® XT 2.0 material under optimal processing conditions.

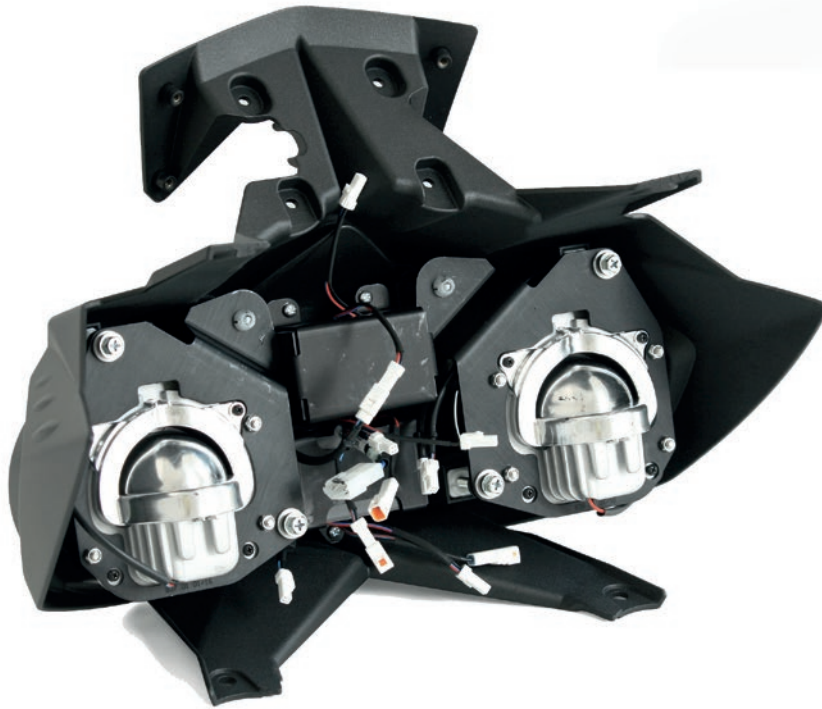
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