stratasys

MATERIAL DATA SHEET
FDM



ABS Draft

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® ABS Draft is a low-cost ABS (acrylonitrile butadiene styrene) material designed for economical prototyping, concept validation, and draft printing applications. ABS Draft delivers approximately 80% of the mechanical performance of ABS-M30, making it most suitable for general-purpose 3D printing use cases where overall part strength, aesthetics, and part quality are not important. As a Stratasys Validated Material*, ABS Draft provides a reliable and affordable option for producing parts quickly and cost-effectively.

* Materials at Stratasys are categorized to be Preferred or Validated. Our Preferred Materials are optimized to meet the highest application requirements. They are tuned to the highest level of part quality and reliability and are engineered to provide the best combination of printer and material performance. Our Validated Materials are developed in-house by Stratasys or a third-party and validated to ensure reliable and successful printing. Validated Materials are not tuned to the same high level of part quality and reliability as a Preferred Material. Validated Materials may or may not be exclusive to Stratasys.

Contents:

Overview 2

Ordering Information 3

Legal Disclaimer 4

Physical Properties 4

Mechanical Properties 5

Ordering Information[1]

Table 1: Printer and Support Material Compatibility

Printer	Model Tip	Layer Height	Support Material	Support Tip
F870™	N14	0.25 mm (0.010 in.)	SR-35™ (soluble)	N14
F3300®	N500SA	0.25 mm (0.010 in.)	SR-35 (soluble)	N410SA

Build Sheet

F870 Standard Build Sheets

- 0.381 x 762 x 1,041 mm (0.015 x 30 x 41 in.)

F3300 Low Temperature Build Sheets

- 0.51 x 660 x 711 mm (0.02 x 26 x 28 in.)

System Requirements

F870

- N14 Extrusion head - Model and Support (dark blue cover, dark blue label)
- No material license required

F3300

- F3000 Series Extruder Drive
- Standard Hot Ends
- No material license required

[1] Contact your Stratasys representative for ordering information

Table 2: ABS Draft Ordering Information

Part Number	Description	System Compatibility
Filament Consumables		
F3000 Series / F870 Spools		
363-00190	MTRL, F870 and F3000 Series, (M), ABS Draft, Gray, 4100CC	F870, F3300
363-00700	MTRL, F870 and F3000 Series, (S), SR-35, 4100CC	
Printer Consumables		
F870		
123-50102-S	F770 and F870 build sheet, 0.015 x 30 x 41 in. (0.381 x 762 x 1,041 mm), box of 20	F870
F3000 Series		
Coming soon	FDM, N500SA Hot End (0.25 mm/0.010 in. layer height)	F3300
Coming soon	FDM, N410SA Support Hot End (0.25 mm/0.010 in. layer height)	
363-30000-S	F3300 sheet bundle, standard 0.02 x 26 x 28 in., box of 10	
Print Heads		
F870		
123-00900-S	Standard Extrusion Head, N14 (model and support, dark blue cover, dark blue label)	F870
F3000		
533-10000-S	F3000 Series Extruder Drive	F3300

Legal Disclaimer

Important Information Regarding Material Property Data

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. End-use material performance can be impacted (+/-) by, but not limited to, part design, end use conditions, test conditions, etc. Actual values will vary with build conditions. Product specifications are subject to change without notice.

This document provides technical performance information and is not a substitute for the applicable Safety Data Sheet, processing instructions, or other product safety information. Before use, each user must review the applicable safety information and independently test and validate the material and finished part under the intended processing, operating, and end-use conditions.

Physical Properties

Physical properties of ABS Draft are expected to be close to ABS-M30 (molded and printed).

Table 3: ABS Draft Physical Properties*

Physical Properties - Printed			
Property	Test Method	Typical Values XY	Typical Values XZ
HDT at 66 psi	ASTM D648 Method B	104.4 °C (220 °F)	103.2 °C (218 °F)
HDT at 264 psi	ASTM D648 Method B	100.0 °C (212 °F)	99.7 °C (211 °F)
Physical Properties - Non Printed			
Property	**Test Method**	**Molded Plaques**	
Tg	ASTM D7426 Inflection Point	105.2 °C (221 °F)	
Specific Gravity	ASTM D792 at 23 °C	1.050	

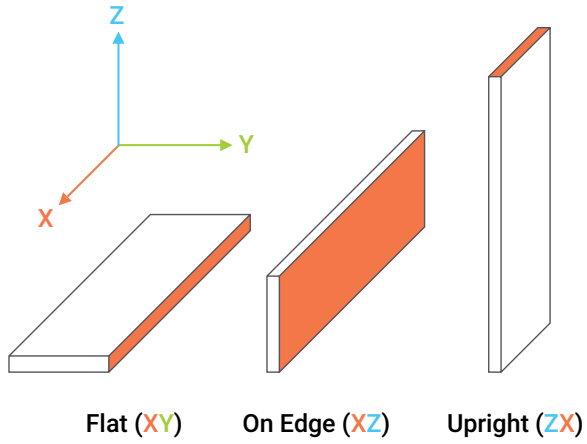
* Data is representative only and comes from ABS-M30

Mechanical Properties

Samples were printed with 0.25 mm (0.010 in.) layer height on the F870 with an N14 head. The mechanical properties are for reference only and meant to be representative. Mechanical properties are presented as minimum expected values for ABS Draft.

Print Orientation

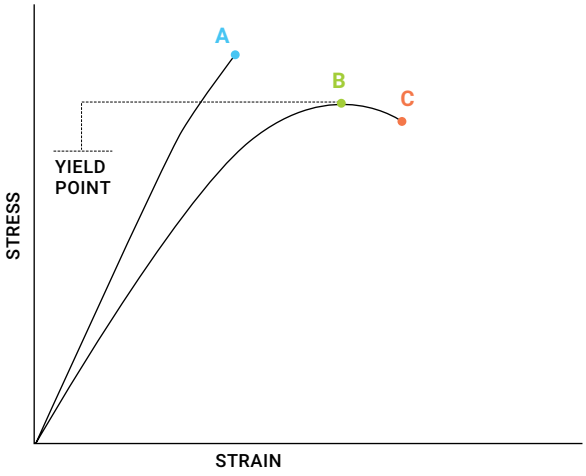
Parts created using FDM are anisotropic as a result of the printing process. Below is a reference of the different orientations used to characterize the material.



Flat (XY) **On Edge (XZ)** **Upright (ZX)**

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

Table 4: ABS Draft Mechanical Properties - F870 - N14 head

0.25 mm (0.010 in.) Layer Height		XZ Orientation	ZX Orientation
Tensile Properties: ASTM D638			
Yield Strength	MPa	26.0	18.5
	psi	3,780	2,680
Elongation at Yield	%	1.68	1.28
Strength at Break	MPa	22.1	18.3
	psi	3,200	2,650
Elongation at Break	%	3.60	1.28
Modulus (Elastic)	GPa	1.60	1.42
	ksi	232	206
Flexural Properties: ASTM D790, Procedure A			
Strength at Break	MPa	No Break	30.2
	psi	No Break	4,380
Strength at 5% Strain	MPa	46.5	-
	psi	6,740	-
Strain at Break	%	No Break	1.76
Modulus	GPa	1.74	1.47
	ksi	252	214

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