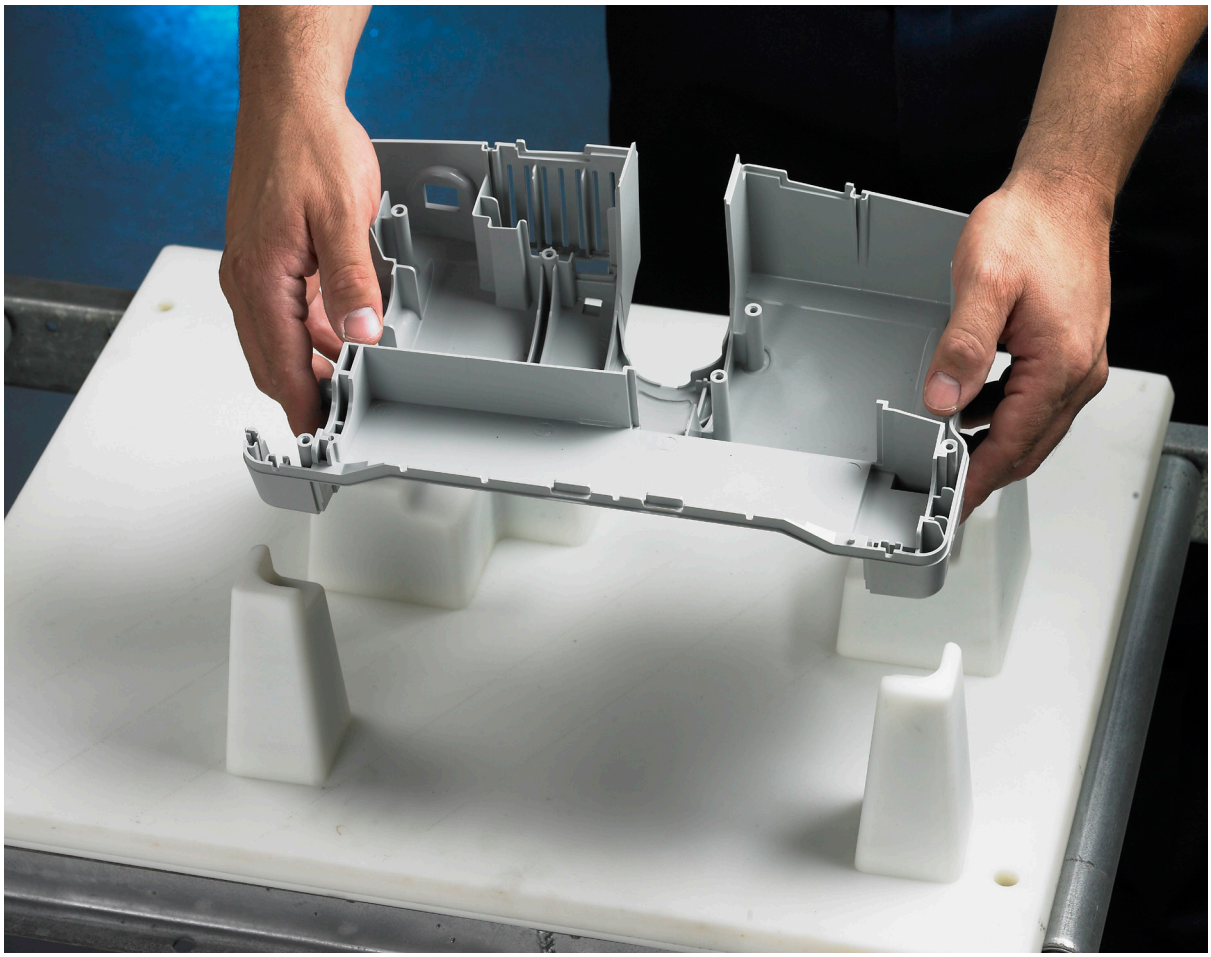
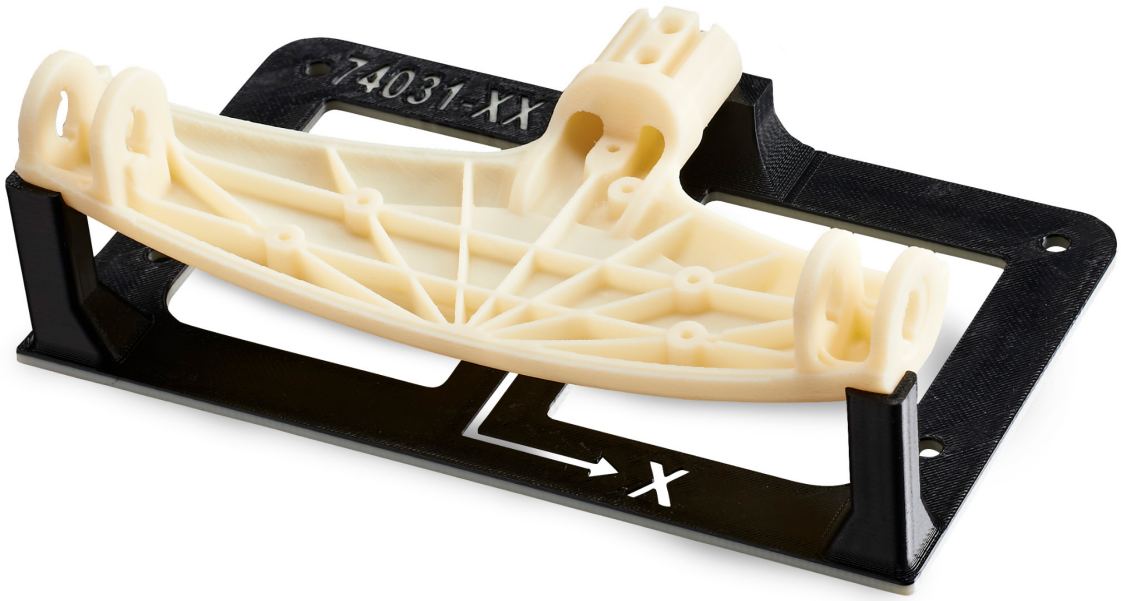
# ABS-M30



