



PRODUCT CARD

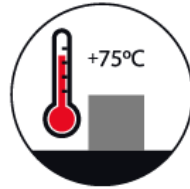
ABS



high impact resistance



good mechanical strength



permissible continuous working temperature over 75°C



high gloss



good electrical insulating properties



high chemical resistance



high stiffness



high hardness



acetone soluble

1. GENERAL INFORMATION ABOUT THE PRODUCT

ABS (acrylonitrile butadiene styrene copolymer) is second, after PLA, most popular material. It is used when higher impact strength, hardness and better scratch resistance than Polylactide is needed. ABS has good isolation properties and much more temperature resistance than PLA. Printing with ABS is a little more difficult because of more shrinkage and less universality of the substrate.

Main ABS features:

- good mechanical strength, stiffness and hardness,
- high impact resistance,
- good thermal stability,
- permissible continuous operation temperature over 75°C,
- average chemical resistance, in particular satisfactory resistance to alkalis, diluted acids, aliphatic hydrocarbons, oils and fats,
- good electrical insulation properties,
- high gloss.

2. TECHNICAL PARAMETERS

CHARACTERISTICS	TEST METHOD	TEST CONDITIONS	IU	VALUE
	ISO			
PHYSICAL				
Density	ASTM D792	-	g/cm ³	1.04
Water absorption to saturation	ASTM D570	23°C/sat.	%	0.3
Processing shrinkage II/⊥		-	%	0.3~0.5
MECHANICAL				
Yield strength	527-1,-2	50mm/min	MPa	41
Elongation at break	527-1,-2	50mm/min	%	50
Bending stress	178	2mm/min	MPa	58
Elastic modulus at tension	178	2mm/min	MPa	1750
Notched Charpy impact strength	179-1	1eA	kJ/m ²	22
Notched Charpy Impact strength (-30°C)	179-1	1eA	kJ/m ²	10
THERMAL				
Vicat softening point	306	50N	°C	96
Deflection temperature under load	75-1,-2	1,8 MPa	°C	71
Coefficient of linear thermal expansion II/⊥	11359-1/-2	23°C - 85°C	E-6/°C	85
COMBUSTIBILITY				
Flammability level test	UL94	3,2 mm	Class	HB
Flammability index of incandescent material wire(GWFI)	IEC-60695-2-12	2 mm	°C	650
ELECTRICAL				
Surface resistivity	IEC 60093	-	Ω	10 ¹³
Volume resistivity	IEC 60093	-	Ωxcm	10 ¹²
Dielectric constant	IEC 60250	100kHz	-	3.9

Tests have been done in 23°C, if it's not marked differently.

3. RECOMMENDATION OF PRINTING



There might be some problems to achieve proper adhesion on glass bed.

Using perforated bed, PVA glue, specialized product (Dimafix), kapton coating or other different way to obtain adhesion is recommended.

Recommended parameters of printing:

Hotend temperature	240 - 265 °C
Bed temperature	90 – 105 °C
Print speed	< 200 mm/s

Examples of problems and their solutions:

Problem	Possible cause	Proposed solution
Weak layers adhesion	1) Extruder temperature is too low 2) Too high speed of printing	1) Raising the extruder temperature 2) Raising the extruder temperature / reducing the print speed
Uneven feeding – losing steps of the feeder / filament sliding on the drive gear	1) Extruder temperature is too low 2) Weak feeder pressure	1) Raising the extruder temperature 2) Raising the pressure
Print is peeling of the bed	1) Too low temperature of bed 2) Improperly prepared surface 3) Cooling	1) Raising the bed temperature 2) Degreasing the bed / using another source of adhesion / using perforated bed 3) Giving up the cooling on first stage is recommended
Edge curling	1) Processing shrinkage	1) Compensation with amount of served filament / selection cooling parameters / changing the chamber temperature

4. SAFETY NOTES

Exhaust fan is recommended.

Air filters in printer is recommended.

ABS needs to be used only in well ventilated conditions.

Inhaling fumes generated during the printing must be avoided.

Generating fumes during the printing depends mainly on printing temperature. In case of visibly raising emission level, the printing needs to end. Check the hotend temperature and efficiency of the control system before using it next time.

In proper using conditions, the product doesn't endanger health.

It's forbidden to set fire or exceed decomposition temperature!

Decomposition of ABS is typically over 300 °C.

Main ingredient of decomposition is styrene.

Detailed safety information available in SDS.