

# FDM HIPS



## FDM Thermoplastic Filament

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes.



## Overview

FDM® HIPS (high-impact polystyrene) is a low-cost, general-use 3D printing thermoplastic. It offers similarities to ABS but has high impact resistance making it suitable for printing lower-requirement jigs, fixtures and prototypes at a reduced cost.

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## Ordering Information

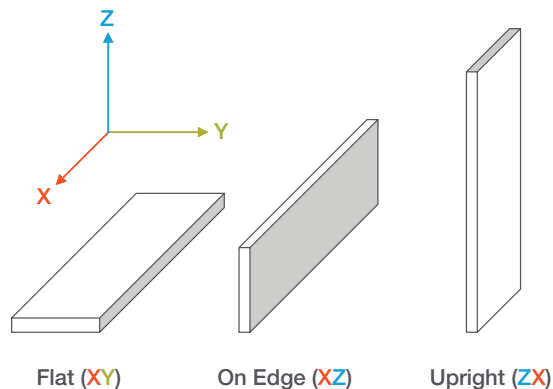
Part Number	Description
<b>Filament Canisters</b>	
355-70000	HIPS, 92 cu in. - Plus
355-70080	SUP1500B, 92 cu in. - Plus
<b>Printer Consumables</b>	
511-10401	T16 tip
511-10301	T12 tip
325-00300	Low Temperature build sheet, 0.02 x 26 x 38 in. (0.51 x 660 x 965 mm)

## Mechanical Properties

Samples were printed with 0.010 in. (0.254 mm) layer height on the Fortus 450mc. For the full test procedure please see the [Stratasys Materials Test Procedure](http://www.stratasys.com) on [www.stratasys.com](http://www.stratasys.com).

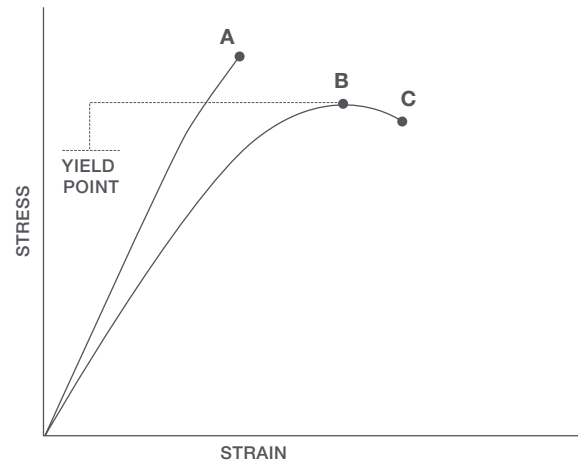
### Print Orientation

Parts created using FDM are anisotropic as a result of the printing process. Below is a reference of the different orientations used to characterize the material.



### Tensile Curves

Due to the anisotropic nature of FDM, tensile curves look different depending on orientation. Below is a guide of the two types of curves seen when printing tensile samples and what reported values mean.



- A = Tensile at break, elongation at break (no yield point)
- B = Tensile at yield, elongation at yield
- C = Tensile at break, elongation at break

		XZ Orientation <sup>1</sup>	ZX Orientation <sup>1</sup>
<b>Tensile Properties: ASTM D638</b>			
Yield Strength	MPa	26.0 (0.36)	23.5 (0.36)
	psi	3770 (52)	3410 (52)
Elongation @ Yield	%	1.6 (0.030)	1.5 (0.030)
Strength @ Break	MPa	19.6 (0.46)	20.3 (0.69)
	psi	2840 (67)	2950 (100)
Elongation @ Break	%	8.7 (0.69)	2.8 (0.44)
Modulus (Elastic)	GPa	1.98 (0.013)	1.93 (0.035)
	ksi	287 (1.9)	281 (5.1)
<b>Flexural Properties: ASTM D790, Procedure A</b>			
Peak Stress	MPa	50.8 (0.54)	44.0 (1.2)
	psi	7370 (78)	6380 (170)
Flex Yield Strain	%	3.5 (0.18)	3.2 (0.19)
Modulus	GPa	2.24 (0.028)	1.85 (0.043)
	ksi	325 (4.0)	268 (6.2)
<b>Impact Properties: ASTM D256, ASTM D4812</b>			
Notched	J/m	74.7 (3.7)	44.6 (5.3)
	ft*lb/in.	1.40 (0.070)	0.835 (0.10)
Unnotched	J/m	827 (190)	132 (11)
	ft*lb/in.	15.5 (3.5)	2.47 (0.20)

<sup>1</sup> Values in parenthesis are standard deviations.

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