Technical Data Sheet

ApolloX Kevlar

Print date: 18-09-2023 **Version:** 1.0

Product specifications

Our ApolloX Kevlar combines all benefits of ApolloX filament plus 10% aramid fibers.

ApolloX Kevlar is a high-performance aramid fiber reinforced ASA filament. The enhancement with Kevlar results in a shatterproof 3D printing material. Kevlar does not break and by that greatly improves the impact and damage resistance. ApolloX Kevlar is very easy to 3D print on open desktop machines. No enclosure, or heated chamber needed. Its low shrinkage factor and perfect layer adhesion make ApolloX Kevlar a breeze to print with.

Important key features

- Reinforced with 10% Kevlar
- High damage, impact, and fatigue resistance
- Heat resistant up to 94°C
- UV- and weather resistant
- Easy to print on open desktop 3D printers

Suitable applications

- Robotics and drones
- Automotive parts
- Fixtures, tooling, work holding, and soft jaws
- Protective gear
- Manufacturing end-use products

Aramid (Kevlar) fiber reinforcement explained

Reinforcing filaments with aramid fibers - or Kevlar - results in great benefits. It combines the unique properties of both materials. The properties of the thermoplastic improve with everything Kevlar offers. Kevlar offer lots of benefits, such as:

- Very high strength-to-weight ratio
- Increasing impact strength
- Reducing weight
- Increasing tensile strength
- Increasing dimensional stability
- Reducing shrinkage / warping
- Increasing heat resistance
- Increasing chemical resistance
- Masking layer lines with a matt surface finish in 3D printed objects

This makes Kevlar reinforced filaments perfect for 3D printing durable parts that will not break easily.

Material properties	**Typical value**	**Test Method**
Density	1.07 g/cm3	ISO 1183
Mechanical properties		
Tensile strength at yield	40 MPa	ISO 527-1
Tensile strength at break	35 MPa	ISO 527-1
Elastic tensile modulus	2200 MPa	ISO 527-1
Elongation at yield	2,8%	ISO 527-1
Elongation at break	6%	ISO 527-1
Charpy unnotched impact strength, 23°C	25 KJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	7,5 KJ/m^2	ISO 179/1eU

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Thermal properties

VICAT softening point	94°C	ISO 306
Heat deflection temperature (HDT) @ 0.45mn/ m^2	89°C	ISO 75
Heat deflection temperature (HDT) @ 1.81mn/ m^2	95°C	ISO 75

Abrasiveness

Please be aware that Kevlar reinforced filaments contain a relatively high concentration of aramid fibers, which have an abrasive nature. In general these aramid fibers will accelerate the nozzle-wear of brass nozzles, much faster than unfilled filaments. We recommend to use ruby nozzles or hardened steel nozzles.

Storage and handling

Filament should be stored at room temperature in a dry and dark place with humidity below 15%. Recommended storage temperature is ca. 18-25°C (64.4 -77.0°F). Keep out of moisture, sunlight and direct heat. When stored properly, product has a shelf life of 24 months. To obtain the best parameters of the printed object, it is recommended to dry the material prior to usage and to 3D print it directly from a dry box.

Product export information

HS Code	Description	Origin
39169090	Monofilament for 3D printing	European Union

Disclaimer