

Prince & Izant Company

12999 Plaza Drive
Cleveland, Ohio 44130
T: 216-362-7000
F: 216-362-7456
princeizant.com



BONDING WIRE TECHNICAL DATA

GOLD

99.99% pure gold wire at ultra-fine diameters is used for bonding in the semiconductor industry. Wire diameters typically range from 0.0005-0.002” however larger and smaller sizes are also available. In some cases, for improved conductivity or enhancement of other properties a

GOLD	Purity % or Composition	Resistivity (Ω /cmf 0°C)		Temp. Coeff. Of Resistance (0-100°C)		Tensile Strength (KPSI)		Elongation (%)		Melting Point (°C)	Densit y (g/cm ³)	Forms Available		
		Hard	Annl d	Hard	Annl d	Hard	Annl d	Hard	Annl d			S	W	R
Gold	99.99%	12.8	12.6	.003 8	.0039	46	20	1.5	36	1063	19.30	y	y	y
Gold, High Purity	99.999%	12.3	12.1	.003 9	.0040	46	19	1.5	36	1063	19.30	*	y	y

S= Sheet , W = Wire , R = Ribbon , y = Regularly Available , * = Available on Special Order

SPECIFIC WIRE PROPERTIES

GOLD WIRE CHARACTERISTICS			
Diameter	Temper	Elongation	Minimum Breaking Load
.001”	Hard	.5-2%	18 grams
	Stress-Relieved	1-3%	8 grams
	Annealed	3-8%	7.5 grams
	Fully Annealed	8-12%	6 grams
.0015”	Hard	5-2%	40 grams
	Stress-Relieved	1-3%	16 grams
	Annealed	3-8%	15 grams
	Fully Annealed	8-12%	13.5 grams
.002”	Hard	5-2%	70 grams
	Stress-Relieved	1-3%	32 grams
	Annealed	3-8%	30 grams
	Fully Annealed	8-12%	24 grams

ALUMINUM AND ALUMINUM ALLOYS

ALUMINUM AND ALUMINUM ALLOYS	Purity % or Composition	Resistivity ($\Omega/\text{cmf } 0^\circ\text{C}$)		Temp. Coeff. Of Resistance ($0-100^\circ\text{C}$)		Tensile Strength (KPSI)		Elongation (%)		Melting Point ($^\circ\text{C}$)	Density (g/cm^3)	Forms Available		
		Hard	Annl d	Hard	Annl d	Hard	Annl d	Hard	Annl d			S	W	R
Aluminum #1100	99%	18	16.2	.0035	.0038	26	13	4	40	643	2.71	n	y	y
Aluminum High Purity	99.999%		117.45	.0038	.0044	16.3	6.8	5	60	660	2.7	n	y	y
Aluminum-Silicon	Al/1%Si		16.415.219.6	.0042	.0046	45	17	1	12	600	2.61	n	y	y
Aluminum-Magnesium	Al/1%Mg		18.9	.0035	.0037	65	23	1	9	640	2.65	n	y	y

S = Sheet , W = Wire , R = Ribbon , y = Regularly Available , n = Not Available

IRON AND NICKEL ALLOYS

IRON AND NICKEL ALLOYS	Purity % or Composition	Resistivity ($\Omega/\text{cmf } 0^\circ\text{C}$)		Temp. Coeff. Of Resistance ($0-100^\circ\text{C}$)		Tensile Strength (KPSI)		Elongation (%)		Melting Point ($^\circ\text{C}$)	Density (g/cm^3)	Forms Available		
		Hard	Annl d	Hard	Annl d	Hard	Annl d	Hard	Annl d			S	W	R
Constantan	Cu/45%Ni	315	294	\pm .00003	\pm .00002	150	80	2	32	1270	8.86	n	y	y
Kovar (G)	Ni/17%Co/Bal. Fe	330	294	.003	.0033	180	90	2	28	1430	8.36	n	y	y
Tophet A (G)	Ni/20%Cr	630	650	.0001	.0001	200	100	2	26	1400	8.41	n	y	y
Tophet C (G)	Ni/15%Cr/Bal. Fe	630	675	.00015	.00013	175	95	2	28	1400	9.25	n	y	y
Stainless Steel #302	Fe/18%Cr/1%Ni plus Mn, C, Si	423	460	.00035	.00017	250	110	2	40	1420	7.9	n	y	y
Alloy 800	Ni/20%Cr/2.5%Al/2.5%Mn	-	800	-	.0002	200	100	1	10	1350	8.1			
#316 Stainless	Fe/17%Cr/12%Ni/2%Mo		445			250	75	10	40	1390	8.03			

S = Sheet , W = Wire , R = Ribbon , y = Regularly Available , n = Not Available

USES

Gold is widely used in numerous electrical, electronic and industrial applications, such as waveguide assemblies, transistor units and circuit boards. Gold have been readily used in coating and spattering applications in numerous electrical and industrial applications. Gold has been extensively used in dental and jewelry applications as well.

BRAZING CHARACTERISTICS

Gold is typically selected for its favorable thermal and electrical conductivity properties, as well as for its good resistance to oxidation and corrosive attack. It also exhibits excellent ductility and is easily joined by welding or brazing.

PROPERTIES OF BRAZED JOINTS

The properties of a brazed joint are dependent upon numerous factors including base metal properties, joint design and filler metal.

SPECIFICATIONS

N/A

AVAILABLE FORMS

Wire, strip, engineered preforms and specialty preforms per customer specification, powder and paste.

Individuals requiring further information and Engineering Specification Documents may wish to contact the Engineering Society for Advanced Mobility, Land Sea Air and Space, The Society of Automotive Engineers <http://www.sae.org/> (SAE AMS) or The American Welding Society (AWS) <http://aws.org/>

NOTE:

DISCLAIMER

The information and recommendations contained in this publication have been provided without charge & compiled from sources believed to be reliable and to represent the best information available on the subject at the time of issue. No warranty, guarantee, or representation is made by the Prince and Izant Company, Inc. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Prince and Izant Company, Inc. assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this (and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances.