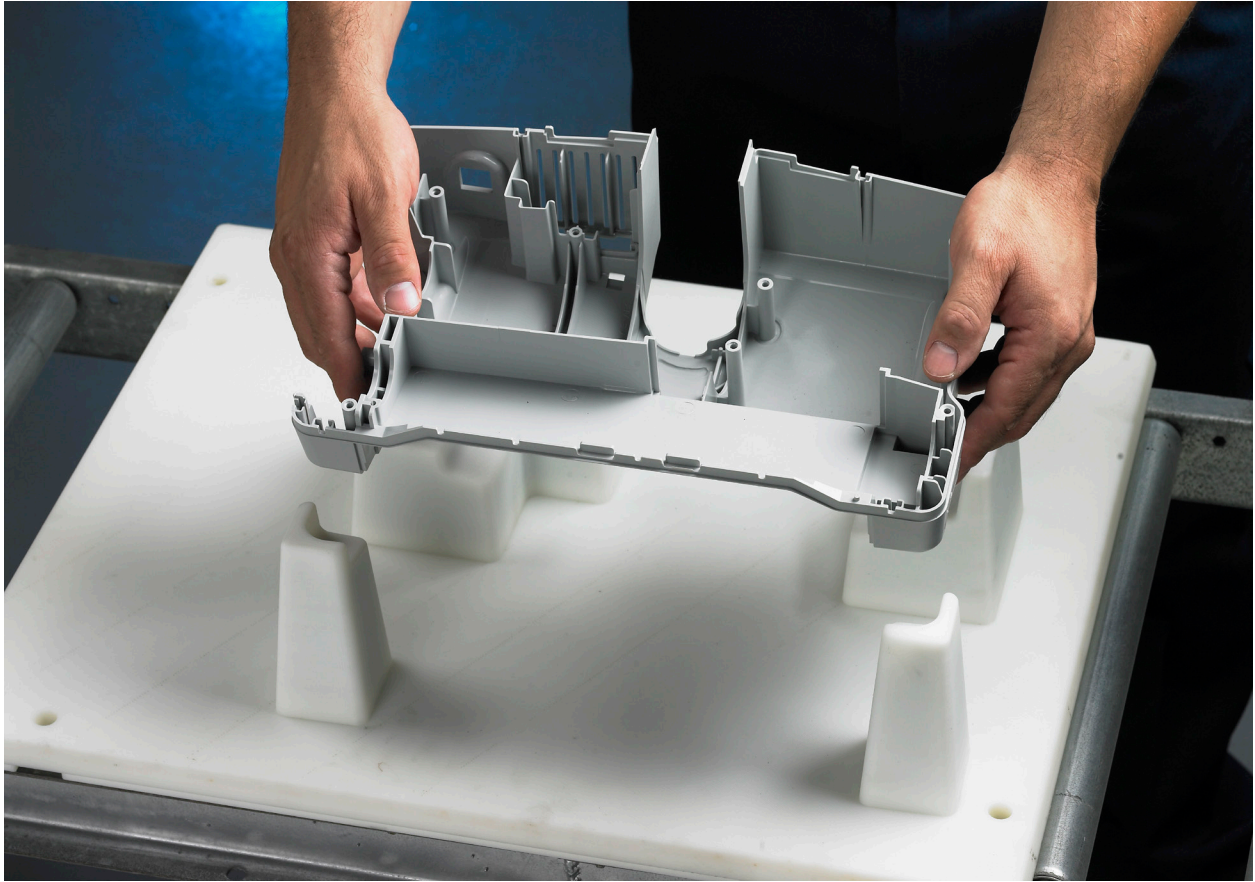
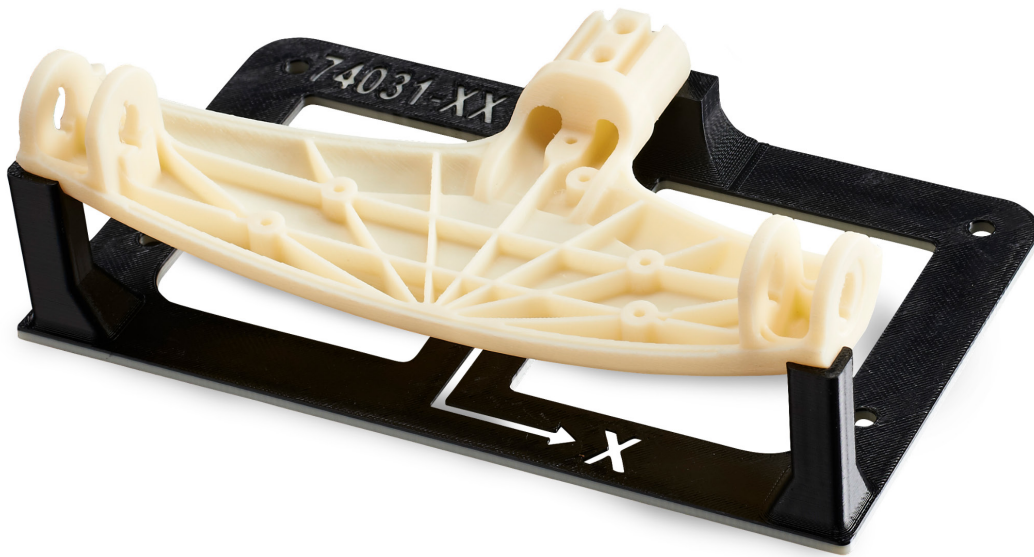


