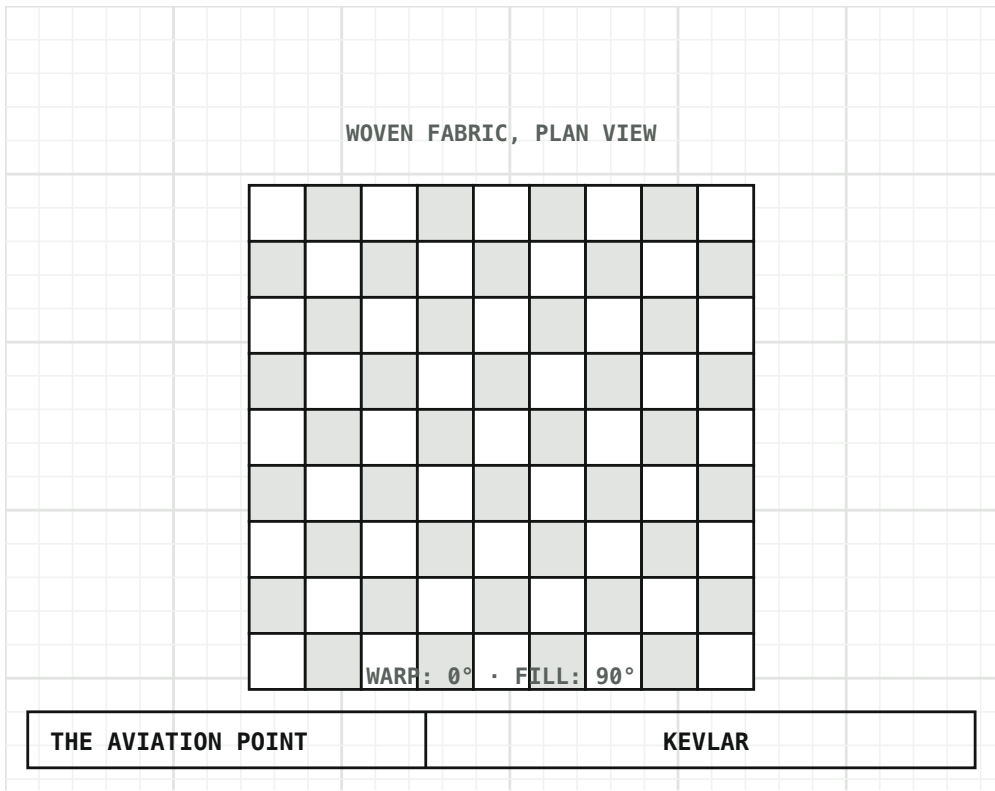
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Kevlar aramid — aramid fiber

Aramid is light and tough: Kevlar 49 is 1.44 g/cm³ with about 3,000 MPa (435 ksi) yarn strength.



Schematic

Designation

Item	Value
Designation	Kevlar aramid
Class	Composites
Type	aramid fiber

Typical yarn properties (DuPont Table II-1)

Property	Kevlar 29	Kevlar 49
Density	0.052 lb/in³ (1.44 g/cm³)	0.052 lb/in³ (1.44 g/cm³)
Yarn tensile strength	424,000 psi (2,920 MPa)	435,000 psi (3,000 MPa)
Yarn tensile modulus	10.2 Msi (70,500 MPa)	16.3 Msi (112,400 MPa), converted
Elongation at break	3.6%	2.4%
Impregnated strand strength	525,000 psi (3,600 MPa)	525,000 psi (3,600 MPa)
Impregnated strand modulus	12.0 Msi (83,000 MPa)	18.0 Msi (124,000 MPa)
Moisture, equilibrium from bone-dry	4.5%	3.5%
Decomposition in air	800–900 °F (427–482 °C)	800–900 °F (427–482 °C)
Recommended long-term maximum in air	300–350 °F (149–177 °C)	300–350 °F (149–177 °C)

DuPont says the table gives typical values, "not product specifications". The Kevlar 49 yarn modulus line prints "6.3×10^6" in the text copy used here, next to 112,400 MPa; 112,400 MPa converts to 16.3 Msi, which is the value shown. Kevlar does not melt; it decomposes.

A Kevlar fabric

Fabric	Weave	Weight	Thickness	Count per in	Breaking strength
BGF aramid 195 denier, plain weave (listed Style 120)	Plain	1.8 oz/yd² (61 g/m², converted)	0.0039 in (0.10 mm)	34 × 34	200 / 200 lbf/in

BGF Industries data sheet via a distributor (see the carbon and aramid page).

Notes

- **Yarn data, not laminate data.**
- **Heat.** DuPont warns tensile properties drop at or above 300–350 °F for extended periods.
- **Moisture.** The fiber properties are virtually unaffected by moisture, but the part still must be sealed against water (FAA).

SOURCES · DuPont, Kevlar Aramid Fiber Technical Guide, Section II, Table II-1 and thermal properties · FAA-H-8083-31B, AMT Handbook — Airframe, Volume 1, Chapter 7 · BGF Industries aramid data sheet, Kevlar 120

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/kevlar/

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.

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