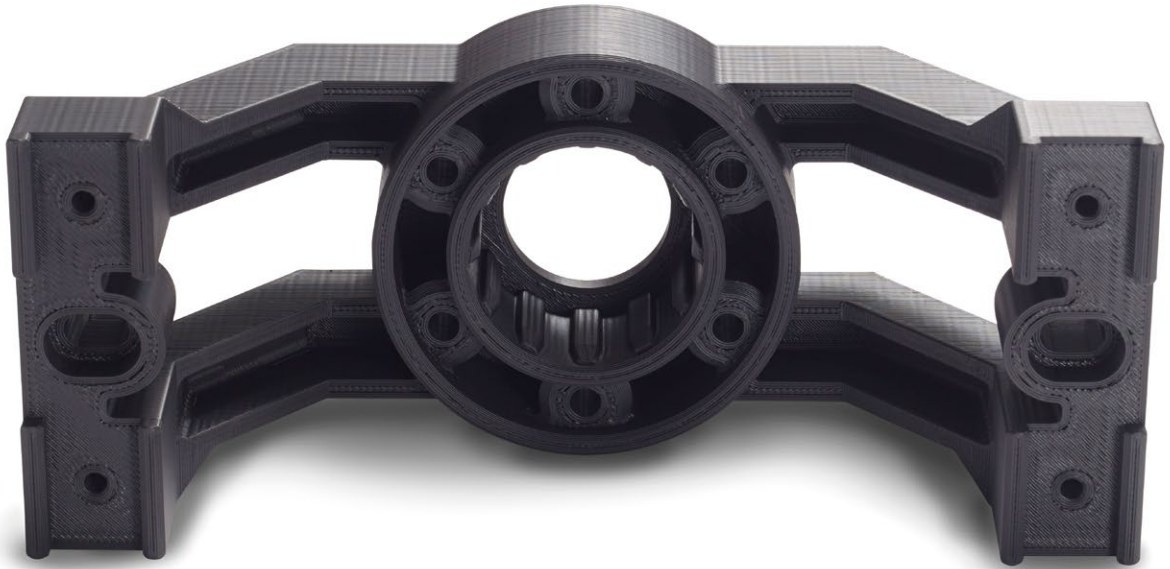


# Diran 410MF07



## **FDM Thermoplastic Filament** **Perfect for manufacturing** **tooling applications.**

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

Diran™ 410MF07 is a nylon-based thermoplastic FDM® material, mineral-filled 7% by weight. It demonstrates very good toughness and impact strength combined with resistance to hydrocarbon-based chemicals. Its smooth, lubricious surface quality offers low sliding resistance.

Typical applications include jigs, fixtures and other forms of general manufacturing tooling, and is particularly effective for applications needing a non-marring interface between the tool and the workpiece.

## Contents:

Overview .....	2
Ordering Information .....	3
Physical Properties .....	4
Mechanical Properties .....	5
Appendix .....	7

## Ordering Information

**3D Printer Compatibility:** F370™

**Support Material:** SUP4000B™

**Build Tray:** F370, High Temperature

**Table 1. Diran 410MF07 Thermoplastic Filament Ordering Information**

Part Number	Description
<b>Filament Canisters</b>	
333-90410	Diran 410MF07, 90 cu in, F123
333-60400	SUP4000B™, 60 cu in, F123
<b>Printer Consumables</b>	
123-00300	F370 Extrusion Head
123-00314-S	F370 Build Tray, High Temperature

## Physical Properties

Values are measured as printed. XY and XZ/ZX orientations were tested.

For full details refer to the [Stratasys Materials Test Procedure on www.stratasys.com](http://www.stratasys.com).

DSC and TMA curves can be found in the Appendix.