# ABS-M30



## 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

ABS-M30™ filament combines the design freedom of FDM® technology with the versatility and capability of ABS (acrylonitrile butadiene styrene). ABS is characterized by its strength and toughness, while being lightweight and resilient, suitable for most general-purpose 3D printing use cases.

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## Ordering Information

**Table 1. Printer and Support Material Compatibility**

Printer	Model Tip (Slice)		Support Material	Support Tip
F120™	F123 Head (7, 10, 13 slice)		SR-30 (soluble)	F123 Head (all slices)
F170™	F123 Head (5, 7, 10, 13 slice)		QSR Support™ (soluble)	F123 Head (all slices)
F190™CR	F123 Head (5, 7, 10, 13 slice)		QSR Support (soluble)	F123 Head (all slices)
F270™	F123 Head (5, 7, 10, 13 slice)		QSR Support (soluble)	F123 Head (all slices)
F370™	F123 Head (5, 7, 10, 13 slice)		QSR Support (soluble)	F123 Head (all slices)
F370@CR	F123 Head (5, 7, 10, 13 slice)		QSR Support (soluble)	F123 Head (all slices)
F770™	F123 Head (7, 10, 13 slice)		SR-30 (soluble)	F123 Head (all slices)
Fortus 450mc™	T10 (5 slice) T12 (7 slice)	T16 (10 slice) T20 (13 slice)	SR-30 / 35 (soluble)	T12SR30 (all slices)
Fortus 900mc™/F900™	T12 (7 slice) T16 (10 slice) T20 (13 slice)		SR-20 / 30 / 35 (soluble)	T12SR20 / 30 (all slices)

### Build Sheet

F123 Standard Build Trays

Low Temperature

- 0.02 x 26 x 38 in. (0.51 x 660 x 965 mm)
- 0.02 x 16 x 18.5 in. (0.51 x 406 x 470 mm)

F770 Build Sheets

- 0.01 x 30 x 41 in. (0.254 x 762 x 1041 mm)

