Figure 4™ TOUGH-GRY 10

Production Rigid

Figure 4

A high-speed material for the production of rigid gray parts

PRODUCTION PARTS IN A FRACTION OF THE TIME

Figure 4 TOUGH-GRY 10 is capable of print speeds up to 100 mm/hour in a strong production plastic. With 25% elongation at break, it has the durability required for a broad range of applications. This dark gray plastic material is extremely stable, including under high humidity conditions.

Liquid Material

MEASUREMENT	CONDITION	VALUE	
Viscosity	@ 25 °C (71 °F)	490 cps	
Color		Dark Gray	
Solid Density	@ 25 °C (77 °F)	1.11 g/cm³	0.04 lb/in³
Liquid Density	@ 25 °C (77 °F)	1.04 g/cm³	0.038 lb/in³
Package Volume		1 kg bottle - Figure 4 Standalone 10 kg container - Figure 4 Production	
Layer Thickness (Standard Mode)		0.05 mm	0.002 in
Vertical Build Speed Standard Mode Draft Mode		 78 mm/hr 104 mm/hr	 3.1 in/hr 4.1 in/hr

APPLICATIONS

- Rapid design iteration
- Strong functional parts for:
  - Automotive styling parts
  - Form, fit and function testing
  - Durable assemblies and snap fits
  - Bezels, covers, cases
  - Master patterns for RTV molding or other uses
- Short-run manufacturing of rigid parts
- Consumer goods
- Ready for painting or plating

BENEFITS

- Strong, rigid production parts
- Stable mechanicals over time
- High production speed

FEATURES

- High elongation at break
- Excellent humidity/moisture resistance
- Durable and strong
- Up to 100 mm/hour vertical print speed
- Dark gray color

3D SYSTEMS®

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Post-Cured Material

MECHANICAL PROPERTIES			
MEASUREMENT	CONDITION	METRIC	U.S.
Tensile Strength (MPa | PSI)	ASTM D638	50	7190
Tensile Modulus (MPa | KSI)	ASTM D638	2180	317
Elongation at Break	ASTM D638	25 %	
Elongation at Yield	ASTM D638	4 %	
Flexural Strength (MPa | PSI)	ASTM D790	75	10900
Flexural Modulus (MPa | KSI)	ASTM D790	2070	300
Notched Izod Impact Strength (J/m | Ft-lbs/in)	ASTM D256	29	0.54
Unnotched Izod Impact Strength (J/m | Ft-lbs/in)	ASTM D4812	598	11.2
Heat Deflection Temperature @ 0.45 MPa (66 PSI) @ 1.82 MPa (264 PSI)	ASTM D648	 59 °C 51 °C	 138 °F 123 °F
Coefficient of Thermal Expansion (CTE) (ppm/°C | ppm/°F) < Tg > Tg	ASTM E831	 93 165	 52 92
Glass Transition (Tg)	DMA, E"	58 °C	136 °F
Hardness, Shore	ASTM D2240	81D	
Water Absorption	ASTM D570	0.34 %	

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