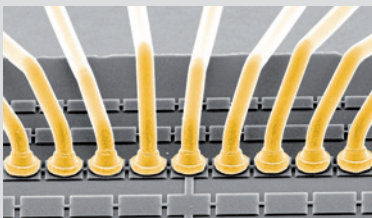
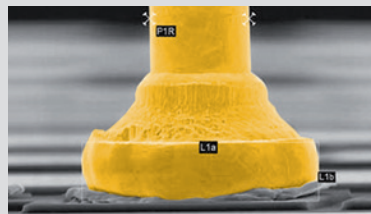


### Au HA3

#### Low Loop • High Reliability • Bumping



In contrast to doped Au wires, alloyed wire types contain a low percentage of alloying elements. This results in markedly higher wire strength, shorter heat affected zones and better thermal stability without a significant increase in electrical resistance. The increased wire strength, while maintaining all other mechanical properties, permits a reduction of



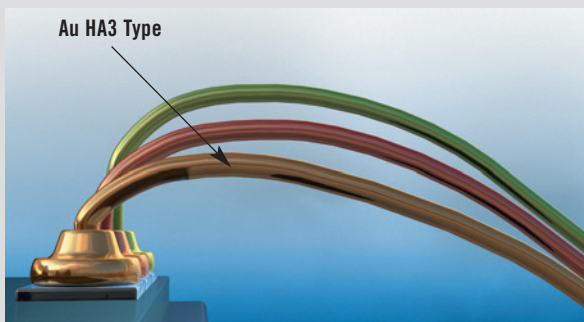
wire diameter together with a marked saving in precious metal costs.

Areas of application

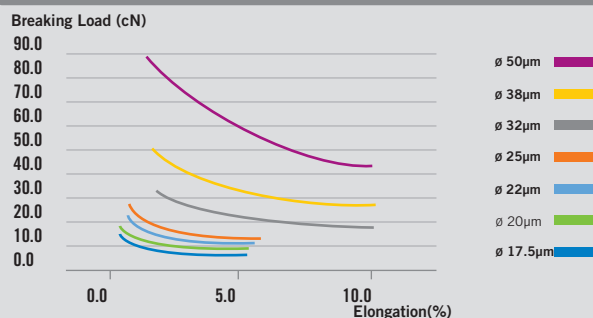
- High frequency bonding
- Low temperature bonding
- Low- and long-loop bonding
- High speed bonding
- Ultra fine pitch bonding
- Ball bumping

#### Au HA3 Benefits

- High reliability wire type
- Increased strength, high loop stiffness
- Very good pull strengths and shear
- Long & low loop geometries
- Optimum stabilized phase formation
- High thermal stability



#### Breaking Load vs. Elongation



#### Recommended Technical Data of Au HA3

Diameter	Microns (µm)	17.5	20	23	25	30	33	38	50
	Mils	0.7	0.8	0.9	1.0	1.2	1.3	1.5	2.0
Elongation	%	2 - 6	2 - 6	2 - 6	2 - 8	2 - 8	3 - 8	3 - 8	3 - 8
Breaking Load	cN	> 5	> 6	> 8	> 10	> 15	> 18	> 22	> 40

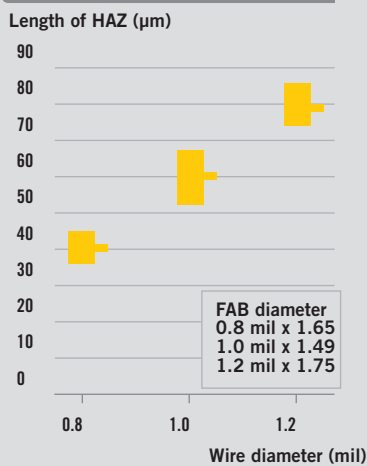
For other diameters, please contact Heraeus Bonding wires sales representative.

### HA3 Characteristics for 25 µm diameter

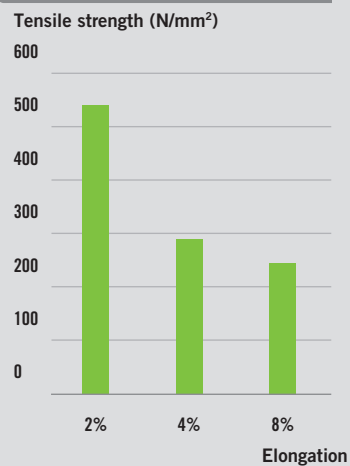
Non-Gold Elements	< 1.03wt %
Elastic Modulus	> 90 GPa
Heat Affected Zone (HAZ)	60 - 100µm
Melting Point	1063 °C
Density	19.2g / cm <sup>3</sup>

Heat Conductivity	3.03 W/cm.K
Electrical Resistivity	2.9µΩ-cm
Coeff. of Linear Expansion (20 – 100 °C)	14.2 ppm / K
Fusing Current for 25 µm, dia 10 mm length (in air)	0.35 A

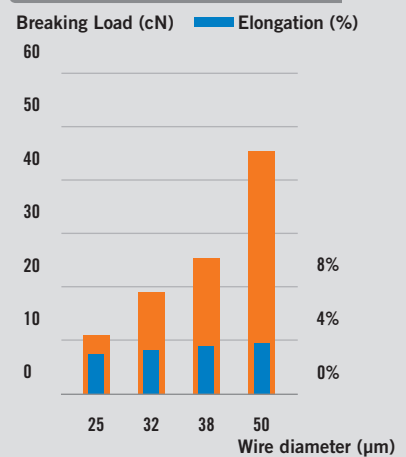
### Heat Affected Zone (HAZ)



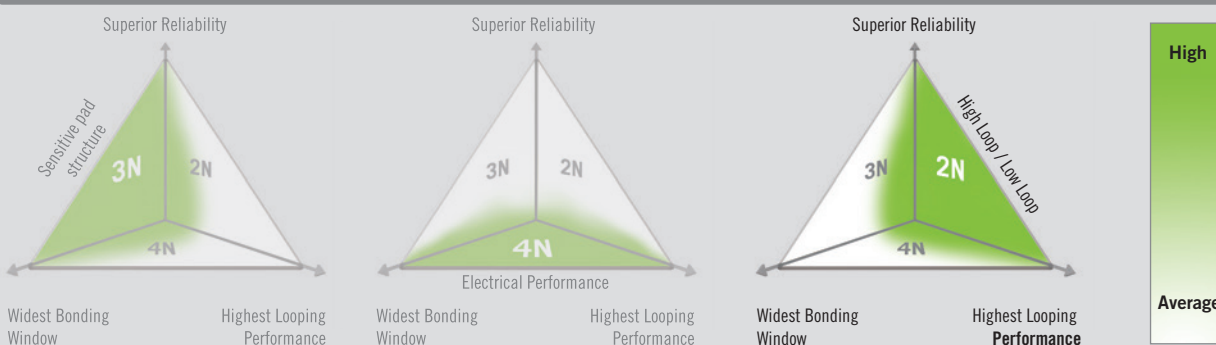
### Breaking Load vs. Elongation



### High Temperature Strength (HTS)



### Gold Wire Segmentation by Properties



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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 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 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.