## 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.

## Contents:

# 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) |
| 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) |
| Fortus 360mc™ | T10 (5 slice)<br>T12 (7 slice)<br>T16 (10 slice)<br>T20 (13 slice) | SR-20 / 30 / 35 (soluble) | T12SR20/30 (all slices) |
| Fortus 400mc™ | T10 (5 slice)<br>T12 (7 slice)<br>T16 (10 slice)<br>T20 (13 slice) | SR-20 / 30 / 35 (soluble) | T12SR20 / 30 (all slices) |
| Fortus 380mc™/450mc™ | T10 (5 slice)<br>T12 (7 slice)<br>T16 (10 slice)<br>T20 (13 slice) | SR30 / 35 (soluble) | T12SR30 (all slices) |
| Fortus 900mc™/F900™ | T10 (5 slice)<br>T12 (7 slice)<br>T16 (10 slice)<br>T20 (13 slice) | SR30 / 35 (soluble) | T12SR30 (all slices) |

### Build Sheet

Low Temperature

- 0.02 x 26 x 38 in.
- 0.02 x 16 x 18.5 in.
- 0.02 x 14 x 16.5 in

### Table 2. Consumable Ordering Information

| Part Number | Description |
|---|---|
| **Printer Consumables** | |
| 123-00401-S | F370 Extrusion Head, all layer heights |
| 511-10501 | T10 tip |
| 511-10301 | T12 tip |
| 511-10401 | T16 tip |
| 511-10701 | T20 tip |
| 511-10900 | T12SR30 tip |
| 123-00302-S | F170 Build Tray, Standard |
| 123-00303 | F270 Build Tray, Standard |
| 123-00304 | F370 Build Tray, Standard |
| 325-00300 | Low Temperature build sheet, 0.2 x 26 x 38 in. (0.76 x 660 x 965 mm) |
| 325-00100 | Low Temperature build sheet, 0.2 x 16 x 18.5 in. (0.76 x 406 x 470 mm) |

### Table 3. ABS-M30 Ordering Information

| Part Number | Description |
|---|---|
| **Filament Canisters** [1] [2] | |
| 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 |
| 355-08110 | 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 |
| 355-03110 | SR-30 Soluble Support, 92.3 cu in. - Plus |
| 360-53110 | Xtend SR-30 Soluble Support, 500 cu in. - Plus |
| 311-30200 | SR-30 Soluble Support, 92.3 cu in. - Classic |
| 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 |
| 355-03140 | SR-20 Soluble Support, 92.3 cu in - Plus |
| 310-30500 | SR-20 Soluble Support, 92.3 cu in - Classic |

[1] Classic canisters are compatible with all Fortus 400mc and Fortus 900mc printers prior to s/n L502.

