

ASA vs. ABS Quick Reference

A material-selection guide focused on the differences that matter most in real applications.

CONSIDERATION	ASA	ABS
Best fit	Outdoor, UV-exposed and weather-exposed functional parts.	Indoor or protected functional parts where long-term weathering is not a primary requirement.
UV / weather resistance	Excellent. Strong resistance to sunlight and weathering is a defining advantage.	More limited for long-term outdoor exposure; prolonged UV can affect appearance and properties.
Outdoor appearance	Better suited to maintaining appearance and color outdoors over time.	More likely to discolor or weather during prolonged outdoor exposure.
Heat resistance	Good for many warm-service applications; exact performance depends on grade.	Good for many warm-service applications; exact performance depends on grade.
Toughness / impact	Good engineering toughness; grade and print orientation matter.	Good engineering toughness; grade and print orientation matter.
Post-processing	Can be sanded, machined and acetone-smoothed with appropriate safety controls.	Can be sanded, machined and acetone-smoothed with appropriate safety controls.
Typical choice	Brackets, housings, signs, fixtures and replacement parts that may see sun, rain or outdoor temperature cycling.	Jigs, fixtures, enclosures, mounts, prototypes and functional parts used primarily indoors or under cover.

WHAT THEY SHARE

ASA and ABS are closely related styrenic engineering thermoplastics. Both generally print best with an enclosure, elevated nozzle and bed temperatures, low part cooling, careful first-layer adhesion, dry filament when moisture symptoms are present, and appropriate ventilation.

QUICK DECISION

Choose ASA when sunlight, weather or long-term outdoor exposure matters. Choose ABS when the part will primarily be used indoors or protected from UV and weather, and those outdoor-performance advantages are not required.