**Table 2. Consumable Ordering Information**

Part Number	Description
<b>Printer Consumables</b>	
123-00402-S	F123 Standard Head (all layer heights)
511-10501	T10
511-10301	T12
511-10401	T16
511-10701	T20
511-10900	T12SR30
511-10901	T12SR20
123-00302-S	F120/F170 Build Tray
123-00303-S	F270/F190CR Build Tray, Standard
123-00304	F370/F370CR Build Tray, Standard
123-50100	F770 Build sheet, 0.01 x 30 x 41 in. (0.254 x 762 x 1041 mm), box of 20
325-00300	Low Temperature build sheet, 0.02x26x38 in. (0.51x660x965 mm)
325-00100	Low Temperature build sheet, 0.02x16x18.5 in. (0.51x406x470 mm)
310-00100	Low Temperature build sheet, 0.03x16x18.5 in. (0.76x406x470 mm)
355-00100	Low Temperature build sheet, 0.02x14x16.5 in (0.51x355x420 mm)

**Table 3. ABS-M30 Ordering Information**

Part Number	Description
<b>Filament Canisters<sup>1 2</sup></b>	
355-02110	ABS-M30 (Ivory), 92.3 cu in - Plus
355-02111	ABS-M30 (White), 92.3 cu in - Plus
355-02112	ABS-M30 (Black), 92.3 cu in - Plus
355-02113	ABS-M30 (Gray), 92.3 cu in - Plus
355-02114	ABS-M30 (Red), 92.3 cu in - Plus
355-02115	ABS-M30 (Blue), 92.3 cu in - Plus
355-02116	ABS-M30 (Nectarine), 92.3 cu in - Plus
355-02117	ABS-M30 (Yellow), 92.3 cu in - Plus
355-08110	ABS-M30 (Ivory), 184 cu in - Plus
355-08112	ABS-M30 (Black), 184 cu in - Plus
355-02120	ABS-M30i, 92.3 cu in - Plus
360-50110	ABS-M30 (Ivory), 500 cu in - Xtend
360-50211	ABS-M30 (Black), 500 cu in - Xtend
333-60300	ABS-M30 (Ivory), 60 cu in - F123
333-60301	ABS-M30 (Black), 60 cu in - F123
333-60302	ABS-M30 (White), 60 cu in - F123
333-60303	ABS-M30 (Red), 60 cu in - F123
333-60304	ABS-M30 (Blue), 60 cu in - F123
333-60305	ABS-M30 (Green), 60 cu in - F123
333-60306	ABS-M30 (Yellow), 60 cu in - F123
333-60307	ABS-M30 (Orange), 60 cu in - F123
333-60308	ABS-M30 (Dark Gray), 60 cu in - F123
333-90300	ABS-M30 (Ivory), 90 cu in - F123
333-90301	ABS-M30 (Black), 90 cu in - F123
333-90302	ABS-M30 (White), 90 cu in - F123
333-90308	ABS-M30 (Dark Gray), 90 cu in - F123
311-20000	ABS-M30 (Ivory) 92.3 cu in - Classic
311-20018	ABS-M30 (Natural) 184 cu in - Classic
311-20100	ABS-M30 (White) 92.3 cu in - Classic
311-20200	ABS-M30 (Black) 92.3 cu in - Classic
311-20218	ABS-M30 (Black) 184 cu in - Classic
311-20300	ABS-M30 (Gray) 92.3 cu in - Classic
311-20400	ABS-M30 (Red) 92.3 cu in - Classic
311-20500	ABS-M30 (Blue) 92.3 cu in - Classic
311-21400	ABS-M30i, 92.3 cu in - Classic
331-20307	ABS (Black), 200 cu in., long lead - F770
355-03110	SR-30 Soluble Support, 92.3 cu in - Plus
360-53110	Xtend SR-30 Soluble Support, 500 cu in - Plus
310-30500	SR-20 Soluble Support, 92.3 cu in - Classic
311-30200	SR-30 Soluble Support, 92.3 cu in - Classic
331-20200	SR-30 Soluble Support, 200 cu in - F120
331-20207	SR30 Soluble Support, 200 cu in., long lead - F770
355-03135	SR-35 Soluble Support, 92.3 cu in - Plus
311-30235	SR-35 Soluble Support, 92.3 cu in - Classic
333-63500	QSR Soluble Support, 60 cu in - F123

<sup>1</sup> Classic canisters are compatible with all Fortus 900mc printers prior to s/n L502.

