



HARZ Labs
MATERIALS FOR 3D PRINTING

HARZ Labs Tough Black

Material Technical Data Sheet (TDS)

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SECTION 1: DESCRIPTION AND APPLICATION

Designed for printing models that have high requirements in hardness, durability, flexural strength.

SECTION 2: MATERIAL PROPERTIES

2.1 Characteristics of liquid

Tested property	Standard/Method	Result (Metric)
Color	-	Black
Odor	-	Weak
Density	ASTM D1298	$1.1 \pm 0.1 \text{ g/cm}^3$
Viscosity (25 °C)	ASTM D2393	$300 \pm 150 \text{ mPa}\cdot\text{s}$

2.2 Mechanical properties

Tested property	Standard/Method	Result (Metric)
Flexural Strength	ASTM D790	$130.0 \pm 10.0 \text{ MPa}$
Flexural Modulus	ASTM D790	$2100 \pm 300 \text{ MPa}$
Ultimate Tensile Strength	ASTM D638	$60 \pm 5 \text{ MPa}$
Tensile Modulus	ASTM D638	$800 \pm 100 \text{ MPa}$
Elongation at Break	ASTM D638	$10 \pm 3 \%$
Hardness	ASTM D2240	$86 \pm 3 \text{ Shore D}$
HDT @ 0.455 MPa	ASTM D648	$63 \pm 4 \text{ }^\circ\text{C}$
HDT @ 1.82 MPa	ASTM D648	$54 \pm 3 \text{ }^\circ\text{C}$
Izod Impact resistance (unnotched)	ASTM D256	$20 \pm 5 \text{ kJ/m}^2$
Charpy Impact resistance (unnotched)	ASTM D6110	$26 \pm 6 \text{ kJ/m}^2$

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