



Aluminum Extrusions vs. Roll Formed Steel and Copper Extrusions

Property	Aluminum Extrusions	Roll Formed Steel	Copper Extrusions (Deoxidized; Low Phosphorus)
Strength (Tensile)	Very good mechanical properties.	Very high mechanical properties.	Average to low mechanical properties.
Density	Lightweight; about 1/3 that of copper or steel.	High density; high pounds per cubic foot.	About three times heavier than aluminum.
Strength to Weight Ratio	Very Good.	Good.	Low.
Corrosion Resistance	Excellent; it can be further increased, along with enhanced appearance, through anodizing or other coatings.	Poor; usually requires protective coatings for corrosion service.	Excellent.
Formability	Easily formable and extruded in a wide variety of complex shapes including multi-void hollows. Formable to net shapes, and extrusions provide for the placement of metal where it's needed.	Readily formable; thinner cross-sections than aluminum extrusions metal cannot always be located where best used in design.	Excellent formability and easily extrudable. Formable to net shapes.
Electrical Conductivity	Excellent; on a pound for pound basis, twice as efficient as copper, used in bus bar and electric connector applications.	Poor cannot usually be used as an electrical conductor.	Excellent electrical conductivity.
Thermal Conductivity	Excellent; ideal for heat exchanger applications.	Poor cannot usually be used as a heat exchanger.	Excellent thermal conductivity, second only to silver in industrial applications.
Finishing	A near limitless array of finishes can be applied including mechanical and chemical prefinishes, anodic coatings, paints and electroplated finishes.	Protective coatings such as paint finishes are employed along w with electroplated finishes.	A variety of coatings and platings can be employed.
Recyclability	High scrap value; routinely reprocessed to generate new extrusions.	Low scrap value.	Very high scrap value.
Tooling Economics	Extrusion tooling is relatively inexpensive. Generally, a simple shape will cost only a few hundred dollars. Short lead times for tooling construction.	Typical tooling costs are thousands of dollars. Long lead times are required.	Inexpensive tooling costs for extrusions.
Energy Savings	Lightweight aluminum extrusions can offer energy savings for transportation vehicles.	Lifetime energy requirements for wrought steel vehicle components are twice those for aluminum components.	In transportation vehicles, copper is less energy-efficient than aluminum.
Combustibility	Noncombustible; does not emit any toxic fumes when exposed to high temperatures.	Noncombustible; does not emit any toxic fumes when exposed to high temperatures.	Noncombustible; does not emit any toxic fumes when exposed to high temperatures.

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