[2] 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**

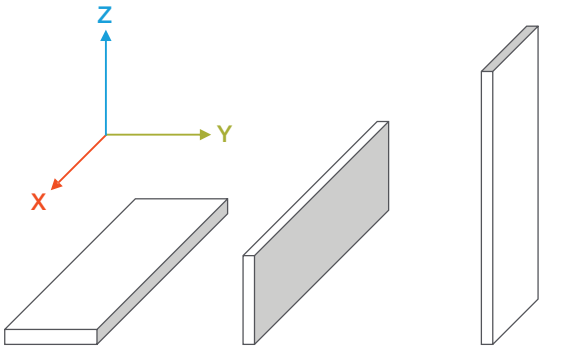
| Property | Test Method | Typical Values | |
|---|---|---|---|
| | | XY | XZ/ZX |
| HDT @ 66 psi | ASTM D648<br>Method B | 104 °C (220 °F) | |
| HDT @ 264 psi | ASTM D648<br>Method B | 100 °C (212 °F) | |
| Tg | ASTM D7426<br>Inflection Point | 105 °C (221 °F) | |
| Mean CTE | ASTM E831<br>(40 °C to 140 °C) | 60 µm/[m*°C] (33.33 µin./[in.*°F]) | |
| Volume Resistivity | ASTM D257 | > 6.78*10^14 Ω*cm | |
| Dielectric Constant | ASTM D150<br>1 kHz test condition | 2.64 | 2.78 |
| Dielectric Constant | ASTM D150<br>2 MHz test condition | 2.49 | 2.61 |
| Dissipation Factor | ASTM D150<br>1 kHz test condition | 0.003 | 0.005 |
| Dissipation Factor | ASTM D150<br>2 MHz test condition | 0.004 | 0.007 |
| Specific Gravity | ASTM D257<br>@23 °C | 1.05 | |

# Mechanical Properties

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

## Print Orientation

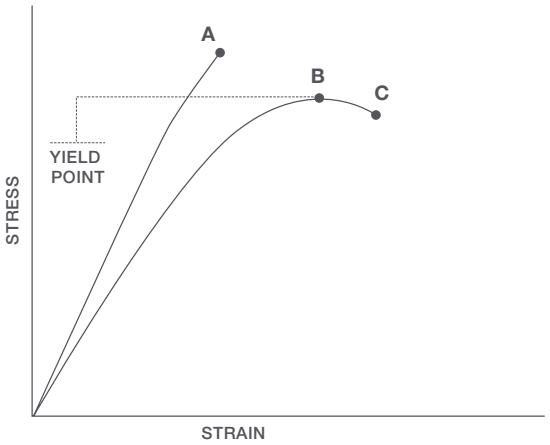
Parts created using FDM are anisotropic as a result of the printing process. Below is a reference of the different orientations used to characterize the material.




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 5. ABS-M30 Mechanical Properties

| | | XZ Orientation[1] | ZX Orientation[1] |
|---|---|---|---|
| **Tensile Properties: ASTM D638** | | | |
| Yield Strength | MPa | 30 (1) | 30 (1) |
| | psi | 4470 (120) | 3990 (40) |
| Elongation @ Yield | % | 1.78 (0.04) | 1.7 (0.1) |
| Strength @ Break | MPa | 28 (1) | 25 (1) |
| | psi | 4080 (85) | 3890 (120) |
| Elongation @ Break | % | 8 (1) | 1.8 (0.3) |
| Modulus (Elastic) | GPa | 2.4 (0.1) | 2.3 (0.2) |
| | ksi | 350 (10) | 330 (20) |
| **Flexural Properties: ASTM D790, Procedure A** | | | |
| Strength @ Break | MPa | No break | 50 (2) |
| | psi | No break | 6910 (320) |
| Strength @ 5% Strain | MPa | 60 (1) | - |
| | psi | 8510 (80) | - |
| Strain @ Break | % | No break | 3.4 (0.2) |
| Modulus | GPa | 2.22 (0.03) | 1.96 (0.06) |
| | ksi | 320 (5) | 280 (10) |
| **Compression Properties: ASTM D695** | | | |
| Yield Strength | MPa | 90 (3) | 210 (15) |
| | psi | 12800 (440) | 30120 (2210) |
| Modulus | GPa | 2.2 (0.1) | 2.16 (0.09) |
| | ksi | 320 (15) | 310 (10) |
| **Impact Properties: ASTM D256, ASTM D4812** | | | |
| Notched | J/m | 100 (10) | 30 (3) |
| | ft*lb/in. | 1.9 (0.2) | 0.60 (0.06) |
| Unnotched | J/m | 290 (60) | 100 (30) |
| | ft*lb/in. | 5 (1) | 1.9 (0.6) |

(1) Values in parentheses are standard deviations.

