

MATERIAL CHARACTERISTICS - METAL

Aluminum

2024

- Non-magnetic
- Aircraft Grade
- 1/3 the weight of steel
- Heat treat to increase hardness
- Good electrical conductivity (30% of copper)
- Good heat conductivity (70 btu/hr/ft²/°F/ft)
- Anodizing increases corrosion resistance & is available in many colors

6061 & 7075

- Aircraft grade
- Heat treat to increase hardness

1100, 3003, 5052

- Commercial (common) alloys
 - Not heat treatable
 - Gasket material - softer alloys
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Beryllium Copper

Alloy 25

- Electrical Alloy
 - Good electrical conductivity (17-22% of copper)
 - Good heat conductivity (68 btu/hr/ft²/°F/ft)
 - Age hardenable (easy to form in annealed state but can be hardened afterward thru heat treating)
 - Non-magnetic & corrosion resistant
 - Extensively used for springs, spring washers, & clips
 - Good plating base
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Brass

Alloy 230, 84/16, Copper/Zinc

- Non-Magnetic
- Good electrical conductivity (37% of copper)
- Good heat conductivity (92 btu/hr/ft²/°F/ft)
- Spring temper provides a flatter part and a cleaner cut than half hard or softer temper
- Corrosion resistant
- Excellent plating base

Alloy 260, 70/30, Copper/Zinc

- Non-Magnetic
- Good electrical conductivity (26% of copper)
- Good heat conductivity (70 btu/hr/ft²/°F/ft)
- Spring temper provides a flatter part and a cleaner cut than half hard or softer temper
- Corrosion resistant
- Excellent plating base

SEASTROM Manufacturing Co., Inc.

456 Seastrom Street · Twin Falls, Idaho 83301

www.Seastrom-Mfg.com

1-800-634-2356

Fax (208)734-7222

Email: info@seastrom-mfg.com

Copper

Alloy 110, Electrical tough pitch, 99.9% Copper

- Non-magnetic
 - Corrosion resistant
 - Best electrical grade copper
 - Best electrical (100% of copper) & thermal (225 btu/hr/ft²/°F/ft) conductivity
 - Good plating base
 - Excellent sealing capability
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Phos. Bronze

Grade A, Spring Temper

- Non-magnetic
 - Fair corrosion resistant
 - Fair for electrical applications (15% of copper)
 - High strength
 - High temperature resistance
 - Good bearing surface
 - Good spring material
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Steel

CRS, Commercial Quality

- .010 or above #4 temp (1/4 H)
 - Below .010 #1 temp (FH)
 - Inexpensive
 - General applications
 - Good plating base material (magnetic & it will corrode)
 - Fair electrical conductor (12% of copper)
 - Highest strength for cost
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Stainless Steel

300 Series

- .010 or above (Annealed)
- .005-.009 (HH)
- .001-.004 (FH)
- Slightly magnetic. Least magnetic in annealed condition
- General applications
- Greater strength than steel
- Excellent corrosion resistance

400 Series

- Steel & Plate vs. Stainless - in many instances a steel part with the additional plating process changes are the same
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Spring Steel

High Carbon

1074/1075 - .005 and above

- May be heat treated to increase hardness
- Can be formed easily in annealed state then hardened thru heat treating
- Used for springs, spring washers, & clips

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Titanium

Titanium Coil - AMS4900

- Commercial pure
- Extreme high temperature applications
- High strength to weight ratio
- Mainly used in aircraft
- Quite expensive
- Corrosion resistant

Titanium Rod - 6AL-4V

- Extreme high temperature applications
- High strength to weight ratio
- Mainly used in aircraft
- Less expensive than commercial pure
- Corrosion resistant

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