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# THE ALL-NEW MAKERBOT SLATE GRAY TOUGH PLA FILAMENT BUNDLE

As Tough as ABS and as Reliable as PLA

## TOUGH PLA BUNDLE PRODUCTS

for Replicator+ SKU: 111746-00

for Replicator SKU: 111746-00

for Replicator Z18 SKU: 111752-00

## SPECIFICATIONS

Filament diameter 0.07 in [1.75 mm]

Spool diameter 9.84 in [25.0 cm]

Spool width 1.57 in [4 cm]

Spool hub hole 2 in [5.08 cm]

## TEMPERATURE

Glass Temp: 140-149°F [60-65°C]

Melting Temp: 302-320°F [150-160°C]

Nozzle Temp: 419°F [215°C]

## SHIPPING WEIGHT

7.81 lb [3.54 kg]

## Similar Tensile, Impact, and Flexural Strength to ABS

Made with designers and engineers in mind, the Slate Gray Tough PLA Filament Bundle allows you to create durable, high-impact strength prototypes and fixtures. It includes three spools of Tough PLA Filament and the Tough PLA Smart Extruder+.

Print without the hassles of ABS or the brittleness of PLA. You can print prototypes, jigs, and fixtures with features that demand wear and impact-resistance, such as snap fits and living hinges. Tough PLA is also a workable material that responds well to sanding, thread-tapping, and post-processing.

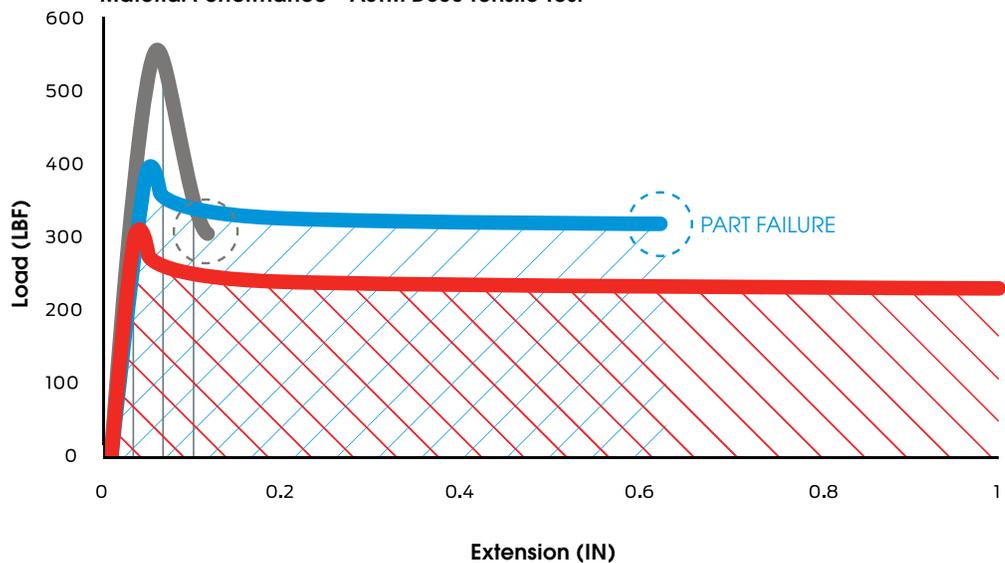
Tough PLA exhibits similar behavior to ABS under flexural, tensile and impact loads. The stress and strain curves below show the tensile similarities. Whereas PLA can bear a larger load at once, it can't endure much deflection before break — resulting in a stiff, brittle characteristic. Tough PLA by comparison, will deform elastically and return to its original shape before hitting peak strength; after which, it exhibits a very long plastic deformation range before break that outperforms ABS. This results in a pliable, workable material that flexes before failure.

## Material Performance - Impact Test

Filament	Notched Izod (ft-lb/in)*	Type of Break
ABS	3.14	Hinged
Tough PLA	7.2	Partial
PLA	0.55	Complete
Filament	Unnotched Izod (ft-lb/in)	Type of Break
ABS	20.01	Hinged
Tough PLA	47.7	Non-break
PLA	4.83	Complete

**PLA**   
**ABS**   
**Tough PLA** 

## Material Performance - ASTM D638 Tensile Test



All tests were performed following ASTM standard protocol with injection molded specimens from the same resin used to create MakerBot filaments. The performance characteristics of these materials may vary according to application, operating conditions, or end use, and the information is only presented for reference purposes only. They should not be used for design specifications or quality control purposes. Product specifications are subject to change without prior notice. Each user is responsible for determining that the MakerBot material is safe, lawful, and technically suitable for the intended application, as well as for identifying the proper disposal (or recycling) method consistent with applicable environmental laws and regulations. Except as may be specified in the MakerBot Limited Warranty, MakerBot makes no warranties of any kind, express or implied, including, but not limited to, the warranties of merchantability, fitness for a particular use.