<sup>2</sup> Plus canisters are compatible with all Fortus 450mc, all Stratasys F900, and Fortus 900mc printers s/n L502 and up.

## Physical Properties

Values are measured as printed. XY, XZ, and ZX orientations were tested. For full details refer to the [Stratasys Materials Test Report](#) (immediate download upon clicking the link). DSC and TMA curves can be found in the Appendix.

**Table 4. ABS-M30 Physical Properties**

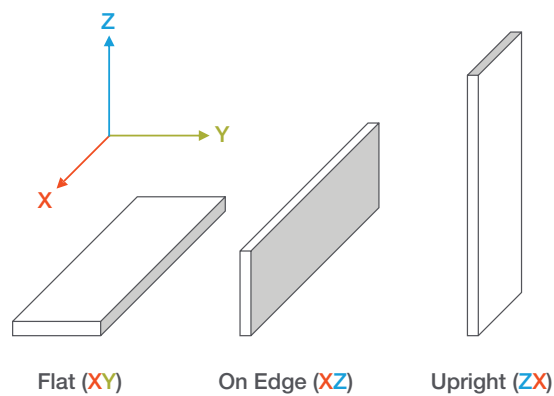
Property	Test Method	Typical Values	
		XY	XZ/ZX
HDT @ 66 psi	ASTM D648 Method B	103.8 C (218.9 F)	
HDT @ 264 psi	ASTM D648 Method B	99.9 C (211.7 F)	
Tg	ASTM D7426 Inflection Point	105.2 C (221.4 F)	
Mean CTE	ASTM E831 (40 °C to 140 °C)	60.77 $\mu\text{m}/[\text{m}^{\circ}\text{C}]$ (33.76 $\mu\text{in.}/[\text{in.}^{\circ}\text{F}]$ )	
Mean CTE	ASTM E831 (40 °C to 80 °C)	58.65 $\mu\text{m}/[\text{m}^{\circ}\text{C}]$ 32.58 $\mu\text{in.}/[\text{in.}^{\circ}\text{F}]$	
Volume Resistivity	ASTM D257	> 6.75*10 <sup>14</sup> $\Omega^{\circ}\text{cm}$	
Dielectric Constant	ASTM D150 1 kHz test condition	2.64	2.78
	ASTM D150 2 MHz test condition	2.49	2.61
Dissipation Factor	ASTM D150 1 kHz test condition	0.003	0.005
	ASTM D150 2 MHz test condition	0.004	0.007
Specific Gravity	ASTM D257 @23 °C	1.05	

## Mechanical Properties

ABS-M30 black samples were printed with 0.010 in. (0.254 mm) layer heights on the F900 and F770. For the full test procedure please see the [Stratasys Materials Test Procedure](#) (immediate download upon clicking the link).

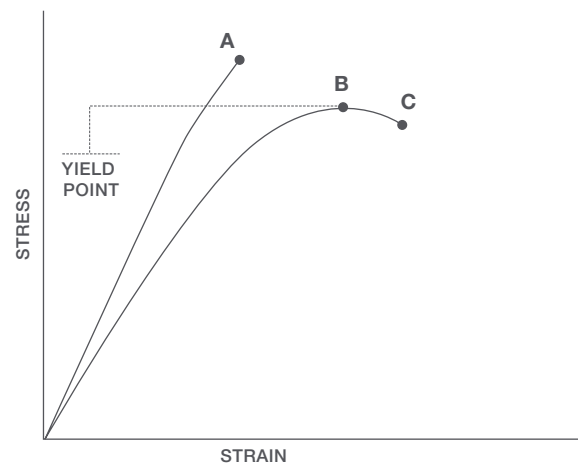
### Print Orientation

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 5. ABS-M30 Mechanical Properties (F900 - T16 Tip)**

