

CRAFTSMAN CRIBSHEET

FDM Printing for the Shop

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FDM or Fused Deposition Modeling is typically a spool of plastic fed through a nozzle depositing one layer at a time. FDM is a great method for making larger prints. It also has the capability to make hollow, or honeycomb-formed interiors.

Printing hollow can reduce weight without compromising strength. Hollow prints can also reduce the amount of material used on large prints. Final print tolerances of around $\pm .015-.030$ " are typical. [P](#)

Material	Tensile Strength (psi)	Young's Modus (psi)	Percent Elongation (%)	Melting Point (°F)	Impact Properties (ft-lb/in ²)
PLA	6760 $\pm$ 130	382,500 $\pm$ 47,900	1.90 $\pm$ 0.21	302	1.43 $\pm$ 0.09
PLA (Polylactic Acid) Uses: All around material great for most items. Easy to use and holds up well in a shop environment. A biodegradable and widely used material, known for ease of printing and low warping, but with lower heat and impact resistance.					
PETG	7250-10150	304,500-333,500	6-12	446	2.68-4.29
PETG (Polyethylene Terephthalate Glycol) Uses: Good UV resistance, good for high strength and impact applications. Offers a good balance of strength, flexibility, and chemical resistance, with better printing characteristics than ABS.					
TPU	3625-7250	1,450-145,000	500-700	356-428	10.73-26.83
TPU (Thermoplastic Polyurethane) Uses: Rubber-like with great impact resistance. Can be used for shock absorbers, flexible covers. Wearable items are often printed from TPU. A flexible and elastic material, ideal for creating rubber-like parts, but can be challenging to print due to its flexibility. Great impact resistance.					
ABS	5800-7250	290,000-333,500	10-30	428	8.04-10.73
ABS (Acrylonitrile Butadiene Styrene) Uses: Great for strength and durability. Parts can be acetone smoothed after printing. Parts hold up to UV and temperature changes. Do well in mechanical applications. A strong and durable material with good impact resistance but can be prone to warping during printing and requires a heated print bed.					

*All data presented above is for reference and will vary depending on manufacturer's specifications. Material properties with additives (carbon fiber, metal powder, etc) will greatly change final reported values. Presented as a general guideline to the above materials.