

**CLASS OF MATERIAL:** Composite polyamide material glass fiber reinforced

**TECHNOLOGY:** Selective Laser Sintering

Windform® GT is a polyamide based glass fiber reinforced composite material with a dark black color. After hand polishing, the material is smooth with a deep lustrous finish.

The Windform® GT is a flexible product in the Windform® family of materials for additive manufacturing, not only aesthetically, but also in terms of performance.

Windform® GT combines the optimal characteristics of elasticity, ductility, and resistance to impact. Thus, it can be considered a highly valuable material in various racing and functional applications in regards to vibration and shock.

The material's superior values in regards to impact strength and elongation at break, combined with its tensile and flexural strength, make it ideal for applications where resistance to "damage" is a prerequisite in order to preserve internal components in the event of impact and/or improper use.

Windform® GT is also a waterproof material, with resistance to the absorption of moisture and liquids.

It is also very light with excellent mechanical properties per unit density.

Windform® GT is a not electrically conductive material.

## **APPLICATIONS:**

For automotive applications which require specific flexibility in the car and under the hood (such as snap fit components). It is also suitable for motorsports, air ducts, intake and cooling systems, hydraulic ducts in contact with liquids or oils, protective covers for sensors and for all applications that need flexibility and resistance to damage (for example: racing components near the ground). This material can also be used in medical field e.g. to manufacture tailor-made orthoses. These applications indicated are just an example. The versatility of the product combined with the technology used allows for endless possibilities.

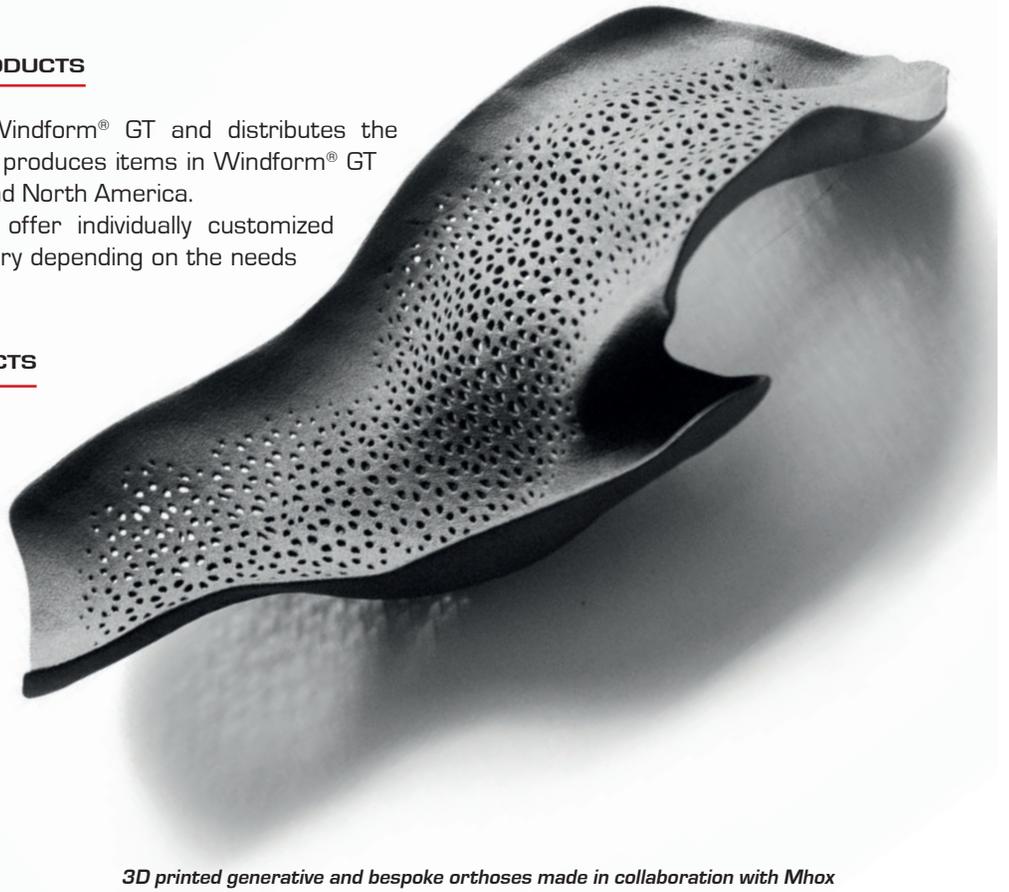
## **WHERE TO FIND WINDFORM® PRODUCTS**

CRP Technology produces items in Windform® GT and distributes the material in Europe and ROW. CRP USA produces items in Windform® GT 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® 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.