		XZ Orientation <sup>1</sup>	ZX Orientation <sup>1</sup>
<b>Tensile Properties: ASTM D638</b>			
Yield Strength	MPa	30.8 (0.85)	27.5 (0.28)
	psi	4470 (120)	3990 (41)
Elongation @ Yield	%	1.8 (0.043)	1.7 (0.13)
Strength @ Break	MPa	28.1 (0.58)	26.8 (0.84)
	psi	4080 (84)	3890 (120)
Elongation @ Break	%	8.1 (1.5)	1.8 (0.31)
Modulus (Elastic)	GPa	2.40 (0.080)	2.30 (0.16)
	ksi	349 (12)	334 (23)
<b>Flexural Properties: ASTM D790, Procedure A</b>			
Strength @ Break	MPa	No break	47.7 (2.2)
	psi	No break	6910 (320)
Strength @ 5% Strain	MPa	58.7 (0.54)	-
	psi	8510 (78)	-
Strain @ Break	%	No break	3.4 (0.22)
Modulus	GPa	2.22 (0.037)	1.96 (0.064)
	ksi	323 (5.4)	284 (9.3)
<b>Compression Properties: ASTM D695</b>			
Yield Strength	MPa	88.3 (3.0)	208 (15)
	psi	12800 (440)	30100 (2200)
Modulus	GPa	2.20 (0.11)	2.16 (0.092)
	ksi	319 (17)	314 (13)
<b>Impact Properties: ASTM D256, ASTM D4812</b>			
Notched	J/m	101 (9.9)	32.2 (3.0)
	ft*lb/in.	1.89 (0.19)	0.603 (0.057)
Unnotched	J/m	291 (57)	103 (30)
	ft*lb/in.	5.45 (1.1)	1.93 (0.57)

(1) Values in parentheses are standard deviations.

**Table 6. ABS-M30 Mechanical Properties (F770)**

		XZ Orientation <sup>1</sup>	ZX Orientation <sup>1</sup>
<b>Tensile Properties: ASTM D638</b>			
Yield Strength	MPa	32.5 (1.7)	23.1 (1.3)
	psi	4720 (250)	3350 (190)
Elongation @ Yield	%	2.1 (0.1)	1.6 (0.2)
Strength @ Break	MPa	27.6 (2.4)	22.9 (1.2)
	psi	4000 (350)	3310 (170)
Elongation @ Break	%	4.5 (1.2)	1.6 (0.2)
Modulus (Elastic)	GPa	2.00 (27)	1.78 (29)
	ksi	290 (3.9)	258 (4.1)
<b>Flexural Properties: ASTM D790, Procedure A</b>			
Strength @ Break	MPa	No Break	37.8 (4.1)
	psi	No Break	5480 (590)
Strength @ 5% Strain	MPa	58.1 (2.2)	-
	psi	8430 (320)	-
Strain @ Break	%	No Break	2.2 (0.3)
Modulus	GPa	2.17 (0.03)	1.84 (0.06)
	ksi	315 (4.9)	267 (8.1)
<b>Impact Properties: ASTM D256, ASTM D4812</b>			
Notched	J/m	91.0 (17)	21.7 (3.7)
	ft*lb/in	1.71 (0.31)	0.406 (0.07)
Unnotched	J/m	423 (96)	62.9 (134)
	ft*lb/in	7.92 (1.8)	1.18 (0.3)

(1) Values in parentheses are standard deviations.



# Appendix

Figure 1. 2nd heating scan DSC data for the ABS-M30 Black Flat (XY) sample.

