

CNC Material Selection Matrix

FSCPRECISION — one-page quick reference. Cost* = relative stock cost (\$ cheapest).

Material	Machinability	Cost*	Corrosion	Strength/Wt	Best for	Watch-outs
Aluminium 6061	Excellent	\$ (cheapest)	Good (anodises)	Very good	Brackets, enclosures, proto	Soft; watch thin walls
Aluminium 7075	Good	\$\$	Fair (SCC)	Excellent	Aerospace, high-load	Patchy anodise; less corro
Stainless 304	Fair (work-hardens)	\$\$	Very good	Moderate	Food, medical, marine	Gummy chips; slower feeds
Stainless 316	Fair	\$\$\$	Excellent (marine)	Moderate	Marine, chemical	Higher cost; same caveats
Carbon / mild steel	Excellent	\$ (cheapest)	Poor (coat)	Moderate	Jigs, structural, volume	Rusts; plate or finish
Titanium Gr5	Poor (springs)	\$\$\$\$	Excellent	Excellent	Medical, aero, corrosive	Tool wear; chip-fire risk
Brass (C360)	Excellent (best)	\$\$	Good	Moderate	Fittings, connectors	Free-cut grade dream; soft
Copper	Fair (gummy)	\$\$	Good	Moderate	Electrical, thermal	Burrs; spec for conduction
POM (Delrin)	Excellent	\$	N/A (chem)	Low	Gears, bushings, fixtures	Warps if clamped wrong
PEEK	Good	\$\$\$\$	Excellent (chem)	Good	Medical, semi, hi-temp	Expensive; sharp tools
Nylon 66	Good	\$	N/A (chem)	Low	Wear parts, insulators	Absorbs moisture; swells
ABS	Good	\$	N/A	Low	Housings, prototypes	Low temp; not for load

5-question selector: (1) Weather/salt/chemical? — 316SS / Ti / PEEK. (2) Weight critical? — 7075 / Ti. (3) Conductive? — Cu / Al / Brass. (4) Cost King, no rust? — carbon steel + finish. (5) Needs to be non-metal? — POM/Nylon, PEEK only for real heat/chem.