



CarbonMide - PA12-CF EOS GmbH - Electro Optical Systems

Source: www.materialdatacenter.com

The anthracite black, carbon-fiber filled polyamide 12 material stands out for excellent stiffness and a maximized weight strength-ratio. Laser-sintered parts made from CarbonMide possess excellent material properties:

- Extreme stiffness
- Excellent strength and hardness
- Light weight
- Electric conductivity

Due to the process related orientation of the fibers the mechanical properties varies in the three axis directions. Typical applications of the material are mechanically stressed parts which are optimized considering the self-weight of the part. Surface finished CarbonMide laser-sinter parts are suited for e.g. usage as aerodynamic components in motor sports application.

3D Data	Value	Unit	Test Standard
Tensile Modulus			ISO 527-1/-2
X Direction	6100	MPa	
Y Direction	3400	MPa	
Z Direction	2200	MPa	
Tensile Strength			ISO 527-1/-2
X Direction	72	MPa	
Y Direction	56	MPa	
Z Direction	25	MPa	
Strain at break			ISO 527-1/-2
X Direction	4.1	%	
Y Direction	6.3	%	
Z Direction	1.3	%	

The properties of parts manufactured using additive manufacturing technology (e.g. laser sintering, stereolithography, Fused Deposition Modelling, 3D printing) are due to their layer-by-layer production, to some extent direction dependent. This has to be considered when designing the part and defining the build orientation.

3D Data	Value	Unit	Test Standard
Charpy impact strength			ISO 179/1eU
+23°C, X Direction	20.5	kJ/m ²	
+23°C, Y Direction	27.5	kJ/m ²	
+23°C, Z Direction	5.5	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
+23°C, X Direction	5.3	kJ/m ²	
+23°C, Y Direction	4.4	kJ/m ²	
+23°C, Z Direction	2.1	kJ/m ²	
Volume resistivity			IEC 60093
X Direction	0.0463	Ohm*m	
Y Direction	0.107	Ohm*m	
Z Direction	3.08	Ohm*m	

3D Data	Value	Unit	Test Standard
Melting temperature (20°C/min)	176	°C	ISO 11357-1/-3
Other properties			
Density (lasersintered)	1040	kg/m ³	EOS Method

Characteristics

Processing Laser Sintering, Rapid Prototyping

Special Characteristics

Increased electrical conductivity

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