

MACS MANUFACTURING

PASSION • VISION • PRECISION

MONTHLY GUIDE

Metal Materials Selection Guide

Choosing the right material for strength, cost, weight & environment

Selecting the correct metal is one of the most important decisions in custom fabrication. The right choice improves performance, reduces cost, and extends service life. This guide compares the most common materials we work with at Macs Manufacturing.

Quick Comparison: Common Fabrication Metals

Property	Mild Steel (A36 / HR)	Stainless Steel (304)	Aluminum (6061-T6)	Galvanized Steel
Relative Cost	Low	High	Medium	Low-Med
Strength-to-Weight	Good	Very Good	Excellent	Good
Corrosion Resistance	Poor*	Excellent	Very Good	Good
Weldability	Excellent	Good	Good	Fair
Machinability	Excellent	Fair	Very Good	Good
Formability / Bending	Excellent	Good	Very Good	Good
Typical Thickness Range	0.030–1"+	0.030–0.5"	0.040–1"	0.030–0.25"
Common Uses	Frames, brackets, structural	Food, medical, outdoor, marine	Aerospace, auto, lightweight	Outdoor, HVAC, ductwork
Best For	Cost-sensitive structural work	Corrosive or hygienic environments	Weight-critical applications	Outdoor exposure without paint

* Mild steel requires coating (paint, powder, or galvanizing) for outdoor or wet environments.

Key Decision Factors

- **Environment:** Indoor dry → mild steel is usually fine. Outdoor, chemical, or food contact → stainless or aluminum.
- **Weight Limits:** If the part must be light (mobile equipment, overhead, transportation), aluminum often wins despite higher material cost.
- **Budget:** Mild steel offers the lowest material + fabrication cost for structural work. Stainless and aluminum cost more but can reduce lifetime maintenance.
- **Appearance:** Stainless can be left bare for a clean look. Aluminum and mild steel are typically powder coated or painted.
- **Production Volume:** High volume favors materials that form and weld easily (mild steel and aluminum).



**Not sure which material is right for your project?
Our team can help you choose the optimal material for performance and budget.
(801) 438-3715 • macs-manufacturing.com
1935 S Fremont Dr, Salt Lake City, UT 84104
Let's build something great together.**

Macs Manufacturing — Custom metal fabrication with passion, vision, and precision.