*3D printed generative and bespoke orthoses made in collaboration with Mhox*

WINDFORM® GT	Test Method	SI Unity	Windform® GT
<b>GENERAL PROPERTIES</b>			
Density (20° C)		g/cc	1,19
Colour			BLACK
<b>THERMAL PROPERTIES</b>			
Melting point	ISO 11357-2	°C	193,0
HDT, 1.82 Mpa	ASTM D 648 TYPE B	°C	169,4
Vicat 10N	ASTM D1525-09	°C	188,9
<b>MECHANICAL PROPERTIES</b>			
Tensile Strength	UNI EN ISO 527-1	Mpa	56,21
Tensile Modulus	UNI EN ISO 527-1	Mpa	3289,80
Elongation at break	UNI EN ISO 527-1	%	14,82
Flexural Strength	UNI EN ISO 14125	Mpa	87,90
Flexural Modulus	UNI EN ISO 14125	Mpa	3227
Impact Strength Unnotched (Charpy 23°C)	UNI EN ISO 179-1	KJ/m <sup>2</sup>	54,28
Impact Strength Notched (Charpy 23°C)	UNI EN ISO 179-1	KJ/m <sup>2</sup>	8,69
<b>ELECTRICAL PROPERTIES</b>			
Resistivity, Volume	ASTM D257	ohm * cm	2,62 x 10 <sup>15</sup>
Resistivity, Surface	ASTM D257	ohm	1,02 x 10 <sup>16</sup>
<b>SURFACE FINISH</b>			
After SLS Process		Ra µm	6,20
After manual finishing		Ra µm	1,45
After CNC machining		Ra µm	1,15
<b>PROPERTIES PER DENSITY UNIT</b>			
UTS per density unit		Mpa/(g/cc)	47,24
Tensile Modulus per density unit		Mpa/(g/cc)	2764,54
Flexural Strength per density unit		Mpa/(g/cc)	73,87
Flexural Modulus per density unit		Mpa/(g/cc)	2711,76

**Note: these are all indicative values.** Data was generated from the testing of parts produced with Windform® GT 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® GT	Test Method	US Unit	Windform® GT
<b>GENERAL PROPERTIES</b>			
Density (68° F)		g/cc	1.19
Colour			BLACK
<b>THERMAL PROPERTIES</b>			
Melting point	ISO 11357-2	°F	379
HDT, 1.82 Mpa	ASTM D 648 TYPE B	°F	337
Vicat 10N	ASTM D1525-09	°F	372
<b>MECHANICAL PROPERTIES</b>			
Tensile Strength	UNI EN ISO 527-1	psi	8150
Tensile Modulus	UNI EN ISO 527-1	ksi	477
Elongation at break	UNI EN ISO 527-1	%	14.82
Flexural Strength	UNI EN ISO 14125	psi	12700
Flexural Modulus	UNI EN ISO 14125	ksi	468
Impact Strength Unnotched (Charpy 73.4°F)	UNI EN ISO 179-1	ft-lb/in <sup>2</sup>	25.8
Impact Strength Notched (Charpy 73.4°F)	UNI EN ISO 179-1	ft-lb/in <sup>2</sup>	4.14
<b>ELECTRICAL PROPERTIES</b>			
Resistivity, Volume	ASTM D257	ohm * cm	2.62 x 10 <sup>15</sup>
Resistivity, Surface	ASTM D257	ohm	1.02 x 10 <sup>16</sup>
<b>SURFACE FINISH</b>			
After SLS Process		Ra µm	6.20
After manual finishing		Ra µm	1.45
After CNC machining		Ra µm	1.15
<b>PROPERTIES PER DENSITY UNIT</b>			
UTS per density unit		psi/(g/cc)	6850
Tensile Modulus per density unit		ksi/(g/cc)	401
Flexural Strength per density unit		psi/(g/cc)	10700
Flexural Modulus per density unit		ksi/(g/cc)	393

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

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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).

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