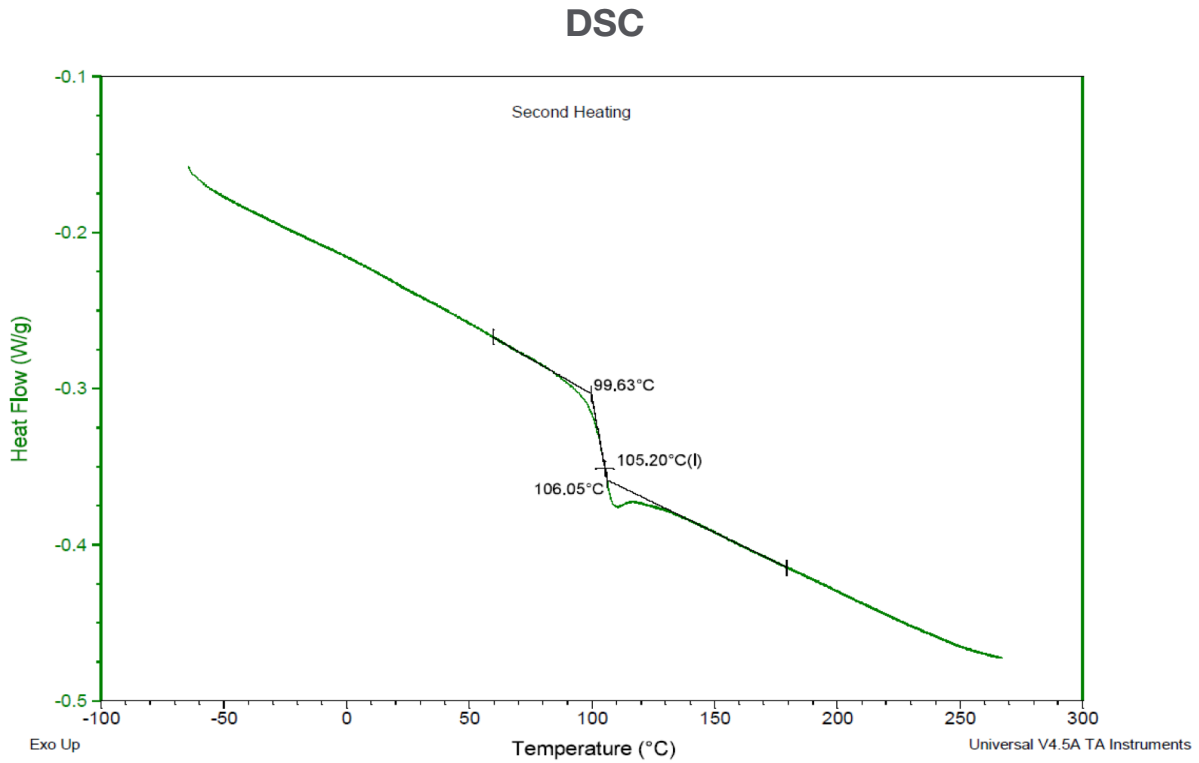


Figure 2. Dimension change data as a function of temperature for the ABS-M30 Black Flat (XY) sample.

