Figure 4

prototypeprojects
3D MADE. SIMPLE.®

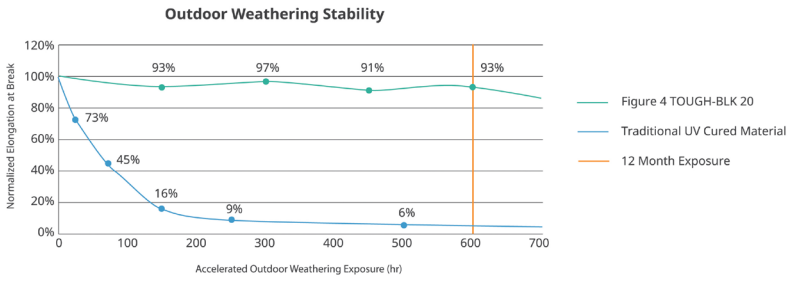
TOUGH-BLK 20

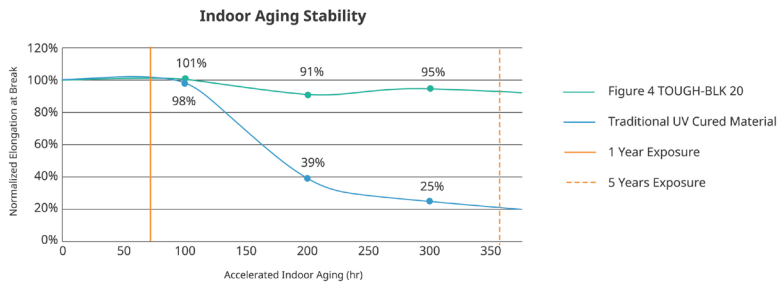
A strong material with long-term UV stability for the production of black ABS-like parts

Exceptional surface finish, durability and UV stability for high performance prototyping and production applications

Figure 4 TOUGH-BLK 20 is a strong ABS-like black plastic with industry-leading UV stability for high performance prototyping and production applications where lifecycle stability is critical and mechanical properties fit. It provides high precision, smooth surface finish and exceptional sidewall quality with minimal finishing.

Industry-leading UV stability





Applications

- Rapid design iteration
- Strong functional parts for:
  - Automotive styling parts
  - Consumer electronics components
  - Legacy replacement parts
  - Form, fit and function testing
  - Durable assemblies and snap fits
  - Bezels, knobs, brackets, covers, cases
- Master patterns for RTV/silicone moulding
- Short-run manufacturing of rigid parts

Benefits

- Reliable and robust functional prototypes
- Production-grade stability – mechanical properties, color, opacity, dimensions will not change over time with exposure to daylight
- High precision and exceptional part quality with smooth surfaces and sidewalls
- Beautiful ABS-like parts

Features

- Long-term indoor and outdoor UV stability (1+ years)
- Durable and strong
- Excellent humidity/moisture resistance
- Look and feel of moulded black ABS

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Liquid Material

LIQUID PROPERTIES			
MEASUREMENT	CONDITION	METRIC	U.S.
Viscocity	@ 25 °C (77 °F)	2623 cps	6350 lb/ft-hr
Colour		Black	
Liquid Density	@ 25 °C (77 °F)	1.04 g/cm^3	0.038 lb/in^3
Layer Thickness (Standard Mode)		0.05 mm	0.002 in

Post-Cured Material

MECHANICAL PROPERTIES			
MEASUREMENT	CONDITION	METRIC	U.S.
Solid Density (g/cm^3 | lb/in^3)	ASTM D792	1.11	0.040
Tensile Strength, Ultimate (MPa | PSI)	ASTM D638	40	5860
Tensile Strength, at Yield (MPa | PSI)	ASTM D638	40	2560
Tensile Modulus (MPa | KSI)	ASTM D638	1780	260
Elongation at Break	ASTM D638	36%	
Elongation at Yield	ASTM D638	4.6%	
Flexural Strength (MPa | PSI)	ASTM D790	61	8775
Flexural Modulus (MPa | KSI)	ASTM D790	1650	240
Notched Izod Impact Strength (J/m | Ft-lbs/in)	ASTM D256	27	0.5
Unnotched Izod Impact Strength (J/m | Ft-lbs/in)	ASTM D4812	1008	18.9
Heat Deflection Temperature @ 0.45 MPa (66 PSI) @ 1.82 MPa (264 PSI)	ASTM D648	 55 °C 45 °C	 131 °F 113 °F
Coefficient of Thermal Expansion (CTE) (ppm/°C | ppm/°F) < Tg > Tg	ASTM E831	 83 173	 46 96
Glass Transition (Tg), DMA, E"	ASTM E1640	46 °C	115 °F
Hardness, Shore	ASTM D2240	79D	
Water Absorption (24 hour)	ASTM D570	0.31%	

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