Heraeus

AW-29

Gold Bonding Wire for Universal Use in Discrete and IC (Larger Dia) Applications

AW-29 Benefits

- Permits ease of looping for high loop applications
- Robust 2nd bond with wide application range for low temperature bonding, such as on soft substrate e. g. COB and Hybrids packages
- Established for use on sensitive IC die metallizations with wire diameter ≥ 30 µm
- Compatible with high speed automatic ball bonding equipment

AW-29 –
for standard bonding applications

Ideal for discrete devices such as LEDs, Optos etc, AW-29 is typically found in 25 µm to 35 µm diameters. This alloy displays salient characteristics via its long HAZ which facilitates ease of looping for both medium (~170 µm)* and high loop (~230 µm)* applications, thereby minimizing requirements on machine looping capability. In addition, AW-29's large process 2nd bond window makes it an excellent choice for low temperature bonding on soft substrates. AW-29 is also commonly used on sensitive die metallization, even in diameters > 30 µm.

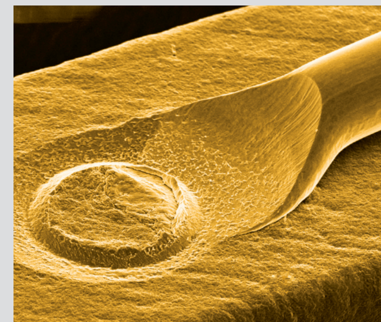
* Reference to 25 µm wire dia.

Application Data*

First bond results on optimum setting

	Ball Diameter (µm)	Squash Height (µm)	Shear Force (g)	Shear Strength (g/mil²)
Mean	88	16	71.1	7.5
Std Dev	0.35	0.63	2.7	0.3
Min	84	13	66.0	6.5
Max	93	20	76.2	7.9

* Results may vary with package and die configuration, as well as bond process.



Bonding Conditions: Wire diameter: 33 µm · Wire bonder: K&S 1488 turbo
Package type: PLCC 68 leads · Die metallization: AlSi (1%) Cu (0.5%)
Leadfrane: Ag: Plated Cu · Wire span: 3.2 – 4 mm · Loop height range: 230 µm +/- 25 µm
Bonding temperature: 240°C · Capillary: 41413-0013-335 · T=3.7 mil, FA 8°

Recommended Technical Data of AW-29

Diameter	**Microns**	20	23	25	28	30	32	33	35	38	50
	Mils	0.8	0.9	1.0	1.1	1.2	1.25	1.3	1.4	1.5	2.0
Recommended Specs for Ball Bonding											
Elongation (%)		2 – 6	2 – 6	2 – 6	2 – 6	2 – 7	2 – 7	2 – 7	2 – 7	2 – 7	4 – 12
Breaking Load (g)		3 – 8	5 – 10	7 – 12	9 – 15	10 – 17	12 – 19	13 – 20	15 – 23	19 – 27	30 – 45

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

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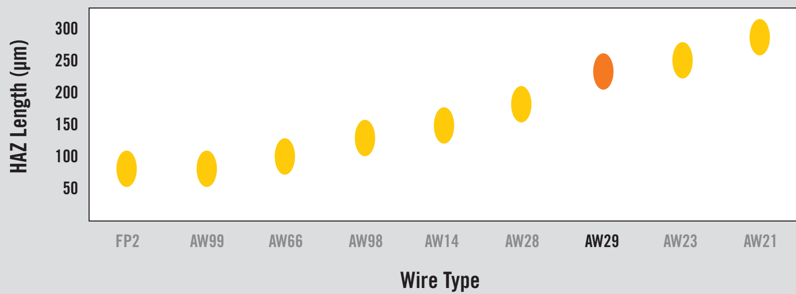
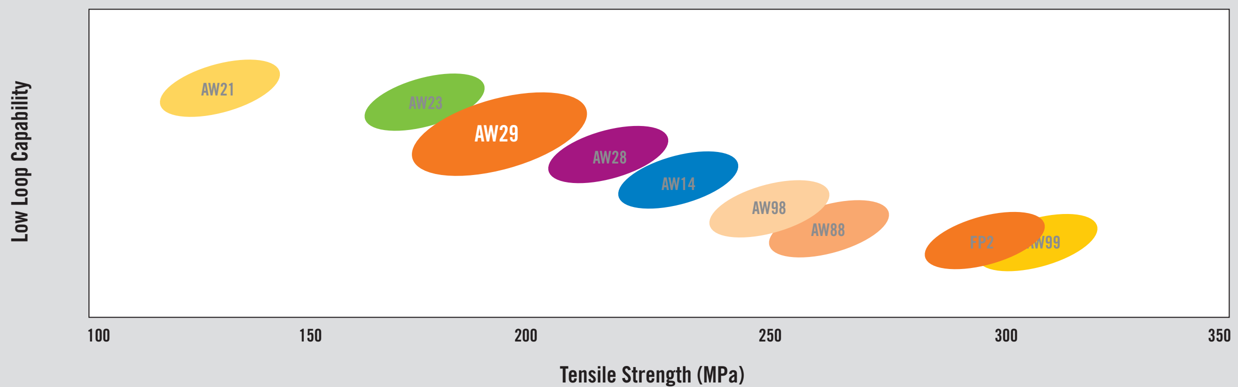
AW-29 Characteristics for 30 µm diameter

Non-Gold Elements	< 100 ppm
Elastic Modulus	~ 70 GPa
Heat Affected Zone (HAZ)	90 – 280 µm
Neck Strength	~ 11 g (at 70 µm ball diameter)
Melting Point	1063 °C
Density	19.3 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 30 µm, dia 10 mm length (in air)	0.44 A

HAZ Length – 25 µm wire, 50 µm FAB) (Measurement accuracy +/- 10 µm)



Low Loop Capability vs. Tensile Strength



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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.

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

11.2017/ Layout: Lunis, Wiesbaden_HET14008-1117-2