# Appendix

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

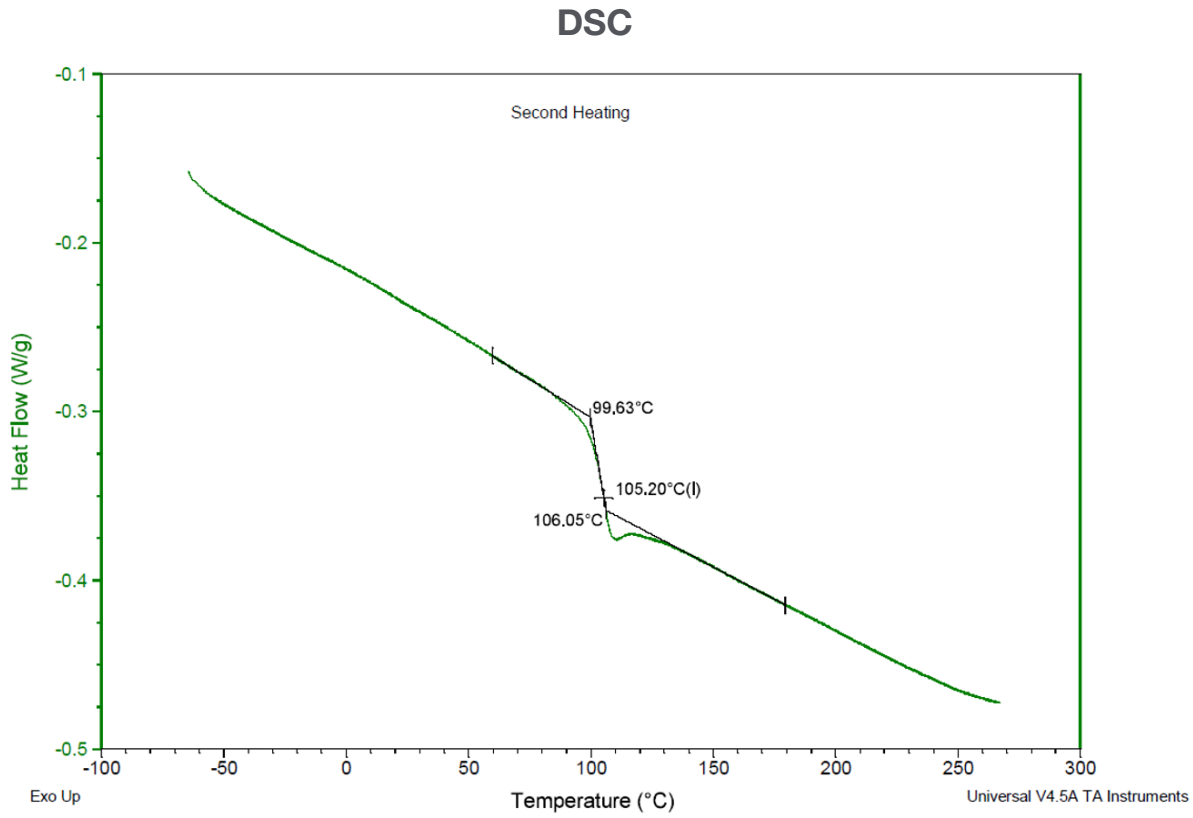


Figure 2. Dimension change data as a function of temperature for the ABS-M30 Black Flat (XY) sample.

