

ALLOY C7026

COPPER-NICKEL-SILICON
Cu-Ni-Si



Exceptional Performance
Versatile Product
Global Availability





Aggressive environments and increasing reliability demand performance from your materials selection. If you are searching for a high strength interconnect alloy which is available, reliably delivered, globally serviced and supported with outstanding technology - look no further than C7026.

The combination of strength, bend formability and stress relaxation stability make C7026 a clear option to proprietary alloys like C7025, Brush 60 (17460), and 171. C7026 is also an upgrade to modified tin brass and modified phosphor bronze alloys - which lack stability at high operating temperatures.

Its combination of properties make C7026 an ideal candidate for miniature, fine pitch components, elevated temperature interconnects, telecommunication and high reliability applications.

Ex·cep·tion·al (ĕk-sĕp'shən-əl) *adj.*

1.) Well above average.
e.g.: C7026

Stability in the Long Run

With each new generation in connector design, higher levels of performance are required. Miniaturization, high frequency signals, mixed power/signal, and increased operating temperatures require designers to be more demanding in alloy selection.

As shown in Figure 1, C7026 stands up to the test at 150 C, while maintaining 79% of the initial stress after 1000 hours (and 71% remaining after 10,000 hours), which is above the standard of 70%.

C7026 provides similar performance to competitive alloys while providing a material solution which avoids the pain of single sourced proprietary materials. PMX has established a global supply chain which can support your application needs - from a few pounds to truckloads per week. Our global network scales production lots and service channels to fit your needs.

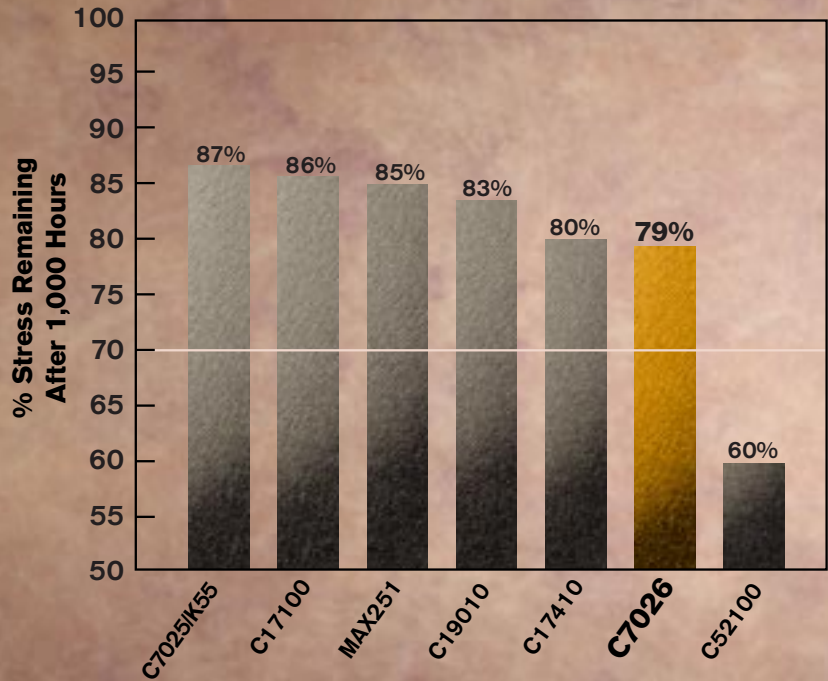


Figure 1
Stress Relaxation Resistance at 150°C
(Initial Nominal Yield Strength 70-95 ksi)

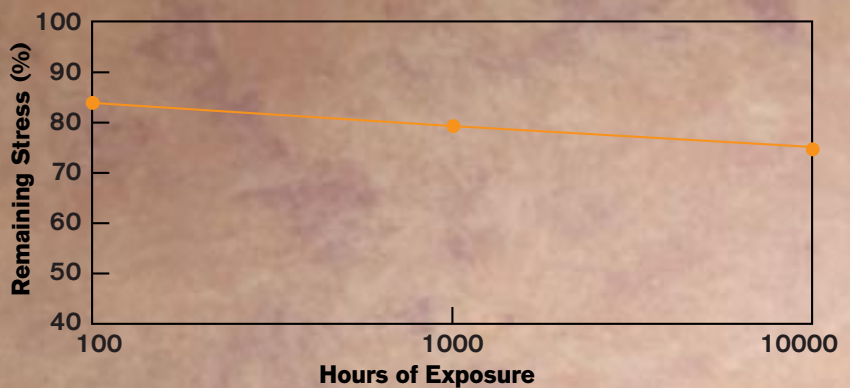


Figure 2
Stress Relaxation Resistance of C7026 at 150°C



Like most people today
you're looking for that
do-everything tool that lets
you go from design to
implementation with less
worry, little hassle and in less
time than your competition.

