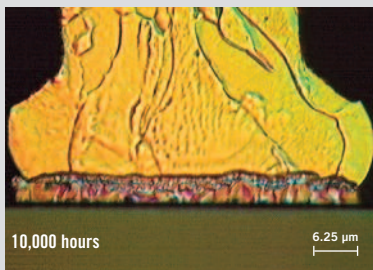
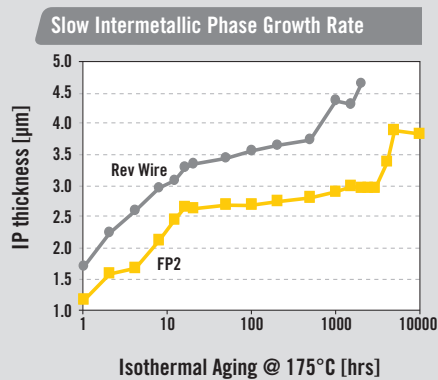


FP2 2N Gold Wire for Proven Ultimate Reliability



10,000 hours
Reliable intermetallic growth –
Cross-section of device after aging @ 175°C



FP2 Benefits

- Ultimate reliability wire through slow and uniform inter-metallic growth
- Superior elastic modulus provides sweep resistance for long wire span or ultra-fine pitch
- Short, fine-grain HAZ permits extremely low looping
- Excellent for ultra-fine wire diameters and low-k device compatibility



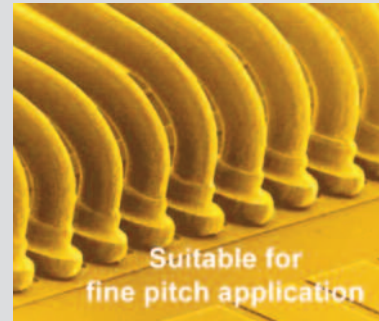
Cross-section of Fine & Short HAZ

FP2 Mechanical Properties

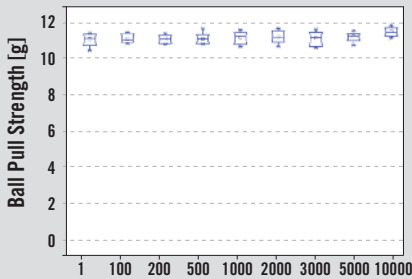
Diameter	Microns	15	18	20	23	25	28	30	32	33
	Mils	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.25	1.3
Recommended Specs for Ball Bonding										
Elongation (%)		2 – 5	2 – 6	2 – 6	2 – 7	2 – 7	2 – 7	2 – 7	2 – 7	2 – 7
Breaking Load (g)		3 – 7	5 – 9	6 – 11	9 – 14	11 – 16	14 – 20	16 – 21	18 – 24	19 – 26
Typical Breaking Load (g)										
Room Temperature @ 4% EL		4.5	6.7	7.6	10.0	11.9	15.1	17.4	20.0	21.3
High Temperature (250°C/20s)		4.2	6.2	7.1	9.3	11.0	14.0	16.0	18.5	20.0
In-Line Pad Pitch (μm)										
Min. In-Line Pad Pitch		35	45	50	60	65	70	80		

FP2 Characteristics (for 25 µm diameter wire)

Non-Gold Elements	< 1%
Breaking Load @ Room Temperature	> 12 g @ 4% EL
Breaking Load @ 250°C / 20 sec.	> 11 g
Elastic Modulus	> 95 GPa
Heat Affected Zone (HAZ)	~ 100 µm (for 50 µm ball diameter)
Neck Strength	> 11 g (at 50 µm ball diameter)
Density	19.26 g/cm ³
Heat Conductivity	2.25 W/cm-K
Electrical Resistivity	2.34 µhm-cm
Coeff. of Linear Expansion (0 – 100°C)	14.2 ppm / K
Fusing Current for 25 µm, dia 10 mm length (in air)	0.46 A
FAB Hardness (HV 0.01/5s)	57 ~ 61

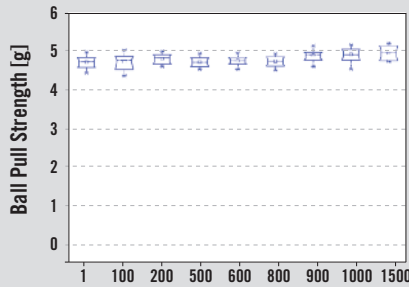


10,000 hours @ 175°C HTS (1 mil)



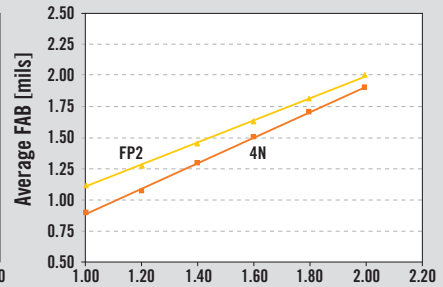
Isothermal Aging @ 175°C [hrs]

Ultra Fine Wire @ 200°C HTS (0.6 mil)



Isothermal Aging @ 200°C [hrs]

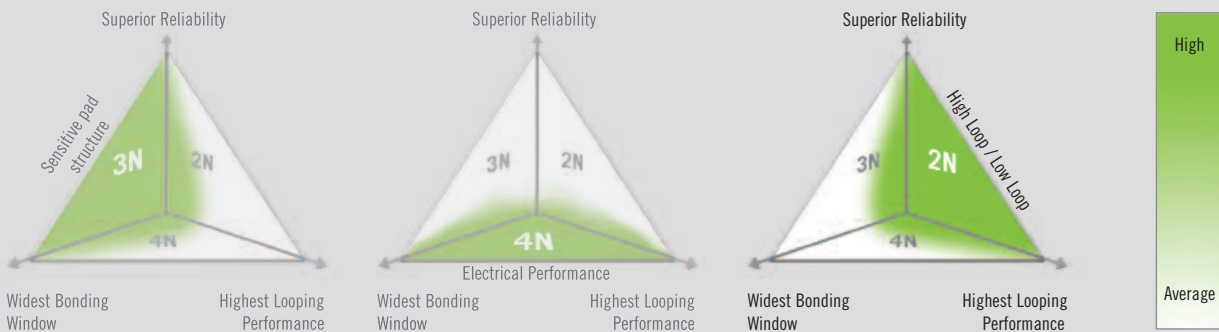
Slightly larger FAB over 4N Wire



Dialed in FAB [mils]

Application Note:
 · Dialed FAB is slightly larger than usual 4N wire (refer to graph on the right)
 · Recommended to use K&S Fortus Capillary with FP2

Gold Wire Segmentation by Properties



W. C. Heraeus GmbH

Contact Materials Division
 Business Unit Bonding Wire
 Heraeusstr. 12-14
 63450 Hanau, Germany
 Phone: +49 6181.35-5591
 Fax: +49 6181.35-5179
 bonding.wires@heraeus.com
 www.heraeus-contactmaterials.com