**Table 2. Diran 410MF07 Thermoplastic Filament Physical Properties**

Property	Test Method	Typical Values XY	Typical Values XZ/ZX
HDT @ 66psi	ASTM D648 Method B	90 °C (194 °F)	90 °C (194 °F)
HDT @ 264psi	ASTM D648 Method B	70 °C (158 °F)	70 °C (158 °F)
Tg	ASTM D7426 Inflection Point	117 °C (243 °F)	117 °C (243 °F)
Mean CTE	ASTM E831 (40 °C to 140 °C)	55 µm/[m·°C] (31 µin/[in·°F])	113 µm/[m·°C] (63 µin/[in·°F])
Volume Resistivity	ASTM D257	> 1.5*10 <sup>15</sup> Ω·cm	> 1.5*10 <sup>15</sup> Ω·cm
Dielectric Constant	ASTM D150 1 kHz test condition	3.58	3.73
Dielectric Constant	ASTM D150 2 MHz test condition	2.85	2.95
Dissipation Factor	ASTM D150 1 kHz test condition	0.013	0.014
Dissipation Factor	ASTM D150 2 MHz test condition	0.000	0.012
Specific Gravity	ASTM D792 @ 23 °C	1.16	1.16

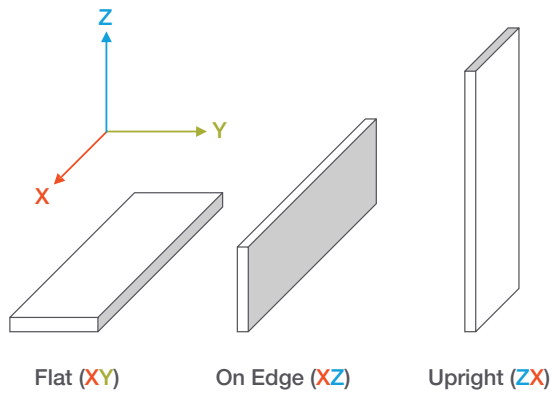
## Mechanical Properties

Samples were printed with 0.010 in. (0.254 mm) layer height.

For the full test procedure please see the Stratasys Materials Test Procedure on [www.stratasys.com](http://www.stratasys.com).

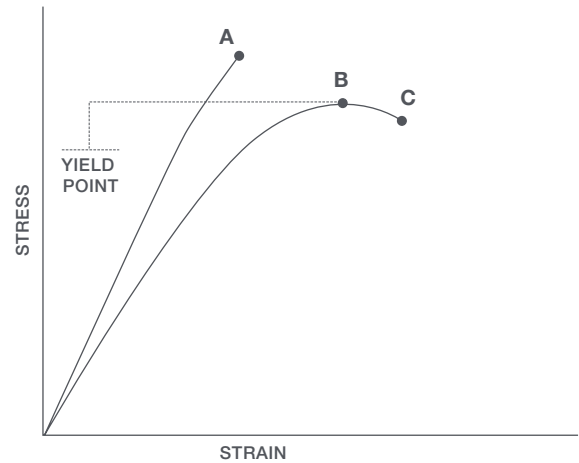
### Print Orientation

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

**Table 3. Diran 410MF07 Thermoplastic Filament Mechanical Properties**

		XZ Orientation <sup>(1)</sup>	ZX Orientation <sup>(1)</sup>
<b>Tensile Properties: ASTM D638</b>			
Yield Strength	MPa	45 (2)	No yield
	psi	6,490 (220)	No yield
Elongation @ Yield	%	4.26 (0.04)	No yield
Strength @ Break	MPa	40 (3)	30 (2)
	psi	5,860 (440)	4,460 (295)
Elongation @ Break	%	12 (3)	3.1 (1.0)
Modulus (Elastic)	GPa	1.69 (0.02)	1.46 (0.02)
	ksi	245 (3)	210 (3)
<b>Flexural Properties: ASTM D790, Procedure A</b>			
Strength @ Break	MPa	No break	45 (2)
	psi	No break	6,770 (325)
Strength @ 5% Strain	MPa	60 (2)	-
	psi	8,800 (230)	-
Strain @ Break	%	No break	3.1 (0.6)
Modulus	GPa	1.85 (0.04)	1.47 (0.07)
	ksi	270 (6)	210 (10)
<b>Compression Properties: ASTM D695</b>			
Yield Strength	MPa	75 (5)	160 (30)
	psi	10,980 (630)	23,560 (4330)
Modulus	GPa	1.54 (0.03)	1.45 (0.02)
	ksi	220 (4)	210 (3)
<b>Impact Properties: ASTM D256, ASTM D4812</b>			
Izod, Notched	J/m	380 (135)	27 (5)
	ft*lb/in	7 (3)	0.5 (0.1)
Izod, Unnotched	J/m	1,415 (200)	140 (25)
	ft*lb/in	25 (4)	2.6 (0.5)

