

ABS

Acrylonitrile Butadiene Styrene

ABS filament is one of the most common materials used in 3D printing today. It easily molds when heated and sets evenly when cooled. ABS filament is used by a variety of manufacturing industries for parts requiring structural integrity and detail, and is ideal for "wear and tear" projects. It is commonly used in rapid prototyping and additive manufacturing environments to test product impact resistance and durability.

Mechanical Properties	Standard	Value	Unit
Ultimate Tensile Strength	ISO 527	42	MPa
Tensile Modulus	ISO 527	1950	MPa
Elongation at Break	ISO 527	10	%
Flexural Strength	ISO 178	76	MPa
Flexural Modulus	ISO 178	1985	MPa
Hardness Shore	Standard	Value	Unit
Hardness			

Thermal Properties	Standard	Value	Unit
HDT @ 0.45 MPa	ISO 75	95	°C
Glass Transition Temp	DSC	105	°C
Physical Properties	Standard	Value	Unit
Density	ISO 1183	1.05	g/cm ³
Certifications and Tests	Standard	Value	Unit
Flammability (UL 94)			
USP Class VI Certified			

Characteristics

- High temperature resistance, flexibility, machinability and strength
- Impact, and wear & tear resistant
- Easy to post-process
- Good mechanical properties
- Strong electrical insulation properties

Applications

- Injection molding
- Functional prototypes,
- End use parts and Manufacturing tools
- Electronic and mechanical enclosures, covers and cases
- Automotive parts and components, natural finishes and painted, plated and coated
- Pipe systems, musical instruments, home appliances, keyboard caps, Lego, canoes, and even flat-screen TV's and computer monitors.
- Virtually all toys

Considerations

- Strong and toxic fumes, so ensure the HEPA filter is running during a print, and the chamber is always closed!
- It requires proper temperature management, as it must cool slowly to avoid cracks or split layers, so it is critical to use the material profiles provided by 3ntr, when you are learning to print.
- Proper bed adhesion: It is prone to warping, so it is highly recommended to use support material rafts (for 3ntr printers).
- UV sensitivity: ABS is UV sensitive, so it can sustain damage by direct sunlight. For this reason, it's not really recommended to print outdoor parts with ABS. PETG and ASA are good alternatives for such applications.
- ABS requires special care during storage, as it's a mildly hygroscopic material (absorbs water). Moist filament will affect your prints, so try as much as possible to store ABS in a dry container when not in use, or ask about our Material Management System (MMS).

Printing Skill & Experience: Beginner Intermediate Advanced Expert

- Small learning curve – but you can overcome them by following the printing guide steps
- Enclose the printer: ABS is sensitive to drastic temperature changes, so make sure your 3D printer is closed.
- Use a heated bed: This is mandatory. ABS has a high thermal contraction, so when the first layer cools down it shrinks in volume, causing deformations like warping. With a heated bed at around 110 °C, ABS remains in a sort of rubbery state, allowing it to contract without deforming.

Printer Compatibility

<input checked="" type="checkbox"/> 3ntr A2v4	<input checked="" type="checkbox"/> 3ntr A4v4	<input type="checkbox"/> EVO-T	<input type="checkbox"/> EVO22-T
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Available Colors from [TRAK](#): Natural, Black