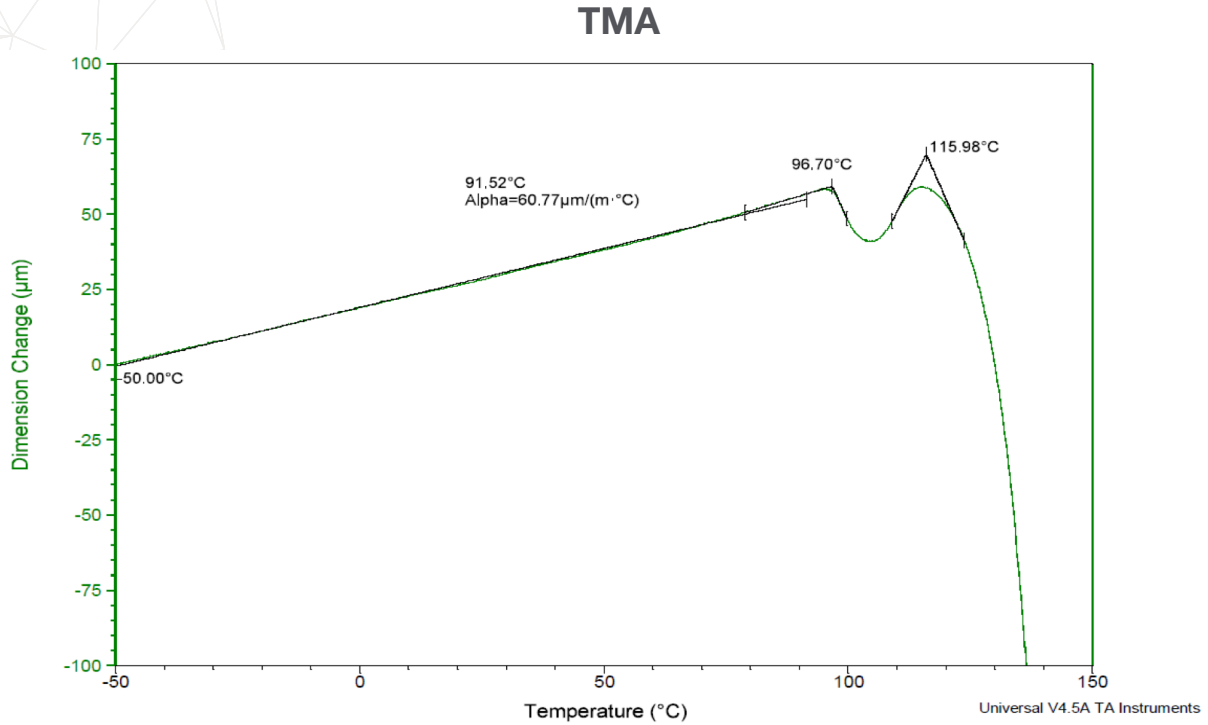


Figure 3. Dimension change data as a function of temperature for the ABS-M30 Black On Edge (XZ) sample.