(1) Values in parentheses are standard deviations

## Appendix

Figure 1. 2nd heating scan, DSC, for Diran 410MF07

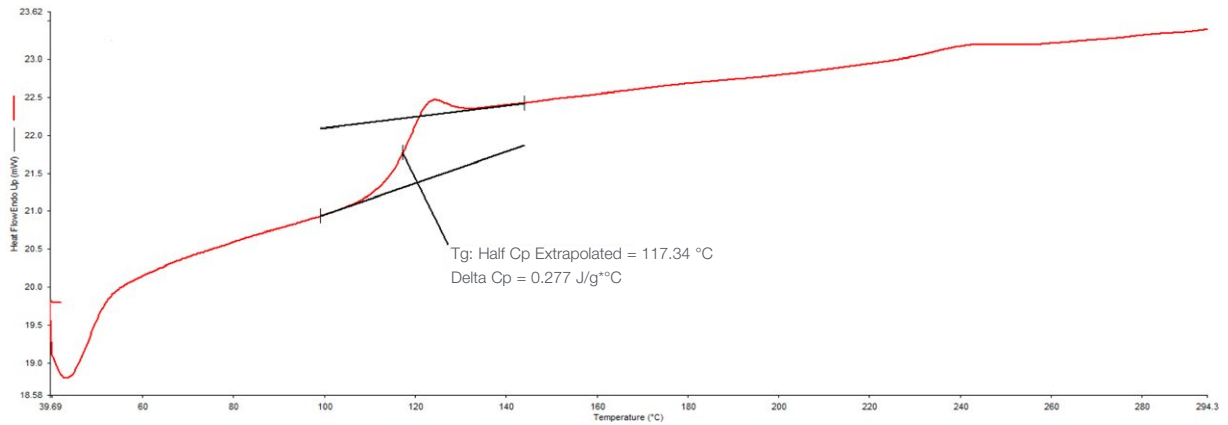
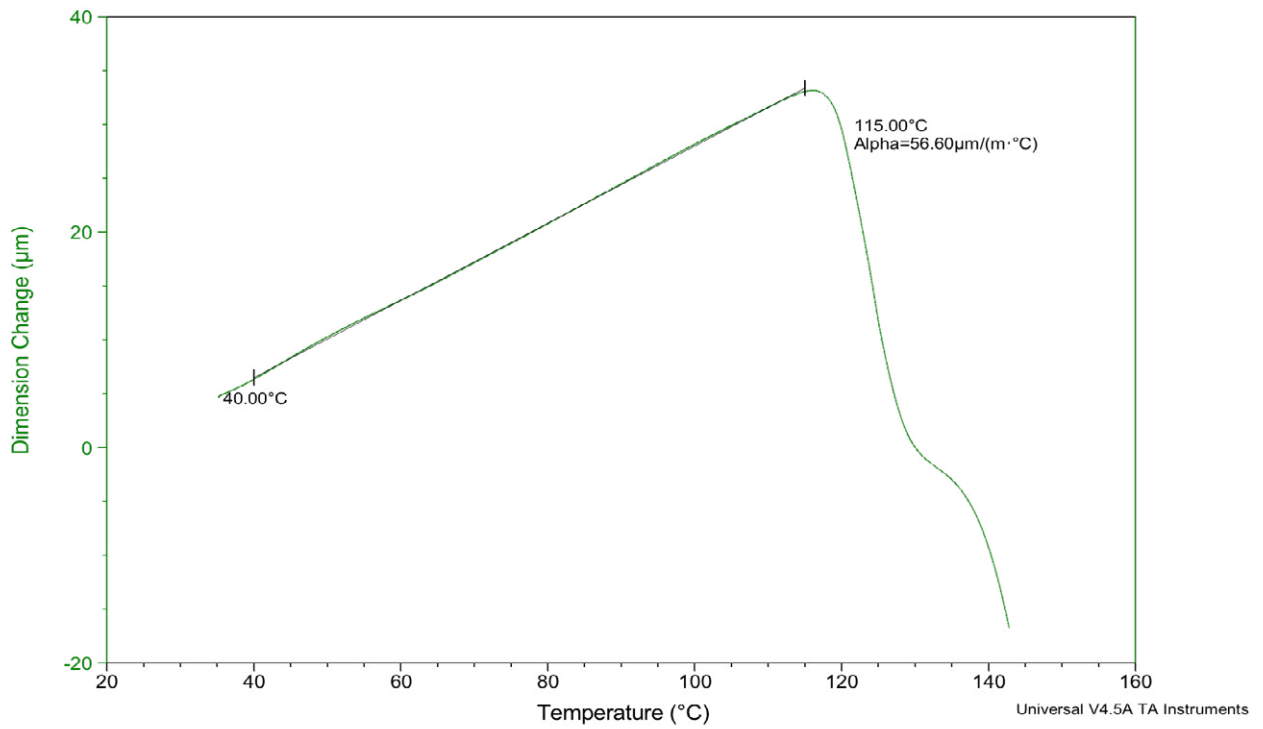