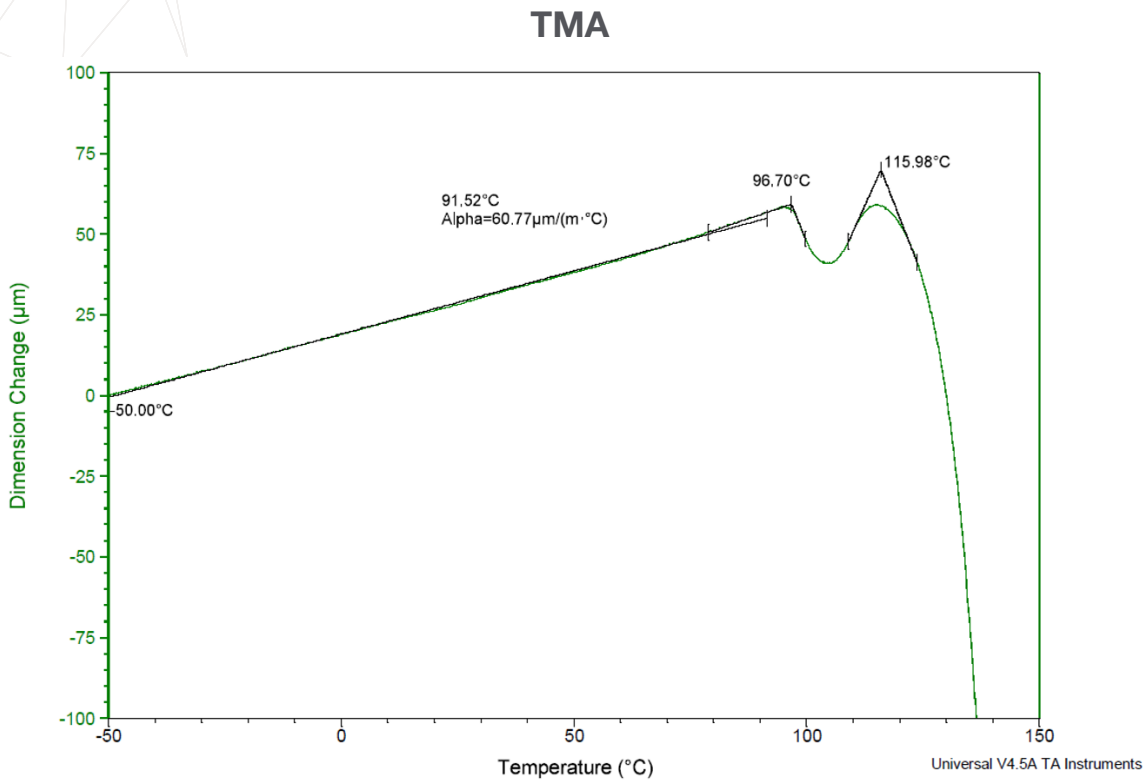



Figure 3. Dimension change data as a function of temperature for the ABS-M30 Black On Edge (XZ) sample.

