# Essentium ABS MG94
# TECHNICAL DATA SHEET

## ESSENTIUM ABS MG94

Essentium ABS MG94 filament made with SABIC CYCOLAC™ MG94 resin is a premium grade of ABS designed for high speed prints with excellent surface finish and balanced mechanical properties. Acrylonitrile butadiene styrene (ABS) is an amorphous terpolymer with outstanding impact resistance and toughness which makes it a good choice for cost-effective functional prototypes, equipment enclosures, general purpose jigs and fixtures, and automotive components.

### MECHANICAL PROPERTIES

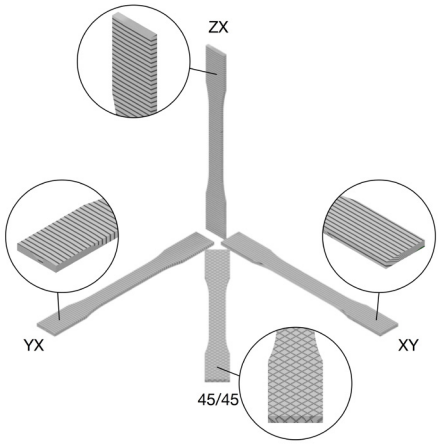
| Metric | Test Method | Print Orientation | | | |
|---|---|---|---|---|---|
| | | XY | 45/45 | YX | ZX |
| Ultimate Tensile Strength, MPa | ISO 527-2 | 37.1 (0.4) | 33.8 (0.9) | 32.7 (0.6) | 27.2 (0.5) |
| Tensile Modulus, GPa | ISO 527-2 | 2.34 (0.03) | 2.20 (0.05) | 2.31 (0.04) | 2.24 (0.02) |
| Strain at Break, % | ISO 527-2 | 4.5 (1.9) | 2.6 (0.4) | 3.8 (0.4) | 1.5 (0.2) |
| Flexural Strength, MPa | ISO 178 | 67.5 (0.6) | 61.3 (0.8) | 54.5 (1.4) | 47.6 (3.1) |
| Flexural Modulus, GPa | ISO 178 | 2.37 (0.02) | 2.06 (0.06) | 2.23 (0.08) | 2.17 (0.05) |
| Izod Impact Strength, Notched kJ/m$^2$ | ISO 180 | 17.0 (0.3)-H | 12.5 (0.9)-H | 4.3 (0.6)-C | 3.3 (0.4)-C |

Standard deviations listed in parentheses

### MATERIAL PROPERTIES[1]

| Property | Method | Value |
|---|---|---|
| Density, g/cm$^3$ | ISO 1183 | 1.04 |
| HDT @ 0.45 MPa, ˚C | ISO 75 | 91 |
| HDT @ 1.8 MPa, ˚C | ISO 75 | 76 |
| Relative Temperature Index, ˚C | UL 746B | 60 |
| Vicat Softening Temp, Rate B/50, ˚C | ISO 306 | 98 |

1 Values taken from raw material TDS






Version 1.1
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## MATERIAL HANDLING AND DRYING

Essentium ABS MG94 is a hygroscopic thermoplastic and will absorb moisture from humid air. Keep the material in the vacuum sealed packaging until you are ready to print with it. ABS filament should always be fed to the printer in a dry container and stored in a dry cabinet. If the material does absorb more than 200ppm moisture, it should be dried in a low dew point (< -40˚C) oven or vacuum oven at 80 – 90˚C for 2 – 4 hours. Avoid touching filament with bare fingers or introducing oils to the filament prior to printing.

| RECOMMENDED HSE PRINT SETTINGS | | | |
|---|---|---|---|
| **0.4mm Hozzle** | | | |
| Extrusion Width, mm | 0.4 – 0.5 | Hozzle Temperature, ˚C | 240 – 440 |
| Layer Height, mm | 0.2 – 0.25 | Bed Temperature, ˚C | 100 – 110 |
| Print Speed, mm/s | 50 – 500 | IR Temperature, ˚C | 60 – 70 |
| Infill, % | 15 – 75 | Fan Speed, % | 0 – 30 |
| **0.8mm Hozzle** | | | |
| Extrusion Width, mm | 0.7 – 0.9 | Hozzle Temperature, ˚C | 240 – 420 |
| Layer Height, mm | 0.3 – 0.35 | Bed Temperature, ˚C | 100 – 110 |
| Print Speed, mm/s | 20 – 200 | IR Temperature, ˚C | 60 – 70 |
| Infill, % | 15 – 75 | Fan Speed, % | 0 – 30 |

| RECOMMENDED FDM PRINT SETTINGS | | | |
|---|---|---|---|
| Nozzle Temperature, ºC | 250 – 270 | Fan Speed, % | 25 – 50 |
| Bed Temperature, ºC | 70 – 80 | Bed Material | G-10/FR4 or Glass |
| Print Speed, mm/s | 40 – 80 | Bed Adhesion Method | Dimafix® or Magigoo® HT |
| First Layer Speed, mm/s | 20 – 40 | Infill Density, % | <75 |

## KEY FEATURES:

- General purpose material
- Best-in-class printability
- Good ductility
- Good electrical properties
- Good paintability and platability

## APPLICATIONS INCLUDE:

- Jigs and fixtures
- Prototypes
- Automotive ducting
- Project enclosures

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