



Grilamid® TR 90 NZZ nat

EMS-GRIVORY - Polyamide 12

Monday, November 4, 2019

General Information

General

Material Status	• Commercial: Active				
Availability	• Africa & Middle East	• Europe	• North America		
	• Asia Pacific	• Latin America			
Features	• High Impact Resistance	• Hydrolysis Resistant	• UV Resistant		
• Appliance Components		• Electrical/Electronic Applications			
• Automotive Applications		• Engineering Parts			
• Automotive Exterior Parts		• Eyeglass Frames			
• Automotive Interior Parts		• Household Goods			
• Cell Phones		• Hydraulic Applications			
• Connectors		• Lighting Applications			
Appearance	• Natural Color				
Forms	• Granules				
Processing Method	• Extrusion	• Injection Molding			

ASTM & ISO Properties¹

Physical	Dry	Conditioned	Unit	Test Method
Density	0.990	--	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow	0.90	--	%	
Flow	0.80	--	%	
Water Absorption				ISO 62
Saturation, 73°F	3.0	--	%	
Water Absorption				ISO 62
Equilibrium, 73°F, 50% RH	1.5	--	%	
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus	--	189000	psi	ISO 527-2
Tensile Stress (Yield)	--	7250	psi	ISO 527-2
Tensile Stress (Break)	--	6530	psi	ISO 527-2
Tensile Strain (Yield)	--	7.0	%	ISO 527-2
Tensile Strain (Break)	--	> 50	%	ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179/1eA
-22°F	--	12	ft·lb/in ²	
73°F	--	29	ft·lb/in ²	
Charpy Unnotched Impact Strength				ISO 179/1eU
-22°F	--	No Break		
73°F	--	No Break		
Hardness	Dry	Conditioned	Unit	Test Method
Ball Indentation Hardness	--	11600	psi	ISO 2039-1

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Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	266	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	230	--	°F	ISO 75-2/A
Continuous Use Temperature -- ²	158 to 194	--	°F	ISO 2578
-- ³	239	--	°F	Internal Method
Glass Transition Temperature ⁴	311	--	°F	ISO 11357-2
CLTE - Flow	6.7E-5	--	in/in/°F	ISO 11359-2
CLTE - Transverse	6.7E-5	--	in/in/°F	ISO 11359-2
Electrical	Dry	Conditioned	Unit	Test Method
Surface Resistivity	--	1.0E+12	ohms	IEC 60093
Volume Resistivity	--	1.0E+13	ohms·cm	IEC 60093
Electric Strength	--	1100	V/mil	IEC 60243-1
Comparative Tracking Index	--	600	V	IEC 60112
Flammability	Dry	Conditioned	Unit	Test Method
Flammability Classification 0.03 in	HB	--		IEC 60695-11-10, -20
Additional Information	Dry	Conditioned	Unit	Test Method
ISO Type	PA MACM12 to HI, GHL, 14-020	--		ISO 1874

Notes

¹ Typical properties: these are not to be construed as specifications.

² Long Term

³ Short Term

⁴ 10°C/min