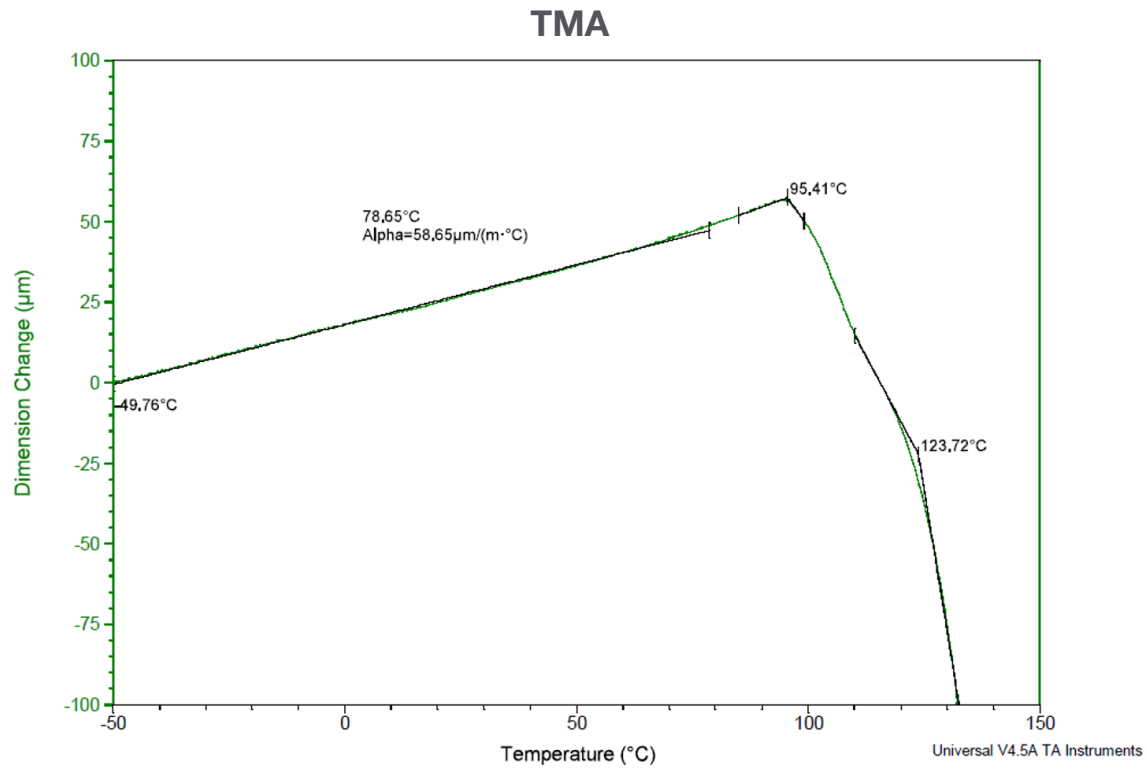
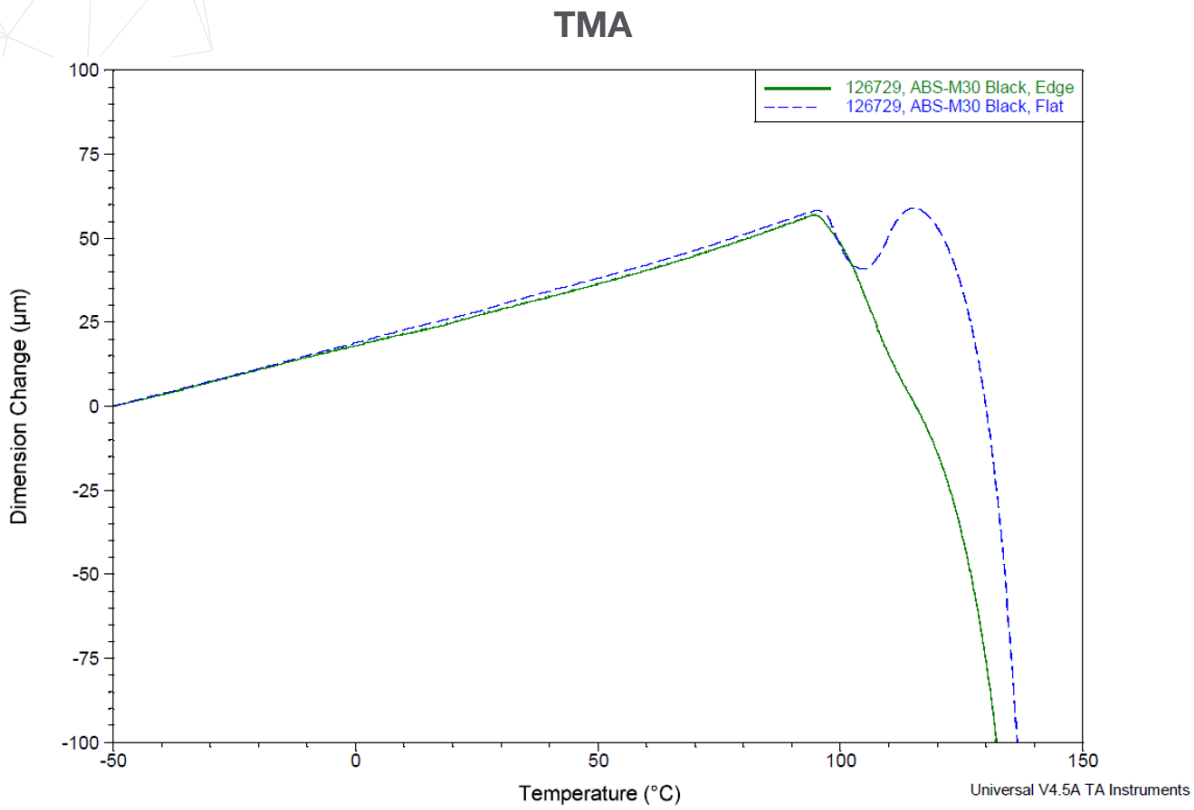


**Figure 4. Overlay of the dimension change data for the Flat (XY) and On Edge (XZ) ABS-M30 Black samples.**




**Stratasys Headquarters**

7665 Commerce Way,
Eden Prairie, MN 55344
+1 800 801 6491 (US Toll Free)
+1 952 937-3000 (Intl)
+1 952 937-0070 (Fax)

1 Holtzman St., Science Park,
PO Box 2496
Rehovot 76124, Israel
+972 74 745 4000
+972 74 745 5000 (Fax)

stratasys.com
ISO 9001:2015 Certified