

Acrylonitrile butadiene styrene, abbreviated as ABS, is a common plastic that is found all around us, famously used for making Lego bricks. Its properties, such as high strength and good temperature resistance, makes it a good choice for many applications.

ABS also offers the possibility of a good surface finish. ABS reacts to acetone, which tends to smooth and polish the surface. It's also a lot easier to sand ABS.

ABS can be a little tricky to print with. One issue you may face while printing ABS is that it's hard to get it to stick to the bed. The printed part tends to "warp" from the sides and the fumes generated can be unpleasant. But we'll get to all of that soon enough!

Pros

- Very sturdy and hard
- Suitable for machine and car parts
- Higher melting point
- Longer lifespan

Cons

- Made out of oil, so more damaging to the environment
- Deforms when not being print on a heated surface
- Hot plastic fumes when printing, therefor you need ventilation
- More difficult to print
- Not suitable for using with food

Uses

- Sports equipment
- Objects that might be dropped
- Toys
- Electronic applications

1. Identification of the material

Trade name:	HotOrange3D
Chemical name:	Acrylonitrilbutadienestyreen
Use:	3D printing
Origin:	HotOrange3D – Netherlands

Disclaimer: The technical data contained on this data sheet is furnished without charge or obligation and accepted at the recipient's sole risk. This data should not be used to establish specifications limits or used alone as the basis of design. The data provided is not intended to substitute any testing that may be required to determine fitness for any specific use.

2. Printer settings

Printer:	Desktop FFF printer		
Nozzle:	0.4	mm	A2 hardened
Layer height:	0.2	mm	100 %
Infill:	±45		
Extrusion Temperature:	230 - 250	°C	
Bed temperature:	130 - 145	°C	
Bed preparation:	PEI sheet		
Print speed:	20-40	mm/sec	
Requirements:			

3. Material properties

Melt temperature:	250	°C	ASTM D3418
Glass transition temperature:	105	°C	ASTM D3419
Heat distortion temperature HDTB (0,45 MPa):	98	°C	ISO 75
Vicat Softening Temperature:	94	°C	ASTM D1525
Met Flow Rate (220 C/10 kg):	23	g	ASTM D1238
Flame Rating (1.5 mm, ALL)	HB		UL 94
Density:	1.04	g/cm ³	ASTM D790
Water absorption, 24 u:	0.1	%	ASTM D570
Shrink rate:	0.5 - 0.7	%	ASTM D955

4. Mechanical properties

Tensile Strength (break, 3.20 mm/50 mm/min):	51	Mpa	ISO 527
Tensile Modulus (3.20 mm/1.0 mm/min):	2220	MPa	ISO 527
Tensile elongation, (break, 3.20 mm/50 mm/min):	30	%	ISO 527
Flexural Modulus (3.20 mm/15 mm/min):	2750	MPa	ISO 178
Flexural Strength (3.20 mm/15 mm/min):	78.5	MPa	ISO 178
Rockwell hardness (R-scale):	110	ASTM	D785

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