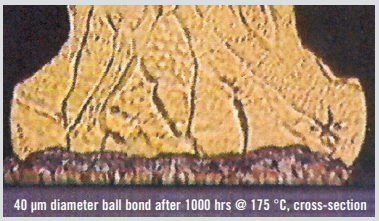
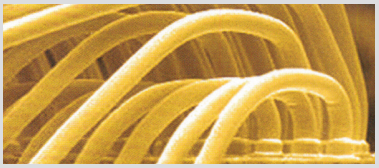
Heraeus

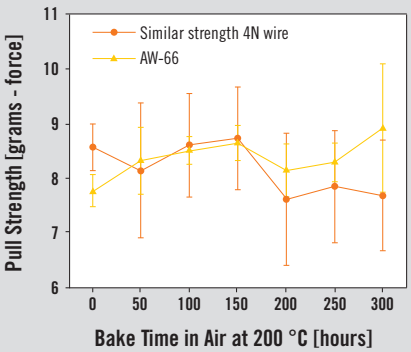
AW-66
4N Gold Ball Bonding Wire for High Reliabilty

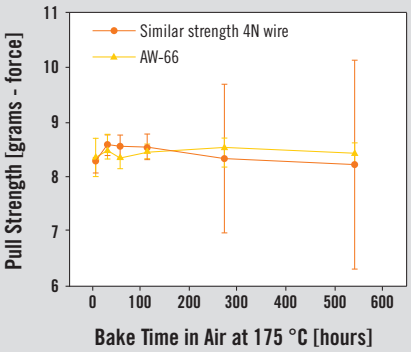


40 µm diameter ball bond after 1000 hrs @ 175 °C, cross-section



AW-66 Thermal Aging Data





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 reduuction)
- 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 for 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.

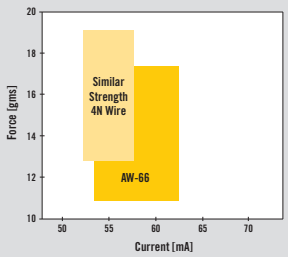
For other diameters, please contact Heraeus Bonding Wires sales representative.

Heraeus

AW-66 Characteristics for 25 µm diameter

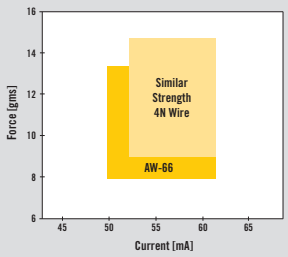
Non-Gold Elements	< 100 ppm
Elastic Modulus	~ 80 GPa
Heat Affected Zone (HAZ)	50 – 170 µm
Neck Strength	~ 11 g (at 50 µm ball diameter)
Melting Point	1063 °C
Density	19.32 g/cm^3
Heat Conductivity	3.17 W/cm·K
Electrical Resistivity	2.3 µΩ-cm
Coeff. of Linear Expansion (20 – 100°C)	14.2 ppm/K
Fusing Current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

1st Bond Window on BOAC Die



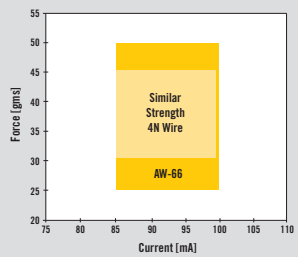
Bonding Conditions: 25 µm wire · BOAC die on BGA, T = 170°C Ball diameter target 50 µm +/- 2 µm · Shear strength target > 6.0 g/mil^2 · IP coverage > 75% Squash height 10 +/- 2 µm

1st Bond Window on Conventional Die



Bonding Conditions: Al 1%Si 0.5%Cu, 1 µm over SiO_2 · 25 µm wire on BGA · T = 170°C · Ball diameter target 48 µm +/- 2 µm Shear strength target > 0.6 g/mil^2 · IP coverage > 75% · Squash height 9 +/- 2 µm

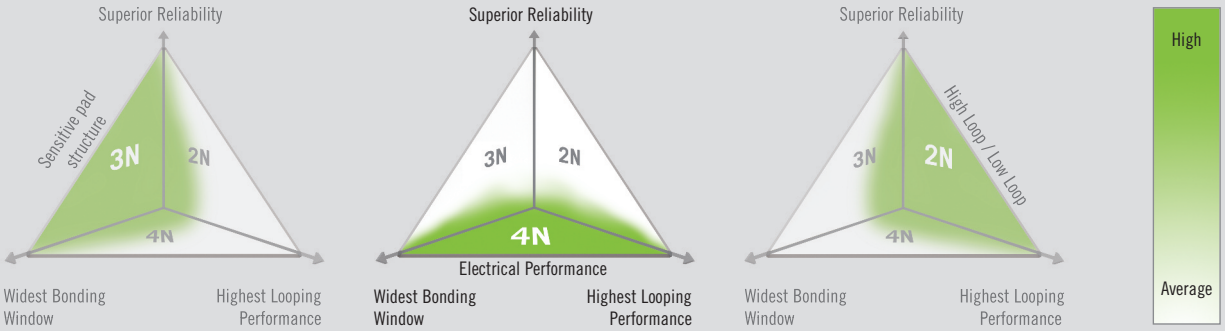
2nd Bond Window



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

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

Gold Wire Segmentation by Properties



Heraeus Electronics
Heraeus Deutschland GmbH & Co. KG
Heraeusstraße 12-14
63450 Hanau, Germany
www.heraeus-electronics.com

Americas
Phone +1 610 825 6050
electronics.americas@heraeus.com

China
Phone +86 21 3357 5457
electronics.china@heraeus.com

Asia Pacific
Phone +65 6571 7677
electronics.apac@heraeus.com

Europe, Middle East and Africa
Phone +49 6181 35 3069
+49 6181 35 3627
electronics.emea@heraeus.com

N, Layout: HET14009-0516-1