



ABS MATERIALS

SPECIFICATIONS

STEP™ ABS Material Properties Data Sheet

ABS (Acrylonitrile Butadiene Styrene) is a high-volume commercial thermoplastic and is one of the most cost-effective materials. It is best used in applications that demand high strength, heat resistance, and the ability to bend before breaking. Due to its strength, machinability and high-performance, ABS is the plastic preferred by engineers for the manufacturing of end-use-parts.

| Mechanical Properties | Test Sample Type | Test Method | Units | Typical Values |
|-----------------------------|-----------------------------|----------------------------|-------------------|----------------|
| Tensile Modulus | Type V, 5mm/min | ISO 527-1:2012 / ASTM D638 | MPa | 1900 |
| Tensile Strength (Fmax) | Type V, 5mm/min | ISO 527-1:2012 / ASTM D638 | MPa | 38.7 |
| Tensile Elongation at Break | Type V, 5mm/min | ASTM D638 | % | 9.6 |
| Tensile Elongation at Yield | Type V, 5mm/min | ASTM D638 | % | 2.8 |
| Flexural Modulus | 2mm/min | ISO 178 | MPa | 1600-2000 |
| Charpy Notched, 23C | 80x10x4mm, notch type A | ISO 179-1:2010 | kJ/m ² | 16-20 |
| Falling Dart, Fmax | 1000mm drop/height, 4.4 m/s | ISO 6603-2:2000 | N | 2200 |
| Falling Dart, Energy | 1000mm drop height, 4.4 m/s | ISO 6603-2:2000 | J | 8 |

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| Thermal Properties | Test Sample Type | Test Method | Units | Typical Values |
|-----------------------------------|------------------|-----------------------|-------|----------------|
| Glass Transition Temperature (Tg) | N/A | DSC (internal method) | °C | 106-110 |
| Vicat Softening Temperature | Rate B/50 | ASTM D1525 | °C | 99 |
| Heat Deflection Temperature | 0.45 MPa | ASTM D648 | °C | 94 |
| Heat Deflection Temperature | 1.82 MPa | ASTM D648 | °C | 79 |

| Additional Properties | Test Method | Units | Typical Values |
|-----------------------------------|-----------------------|--------------------|----------------|
| Specific Gravity | ASTM D792 | Unitless | 1.04 |
| Density | ISO 1183 | gm/cm ³ | 1.04 |
| Flame Classification | UL94 | N/A | HB |
| Melt Mass-Flow Rate (220°C/10 kg) | ASTM D1238 / ISO 1133 | g/10 min | 8 |

LEARN MORE

HEADQUARTERS

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