

## Guide to Materials and Finishes

### Galvanic Corrosion

Galvanic corrosion occurs when dissimilar metals are in contact in the presence of an electrolyte (conductive medium). Galvanic compatibility therefore is important if the application is in an environment where an electrolyte is present. For most office environments this is of little concern. However, if the application is in a marine environment or has contact with outside air then galvanic compatibility is necessary.

The table below shows a typical galvanic series. In general, the further apart two metals appear on the chart the greater the tendency for corrosion.

ANODIC (Least Noble) End Material
Magnesium
Magnesium Alloys
Zinc
Aluminum
Cadmium
Aluminum 17ST
Steel or iron
Cast iron
Chromium-iron (active)
Ni-Resist
18-8 Chromium-nickel-iron (active)
18-8-3 Chromium-nickel-molybdenum-iron (active)
Lead-tin solders
Lead
Tin
Nickel (active)
Inconel (active)
Hastelloy C (active)
Brasses
Copper
Bronzes
Copper-nickel alloys
Monel
Silver Solder
Nickel (passive)
Inconel (passive)
Chromium-iron (passive)
18-8 Chromium-nickel iron (passive)
18-8-3 Chromium-nickel-molybdenum-iron (passive)
Hastelloy C (passive)
Silver
Carbon and graphite
Platinum
Gold
CATHODIC (Most Noble)

## Finish Options

### Beryllium Copper Finish Options (see product pages for ordering information)

- Tin Plate per Mil-T-10727 .0002 min.
  - Good corrosion resistance but will tarnish over time.
- Nickel Plate per QQ-N-290 Class 1, Grade F
  - Excellent corrosion protection along with high hardness for wear and low friction.
- Electroless Nickel Plate per Mil-C-26074 Class 1, Grade B
  - Excellent corrosion protection along with good electrical conductivity and low friction.

### Aluminum Finish Options (see product pages for ordering information)

- Chemical Film (Gold) per MIL-C-5541, Class 1A or Class 3 Chemical Film (Clear) per MIL-DTL-5541, Class 3, Type II
  - Other commonly used trade names associated with this process include: Alodine, Alochrom, Iridite.
- Anodize (“Soft”), per MIL-8625, Class 2, Type II (.00005” - .0003”)
  - Good corrosion resistance with medium abrasion resistance.
  - Unless specified otherwise color will be black.
- Anodize (“Hard”), per MIL-8625, Class 2, Type III (.002”)
  - Excellent corrosion and abrasion resistance.
  - Unless specified otherwise color will be black.
- Electroless Nickel Plate per Mil-C-26074 Class 1, Grade B
  - Excellent corrosion protection along with good electrical conductivity and low friction.

### Stainless Steel Finish

- Passivation per MIL-S-5002
  - Passivation is not a plating or a coating. It is a cleaning process that removes residue from manufacturing operations and enhances the natural corrosion resistance of stainless steels.

### Material Properties

Material	BeCu	BeCu HT	Stainless Steel	Steel
Type	C17200 1/4H	C17200 H	304	ASTM A366
Yield Strength (Mpa)	410-550	710	329	280
Tensile Strength (Mpa)	520-610	780	673	330
Elastic Modulus (Gpa)	125-130	125-130	190	207