## Heraeus

# AW-99 Gold Bonding Wire for the Most Demanding Looping and Finest Pad Pitch





#### **Application Data\***

First bond results on optimum setting

	Ball Diameter	Squash Height	Shear Force	Shear Strength	
	(µm)	(µm)	(g)	(g/mil)	
Mean	31.8	10.2	12.4	7.0	
Std Dev	0.4	0.6	0.5	0.3	
Min	37.5	9.0	11.7	6.56	
Max	38.8	11.2	13.3	7.72	

<sup>\*</sup>Results may vary with package and die configuration, as well as bond process.

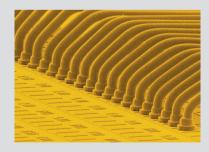
AW-99 (99.99% pure) provides the highest strength and modulus 4N wire in the market today. This gold bonding wire is a broad performing alloy with mechanical properties comparable to leading 2N alloys while retaining the electrical properties of 4N wires.

AW-99's large bonding window, excellent

resistance to sway and mold sweep coupled with robust looping characteristics makes it a preferred choice for multiple applications including those for the finest pad pitch (down to 35  $\mu$ m) and the most rigorous looping. In addition, AW-99 is beryllium free and is compatible even to sensitive/thin pad structures.

#### AW-99 Benefits

- Large process windows with robust 1st and 2nd bonds for a wide range of applications and pad pitch (down to 35 μm)
- Highest strength and modulus comparable to 2N (99%) Au allo
- Robust looping and shortest HAZ length caters for demanding and ultra-low loops such as multistacked die and multi-tier BGA configurations
- High strength retention provides excellent resistance to sway and mold sweep
- Suitable for aggressive wire diameter reduction programs
- Delivers superior strength while retaining compatibility to sensitive/thin pad metallizations
- Environmental friendly Beryllium free



bonung containes: The data recent to pin (O.8 mis) - Wire bonder: K&S 208S - Package (type: 320-led PBGA - Die metalitzation: AISi (1%) Cu (0.5%) - Wire span: 3.5 - 4.5 mm Loop Height Range. 150-165 µm - Bonding

Recommended Technical Data of AW-99								
Diameter	Microns	15	18	20	23	25	28	30
	Mils	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Recommended Specs for B								
Elongation (%)		2 – 5	2 – 6	2 – 6	2 – 7	2 – 7	2 – 7	2 – 7
Breaking Load (g)		3 – 6	4 – 8	5 – 10	7 – 12	9 – 14	11 - 16	13 - 20
In-Line Pad Pitch (μm)								
Min. In-Line Pad Pitch		35	45	50	60	65	70	80

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

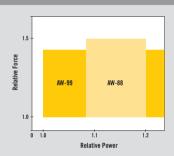
High

Average

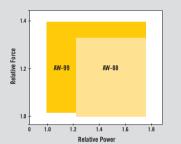
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AW-99 Characteristics for 25 µm diameter			
Non-Gold Elements	< 100 ppm		
Elastic Modulus	$\sim$ 90 GPa		
Heat Affected Zone (HAZ)	$40-170~\mu m$		
Melting Point	1063 °C		
Density	19.32 g/cm <sup>3</sup>		
Heat Conductivity	3.17 W/cm·K		
Electrical Resistivity	2.36 μ $\Omega$ -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		

#### Parameter Window for 1st Bond

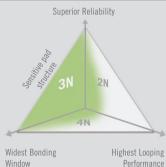


#### Parameter Window for 2nd Bond



# package and die \*Results may vary with configuration, as well a

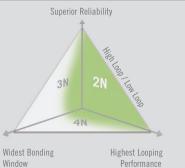
#### Gold Wire Segmentation by Properties





### Superior Reliability 3N 2N 4N **Electrical Performance** Widest Bonding Highest Looping

Window Performance



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