



# Gravi-Tech™ GRV-NP-110-W-NAT

## Polyamide 12

### Key Characteristics

General			
Material Status	• Commercial: Active		
Regional Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Additive	• Impact Modifier		
Features	• High Density	• Impact Modified	• Non-Toxic
Uses	• Industrial Applications • Medical/Healthcare Applications	• Projectiles • Radiation Shielding	• Sporting Goods • Weighting & Balancing
Forms	• Pellets		
Processing Method	• Injection Molding		

### Technical Properties <sup>1</sup>

Physical	Typical Value (English)	Typical Value (SI)	Test Method
Density / Specific Gravity	11.0	11.0	ASTM D792
Molding Shrinkage - Flow	4.0E-3 to 6.0E-3 in/in	0.40 to 0.60 %	ASTM D955
Mechanical	Typical Value (English)	Typical Value (SI)	Test Method
Tensile Modulus <sup>2</sup>	1.20E+6 psi	8270 MPa	ASTM D638
Tensile Strength <sup>2</sup> (Yield)	3950 psi	27.2 MPa	ASTM D638
Tensile Elongation <sup>2</sup> (Break)	1.8 %	1.8 %	ASTM D638
Flexural Modulus	800000 psi	5520 MPa	ASTM D790
Flexural Strength	7000 psi	48.3 MPa	ASTM D790
Poisson's Ratio	0.35	0.35	ASTM E132
Impact	Typical Value (English)	Typical Value (SI)	Test Method
Notched Izod Impact 73°F (23°C), 0.125 in (3.18 mm), Injection Molded	2.1 ft·lb/in	110 J/m	ASTM D256A
Unnotched Izod Impact 73°F (23°C), 0.125 in (3.18 mm), Injection Molded	7.0 ft·lb/in	370 J/m	ASTM D256
Thermal	Typical Value (English)	Typical Value (SI)	Test Method
Deflection Temperature Under Load 66 psi (0.45 MPa), Unannealed, 0.250 in (6.35 mm)	280 °F	138 °C	ASTM D648
Deflection Temperature Under Load 264 psi (1.8 MPa), Unannealed, 0.250 in (6.35 mm)	190 °F	87.8 °C	ASTM D648
CLTE - Flow 32 to 90°F (0 to 32°C) 140 to 212°F (60 to 100°C)	3.5E-5 in/in/°F 5.6E-5 in/in/°F	6.3E-5 cm/cm/°C 1.0E-4 cm/cm/°C	ASTM E831
CLTE - Transverse 32 to 90°F (0 to 32°C) 140 to 212°F (60 to 100°C)	3.2E-5 in/in/°F 4.7E-5 in/in/°F	5.7E-5 cm/cm/°C 8.4E-5 cm/cm/°C	ASTM E831
Thermal Conductivity	24 Btu·in/hr/ft <sup>2</sup> /°F	3.5 W/m/K	ASTM E1461

Electrical	Typical Value (English)	Typical Value (SI)	Test Method
Surface Resistivity (0.125 in (3.18 mm))	10 to 1.0E+3 ohms	10 to 1.0E+3 ohms	ASTM D257
Volume Resistivity (0.125 in (3.18 mm))	10 to 1.0E+3 ohms·cm	10 to 1.0E+3 ohms·cm	ASTM D257

### Processing Information

Injection	Typical Value (English)	Typical Value (SI)
Drying Temperature	180 °F	82 °C
Drying Time	4.0 to 5.0 hr	4.0 to 5.0 hr
Suggested Max Moisture	0.080 to 0.15 %	0.080 to 0.15 %
Rear Temperature	425 to 465 °F	218 to 241 °C
Middle Temperature	430 to 480 °F	221 to 249 °C
Front Temperature	420 to 490 °F	216 to 254 °C
Nozzle Temperature	440 to 480 °F	227 to 249 °C
Mold Temperature	100 to 200 °F	38 to 93 °C

### Notes

<sup>1</sup> Typical values are not to be construed as specifications.

<sup>2</sup> Type I, 0.20 in/min (5.1 mm/min)