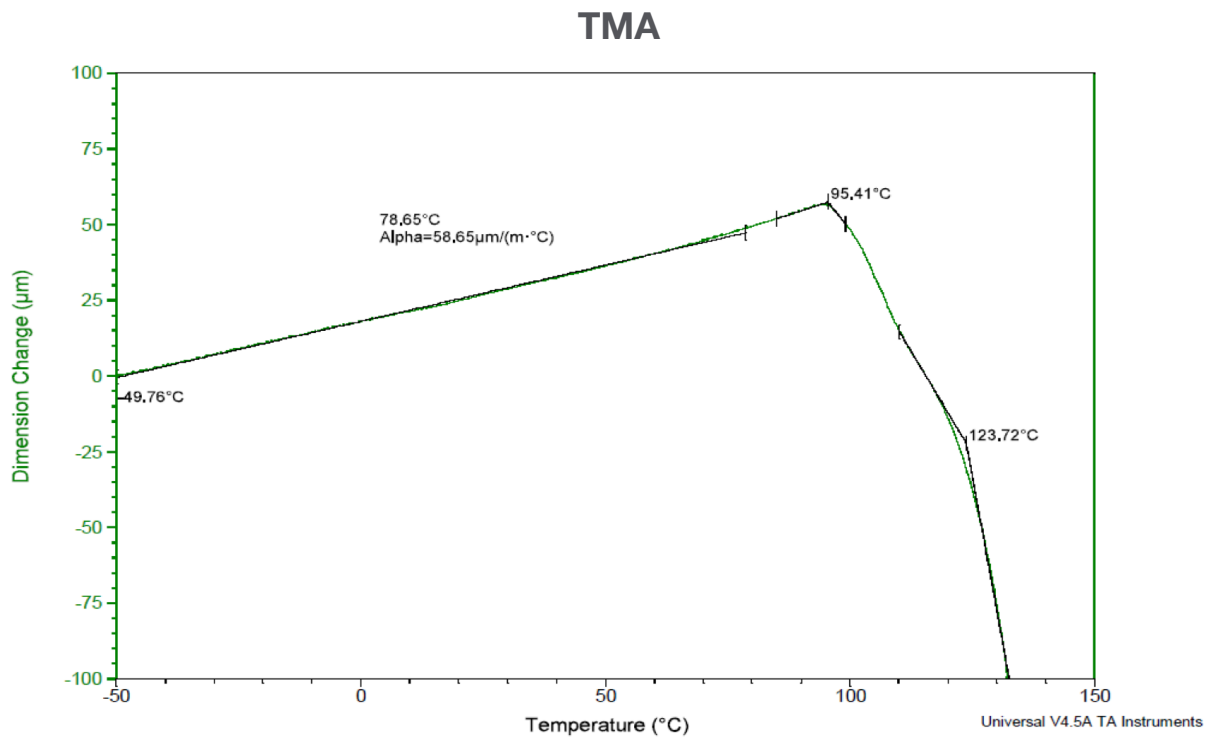
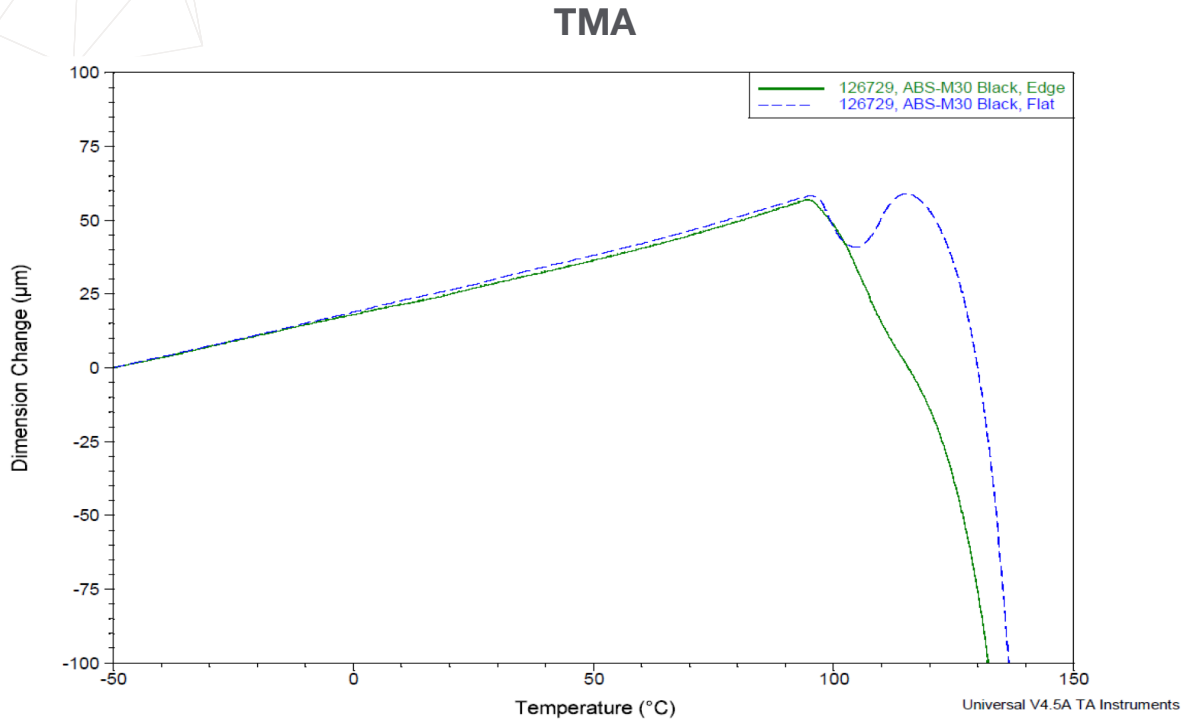


Figure 4. Overlay of the dimension change data for the Flat (XZ) and On Edge (XY) ABS-M30 Black samples.



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