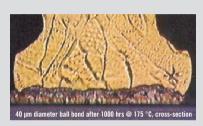
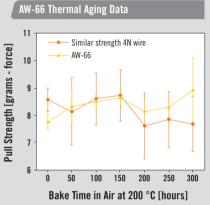
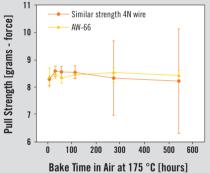
Heraeus

AW-66 4N Gold Ball Bonding Wire for High Reliabilty









AW-66 Benefits

- Long-term stability of ball bonds through robust intermetallic growth
- Excellent bondability on a wide range of wafer metallizations
- Large process windows for 1st and 2nd bonds
- Versatile looping capabilities
- Applicable for wire diameter reduction programs (cost reduction)
- For ultra-fine-pitch applications –
 AW-66X with superior tolerances

Bonding Conditions: 23 µm wire diameter Capillary: 414FF-2455-R33 40 µm ball bond diameter

Recommended Technical Data of AW-66											
Diameter Microns	15	16	17	18	19	20	23	25	28	30	33
Mils							0.9	1.0	1.1	1.2	1.3
	AW-66X						AW-66				
Recommended Specs fo	or Ball Bonding										
Elongation (%)	2 – 6	2 - 5	2 – 5	2 – 6	2 – 6	2 – 6	2 – 7	2 – 7	2 –7	2 – 7	3 – 7
Breaking Load (g)	3 - 6	3 – 7	4 – 7	4 – 8	5 – 9	5 – 10	7 – 12	9 – 14	11 – 16	13 – 20	15 - 23
In-Line Pad Pitch (µm)*											
Min. In-Line Pad Pitch	35	40	40	45	45	50	60	65	65	70	80

^{*} Recommended pad pitch with corresponding wire diameter.

For other diameters, please contact Heraeus Bonding Wires sales representative.

The data given here is valid. We reserve the right to make technical alterations.

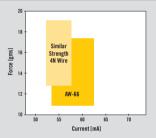
Results may vary with package and die configuration, as well as bonding process

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AW-66 Characteristics for 25 µm diameter

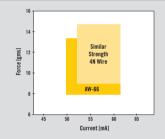
Non-Gold Elements	< 100 ppm				
Elastic Modulus	\sim 80 GPa				
Heat Affected Zone (HAZ)	50 — 170 μm				
Neck Strength	\sim 11 g (at 50 μ m ball diameter)				
Melting Point	1063 °C				
Density	19.32 g/cm ³				
Heat Conductivity	3.17 W/cm·K				
Electrical Resistivity	2.3 μ Ω -cm				
Coeff. of Linear Expansion (20 – 100°C)	14.2 ppm/K				
Fusing Current for 25 µm, dia 10 mm length (in air)	0.37 A				

1st Bond Window on BOAC Die



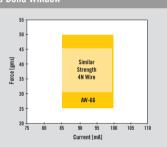
Bonding Conditions: 25 μm wire \cdot BOAC die on BGA, T = 170°C Ball diameter target 50 μm +/- 2 μm \cdot Shear strength target > 6.0 g/mil^2 \cdot IP coverage > 75% Squash height 10 +/- 2 μm

1st Bond Window on Conventional Die



Bonding Conditions: Al 1%Si 0.5%Cu, 1 μ m over SiO₂ \cdot 25 μ m wire on BGA \cdot T = 170°C \cdot Ball diameter target 48 μ m +/- 2 μ m Shear strength target >0.6 g/mil^2 \cdot IP coverage >75% \cdot Squash height 9 +/- 2 μ m

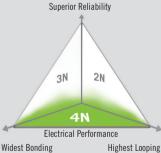
2nd Bond Window



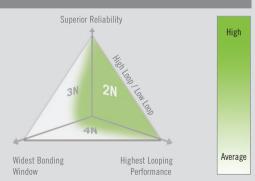
Bonding Conditions: Capillary tip 3.4 mil, 25 μ m wire on QFP, T = 200°C · Stitch pull target > 5 gram · No NSOL, optically acceptable crescent bond

Gold Wire Segmentation by Properties





Widest Bonding Highest Looping
Window Performance



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The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for particular application.