Figure 2. TMA CTE curve inplane with the layer

Sample: Flat-1  
Size: 6.3338 mm  
Method: Ramp  
Comment: RT-160C @ 3C/min

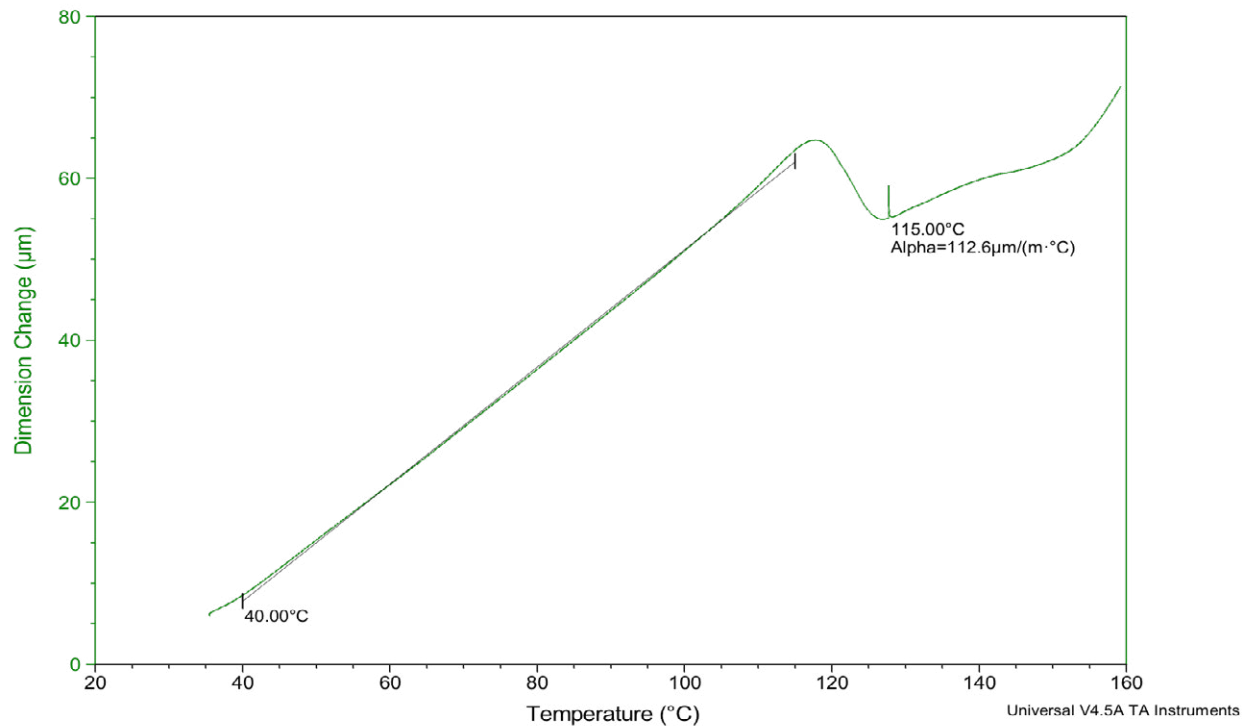
### TMA



**Figure 3. TMA CTE curve normal to the layer**

Sample: Side-1  
 Size: 6.4269 mm  
 Method: Ramp  
 Comment: RT-160C @ 3C/min

### TMA



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