INDUSTRIAL HARDWARE AND SPECIALTIES INCORPORATED

Gold

[MIL-G-45204C]

Gold is by far the most popular elemental metal; and gold plating follows suite. Functional, practical, effective. Superior corrosion resistance, spectacular aesthetics. Yellow to orange color depending on proprietary process used. Ranges from matte to bright finish depending on basis material and type, grade and class of gold used. Brightness of under plating will also affect appearance. Excellent corrosion resistance, and has high tarnish resistance. Provides low contact resistance, and is an excellent conductor. Gold has excellent solderability. If the hardness grade for the gold coating is not specified, Type I shall be furnished at hardness Grade A, and Type II shall be furnished at hardness Grade C. For soldering, a thin, high purity soft gold coating is preferred. A minimum thickness of .000050 inch and a maximum thickness of .00010 inch shall be plated.

Type I: 99.7% gold minimum (Grades A, B, or C).
Type II: 99.0% gold minimum (Grades B, C, or D)
Type III: 99.9% gold minimum (Grade A only).

Grade A: 90 Knoop maximum.
Grade B: 91-129 Knoop.
Grade C: 130-200 Knoop.
Grade D: 201 Knoop and over.

Class 00: .00002" minimum thickness
Class 0: .00003" minimum thickness
Class 1: .00005" minimum thickness
Class 2: .00010" minimum thickness
Class 3: .00020" minimum thickness
Class 4: .00030" minimum thickness
Class 5: .00050" minimum thickness
Class 6: .00150" minimum thickness

Applications:

Electronic connectors; jewelry; plastics tooling; firearms; flatware; transducer cells; shielding; automotive decorative hardware.

Gold is the most non-reactive of all metals and is benign in all natural and industrial environments. Gold never reacts with oxygen (one of the most active elements), which means it will not rust and tarnish very little. Gold tarnish is very thin and shows up as a darkening of reflecting surfaces. Gold is among the most electrically conductive of all metals. Since electricity is basically the flow of charged particles in a current, metals that are conductive allow this current to flow unimpeded. Gold is able to convey even a tiny electrical current in temperatures varying from -55° to +200° centigrade.
"Purple plague" is a brittle gold aluminum compound formed when bonding gold to aluminum. The growth of such a compound can cause failure in microelectronic interconnection bonds.