While it may not open
your favorite bottle of wine,
C7026 is the versatile alloy
you've been searching for.
With its wide range of
capabilities and world-wide
availability, C7026 makes
designing a finished product
easier, purchasing a global
alloy friendlier and your life a
little bit simpler.

Perhaps you should start
looking for that corkscrew.

Ver•sa•tile (vûr'sə-təl) adj.

1.) Capable of doing many things.
e.g.: C7026

Formable

Bend formability is an important focus as connector designs continue to miniaturize. Unlike many alloys on the market, the increased strength and stress relaxation benefits of C7026 are achieved without sacrificing formability.

(Figures 3&4)

C7026 possesses ideal formability for many of your electronic products. In many applications, tighter bends may be possible depending on gauge, width of bend, and tooling method. Call our engineering or product specialists for a free consultation on your specific application.

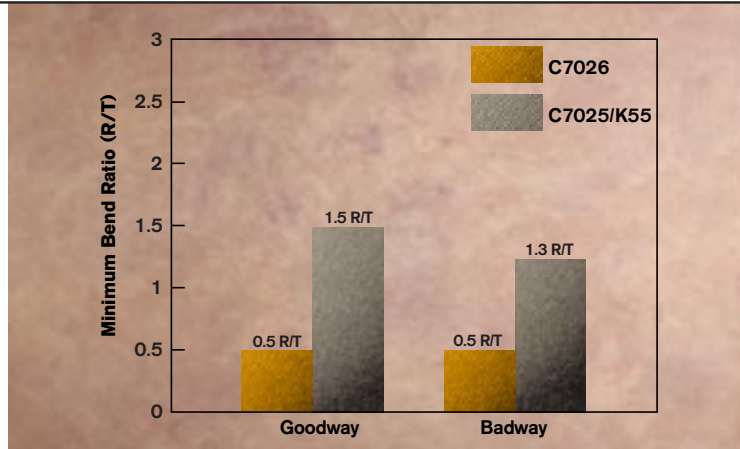


Figure 3

Typical Bend Formability of C7026 and C7025/K55 at TM00 (75-80 ksi Yield Strength) Samples 0.69" (17.5 mm) in width

