ASA

Acrylonitrile styrene acrylate, BigRep ASA

Printer **BigRep VIIO**

Process **Large-format FDM**

Filament **Ø 2.85 mm**

OVERVIEW

ASA is our outdoor engineering material for large-format parts. It holds its strength, color and shape through sun, rain and temperature swings far better than PLA-based or PETG filaments.

It has the best impact strength in our large-format lineup and the highest heat deflection temperature, so it is the default choice for big functional parts that live outside or near heat.

KEY BENEFITS

- Excellent UV and weather resistance for outdoor use
- Highest notched impact strength of our large-format materials
- Heat deflection of 86 °C (187 °F) under load
- Tough, functional parts at meter scale

MECHANICAL & THERMAL PROPERTIES

Property	Test method	Typical value
TENSILE & FLEXURAL		
Tensile strength	ISO 527	40 MPa 5,800 psi
Tensile modulus	ISO 527	1,800 MPa 261 ksi
Flexural strength	ISO 178	60 MPa 8,700 psi
Flexural modulus	ISO 178	1,900 MPa 276 ksi
IMPACT		
Charpy impact, notched	ISO 179	30 kJ/m²
THERMAL		
Heat deflection temp., 1.8 MPa (HDT A)	ISO 75	86 °C 187 °F
Heat deflection temp., 0.45 MPa (HDT B)	ISO 75	94 °C 201 °F
Glass transition temp. (Tg)	DSC	105 °C 221 °F

Printed parts are directional. BigRep does not state how its test specimens were made or oriented. On large-format FDM parts, strength across layers (Z) is noticeably lower than along them (XY). The values above are typical values, not guaranteed minimums. Design with margin and orient load paths in XY where you can.

GENERAL FILAMENT PROPERTIES

Material	Density	FDA compliant
ASA Filament base	**1.09 g/cm³** ISO 1183	**No** Raw filament, per BigRep

DIMENSIONAL TOLERANCES

Direction	First inch (25 mm)	Each additional inch (25 mm)
XY (horizontal)	± 0.020 in · ± 0.51 mm	+ 0.003 in · + 0.08 mm
Z (vertical)	± 0.030 in · ± 0.76 mm	+ 0.003 in · + 0.08 mm

Typical IA3D tolerances for large-format FDM across our BigRep printers. Holes and bores print slightly undersize; drill or ream features that need a fit. Flatness and warp on large, thin or flat sections depend on geometry. For critical fits or tighter requirements, **talk to an engineer**.

TYPICAL APPLICATIONS

- Outdoor housings, covers and enclosures
- Signage, displays and exhibit parts
- Automotive and vehicle exterior prototypes
- Equipment guards and field-use parts
- Large jigs, fixtures and tooling aids

GOOD TO KNOW

- **Compliance:** REACH compliant and RoHS certified
- **Need it stiffer?** See HI-TEMP CF for rigid tooling and fixtures
- **As printed:** layer lines are visible on large-format parts

TEST CONDITIONS & SOURCE

Source: BigRep ASA filament data sheet (bigrep.com/filaments/asa, last updated 30.07.2025). Values are BigRep typical values tested to the ISO methods shown. BigRep does not state specimen preparation, orientation or print settings. Unit conversions and tolerances are by IA3D.

Disclaimer: Material properties are provided as a general reference to help with material selection. Actual part properties depend on geometry, orientation, wall thickness, build position, print settings and service conditions, and may differ from the values shown. This sheet does not guarantee specific properties or suitability for a particular application. Validate critical parts under real operating conditions.

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