IEMAI®

3D printing solutions for high performance materials

ABS Technical Data Sheet (TDS)

Acrylonitrile-Butadiene-Styrene (ABS) is a thermoplastic polymer material which have high strength, high rigidity and easy to process. Due to its strong physical characteristic, thermal resistance, and chemical resistance, it is commonly used as the plastic shell for apparatus. However, ABS will have its mechanical strength weaker and discoloration after exposed to weather conditions (UV light, oxygen, moisture, heat) because Polybutadiene stimulate the oxidation of Polystyrene. UV stabilizer can be introduced to improve this.

IEMAI 3D high performance ABS filament is based on FFF/FDM technology, with a diameter of 1.75mm, 220-260ºC printing temperatures and 90-100ºC hotbed temperatures; allow it to have excellent inter-layer adhesion, and able to improve the strength, durability, and shock resistance of the prototype.

ABS is widely used in mechanical, automotive, electronic, textile, and construction industries, which is a versatile engineering thermoplastic.

Physical	Condition	Test Method	Typical Value
Density		ISO 1183/B	1.06 g/cm^3
Apparent Density		ISO 60	0.66 g/cm^3
Melt Volume-Flow Rate (MVR)	220 ºC / 10.0 kg	ISO 1133	5g / 10 min
Molding Shrinkage-Flow		ISO 294-4	0.42 to 0.72 %

Mechanical	Condition	Test Method	Typical Value
Tensile Modulus	3.20 mm	ISO 527-2	2270MPa
Tensile Stress	Yield, 3.20 mm	ISO 527-2/50	46.0MPa
Tensile Strain	Yield, 3.20 mm	ISO 527-2/50	2.50%
Flexural Modulus	3.20 mm	ISO 178	2350MPa
Flexural Strength	3.20 mm	ISO 178	69.0MPa

Impact	Condition	Test Method	Typical Value
Notched Izod Impact Strength	23 ºC	ISO 180/A	19 kJ/m^2
Charpy Izod Impact Strength	23 ºC	ISO 170 1eA	19 kJ/m^2

Thermal	Condition	Test Method	Typical Value
Heat Deflection Temperature	1.8 MPa, Unannealed	ISO 75-2/A	97 ºC
Vicat Softening Temperature		ISO 306/B50	95 ºC

Elastomers	Condition	Test Method	Typical Value
Fogging		ISO 294-4	97%

Flammability	Condition	Test Method	Typical Value
Burning Rate	2.00 mm	ISO 75-2/A	55 mm/min
Flame Rating		UL 94	
	1.50 mm		HB
	3.00 mm		HB
Carbon Emission		VDA 277	25.0μg/g

Print Recommendation	
Nozzle Temperature	220 -260 ℃
Bed Temperature	90 -110 ℃
Print Speed	30-70 mm/s
Chamber Temperature	50-70 ℃
Cooling Fan	0-50%