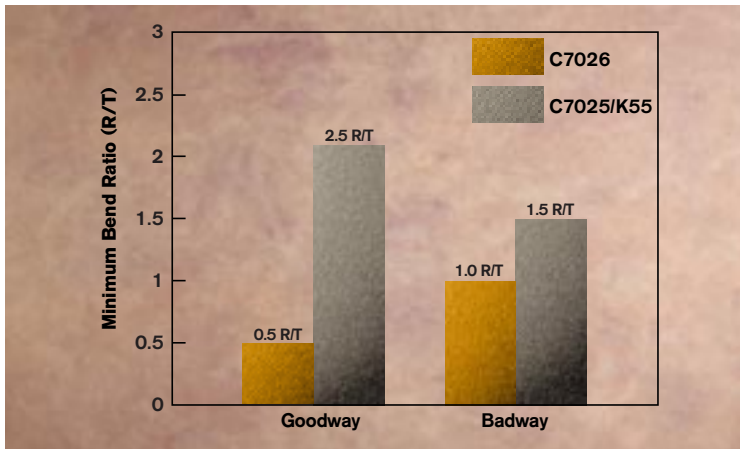


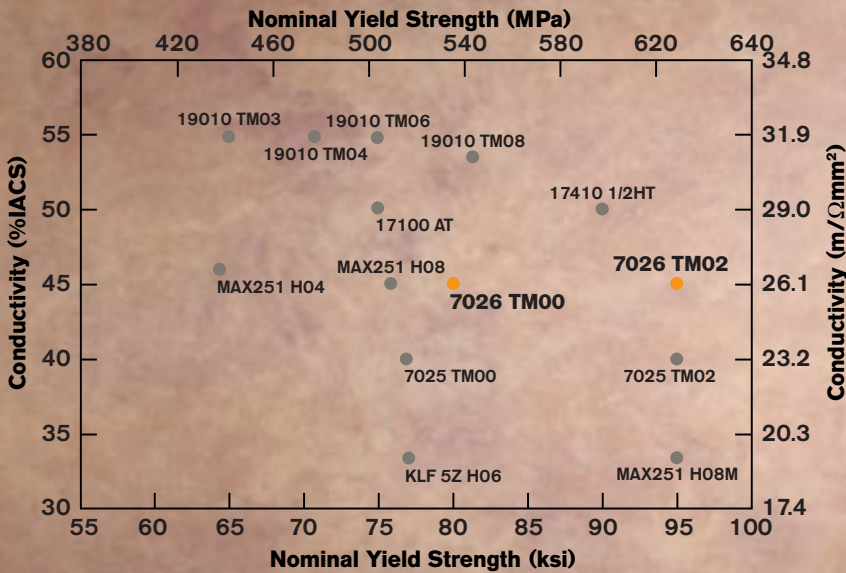
Figure 4

Typical Bend Formability of C7026 and C7025/K55 at TM02 (95-100 ksi Yield Strength) Samples 0.69" (17.5 mm) in width

Bend Properties

	Temper	
	TM00	TM02
90 Degree Bend		
Goodway - (min. R/T)	0.5	0.5
Badway - (min. R/T)	0.5	1

Samples 0.69" (17.5 mm) in width Data reported from samples <.032" (0.8 mm) in thickness



Strong Yet Conductive

One of the most discussed aspects of alloy selection is strength versus conductivity. It is often the case that many alloys will sacrifice conductivity for strength. In contrast, alloy C7026 positions well with improvements over competing alloys and is useful at yield strengths up to 100ksi. (Figure 4)

Conversions

1 psi = 0.00689 MPa

1 ksi = 6.895 MPa

1% IACS = 0.58 m/Ωmm²

Figure 5

Comparison of Yield Strength to Electrical Conductivity of Various Connector Alloys

Global (glō'bəl) adj.

1.) World wide.

e.g.: C7026

Today's business environment has drastically changed from that of 30, or even 10 years ago. Not only do many companies compete in a global marketplace, but they also design, test, and manufacture products in a "global factory." Competitive pressures continue to shrink new product development cycle time requirements. In this environment, the streamlining of raw materials is an excellent way to shrink time to market while controlling costs. When comparing alloys that have good formability and stand up to 150 C temperatures, C7026 provides a high strength solution at moderate electrical conductivities.

To consolidate and standardize alloys for global manufacture, it is also necessary to have a global supply base for raw materials. Alloy C7026 is available globally. In addition PMX has created a unique support system for prototyping, small lot size purchases and creating a reliable supply chain.

Engineers today are looking at products of tomorrow, C7026 has been designed to meet your needs both today and for the future.

C7026

(Cu/2.0Ni/0.45Si)

High Strength Alloy for Elevated Temperature and Electronic Interconnects

Chemical Composition

	Wt. %
Copper	Balance
Nickel (incl. Co)	1.0-3.0
Silicon	0.2-0.7
Phosphorous	0.010 max.
Other	0.50 max.

Physical Properties

	SI Unit	US Customary Unit
Melting Point	1060 (°C)	1940 (°F)
Density	8.9 (gm/cm ³ @ 20°C)	0.320 (lbs/in ³) @68°F
Electrical Conductivity (Annealed)	23.2 (m/Ωmm ²)	40 (%IACS) @68°F
Thermal Conductivity (Annealed)	0.37 (cal•cm/cm ³ •sec•°C)@20°C	90 (Btu•ft/ft ² •hr•°F) @68°F
Modulus of Elasticity (Tension)	130,000 MPa	19,000 ksi

Mechanical Properties

SI Unit	Temper(1)	
	TM00	TM02
Tensile Strength (MPa)	584-653	653-722
Yield Strength (0.2% Offset, MPa)	515 min.	653 min.
Elongation (%)	15 min.	6 min.
Nominal Hardness (HV) ref.	190	210
Conductivity (Min m/Ωmm ²)	23.2	23.2
US Customary Unit	TM00	TM02
Tensile Strength (ksi)	85-95	95-105
Yield Strength (0.2% Offset, ksi)	75 min.	95 min.
Elongation (%)	15 min.	6 min.
Nominal Hardness (HV) ref.	190	210
Conductivity (Min %IACS)	40	40

Details released herein are believed to be accurate at the time of issue and are considered for general information only. Use of this information is to be at the consumer's discretion.

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