

Product Overview

JR LAB ASA is a high-performance engineering-grade filament based on Acrylonitrile Styrene Acrylate (ASA). It is specifically engineered for functional and outdoor-ready 3D printed components that demand excellent resistance to UV radiation, weather exposure, and temperature fluctuations while maintaining balanced mechanical properties, strength, and dimensional stability.

With outstanding interlayer adhesion, low warping tendency, and reliable thermal behavior, JR LAB ASA is ideal for durable structural parts, outdoor housings, fixtures, brackets, covers, and end-use functional components intended for long-term performance in demanding environments.

Key Product Features

Superior Outdoor & UV Performance

JR LAB ASA delivers outstanding resistance to sunlight, rain, and external environmental stress. It maintains mechanical strength and color stability during prolonged outdoor exposure, making it the preferred choice for exterior applications, outdoor housings, and weather-exposed structural elements.

Reliable Printability & Layer Adhesion

The material prints smoothly with low warping and strong interlayer bonding. It performs reliably on both enclosed and open-frame FDM systems, supporting accurate, clean surfaces with minimal tuning. Cooling fan should remain off to maximize layer strength.

Dimensional Stability & Mechanical Strength

High tensile strength and rigidity combined with controlled shrinkage ensure precise geometry is maintained in both small and large components. Reduced deformation improves part quality and long-term reliability under changing temperatures and mechanical loads.

Versatile Engineering Applications

Suited for end-use parts such as outdoor enclosures, brackets, covers, functional prototypes, automotive components, and any application requiring mechanical robustness together with environmental resistance.

Printing Guidelines

Based on a 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters. ASA has a low risk of warping and can be printed even without a heated bed, although a heated bed is recommended for best adhesion.

Parameter	Recommended Value
Nozzle temperature	210 – 250 °C
Melting temperature	190 °C ± 10 °C
Build plate temperature	60 – 100 °C
Build surface	PEI or glass + glue
Cooling fan	Off (0 %)
Printing speed	30 – 70 mm/s
Retraction distance	7 mm
Retraction speed	20 mm/s
Raft separation distance	0.2 mm

Physical & Mechanical Properties

Typical values obtained under controlled laboratory conditions. Actual results may vary depending on printer configuration, environmental conditions, and part design.

Property	Typical Value	Test Method
Density (Specific Gravity)	1.1 g/cm ³	ISO 1183
Melt Flow Rate (MFR)	15 – 16 g/10 min	ISO 1133
Flexural Strength	800 kg/cm ² ($\approx$ 78 MPa)	ASTM D790
Flexural Modulus	22,100 kg/cm ² ($\approx$ 2,170 MPa)	ASTM D790
Mold / Shrinkage	0.4 – 0.5 %	ISO 294-4
Vicat Softening Temperature (A)	95 °C	ISO 306
Printing Temperature Range	210 – 250 °C	—
Melting Temperature	190 $\pm$ 10 °C	ISO 3146-C

Drying & Storage Guidelines

ASA is slightly hygroscopic. Exposure to humidity can lead to surface imperfections, bubbling, or uneven extrusion. For best results:

- Dry at **70 – 90 °C** for **2 – 4 hours** before printing (especially after prolonged storage).
- Store in a cool, dry place (15 – 25 °C), protected from UV light and direct sunlight.
- Keep the filament in a sealed container or bag with desiccant when not in use.
- Proper storage significantly extends shelf life and ensures consistent, repeatable print quality.

Precautions & Best Practices

Printer Compatibility

Ensure your printer supports nozzle temperatures above 240 °C. Due to the material's composition and potential abrasive additives, a hardened steel or ruby nozzle is strongly recommended for extended service life and consistent extrusion quality.

Shrinkage & Warping Control

Although ASA offers good dimensional stability, slight shrinkage may occur if cooled too rapidly. For best results, print in a warm, draft-free environment or use an enclosure. This helps prevent warping, corner lift, and residual stresses in larger or structural parts.

Cooling Settings

Always print with the cooling fan turned **off**. This maintains strong layer adhesion and minimizes the risk of cracking, particularly in structural or thick-walled components.

Filament Handling & Storage

Store JR LAB ASA in a cool, dry place in a sealed container with desiccant. The material may absorb moisture over time, which negatively impacts extrusion quality and surface finish. Proper storage ensures long-term performance and reliable results.



Disclaimer of Liability

The values and information provided in this Technical Data Sheet are intended for reference and comparison purposes only. They should not be considered precise design specifications or used for formal quality control. Actual results may vary depending on printer configuration, nozzle condition, environmental conditions, part geometry, and processing parameters.

The performance and durability of printed parts depend on multiple factors including material characteristics, printer setup, and the final application environment. Users are fully responsible for verifying material suitability, ensuring correct handling, assessing safety and regulatory compliance, and following storage and disposal guidelines in accordance with local regulations.

JR LAB makes no warranties, express or implied, regarding the suitability of this product for any particular use unless otherwise stated in writing. JR LAB assumes no liability for equipment damage, print failures, performance deviations, loss, damage, or injury arising from improper use or operation outside the recommended parameters. Always prioritize the printing parameters printed on the filament spool over this datasheet when discrepancies exist.

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