Heraeus

Electronics

MaxSoft HR

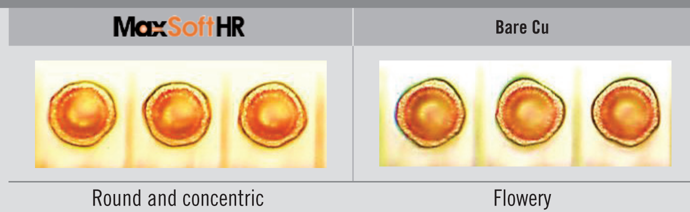
Copper Wire for High Reliability and Robust Bondability

MaxSoft HR Benefits & Features

- Excellent reliability performance
- Ultra-fine pitch wire bonding capability enabled with improved bonded ball shape
- Improved and enhanced 2nd bond performance over bare Cu wire
- Very good and consistent looping performance
- Longer floor life 10 days compared to bare Cu wire

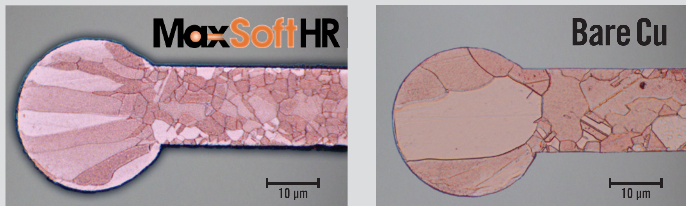
Bonded Ball Shape

MaxSoft HR	Bare Cu



Round and concentric	Flowery

FAB Morphology



Reliability Test – molded Package (0.7mil)

Test	Package	Conditions	Test Periods Passed
TCT	BGA	-65~150°C	>2,000 cycles
	Lead Frame		>2,000 cycles
HTST	BGA	150°C	>2,000 hours
	Lead Frame		>2,000 hours
uHAST	BGA	130°C/85%RH/ 33.5Psia	>768 hours
	Lead Frame		>768 hours

Recommended Technical Data of MaxSoft HR

Diameter	*Microns*	15	18	20	23	25	33	38	50
	Mils	0.6	0.7	0.8	0.9	1.0	1.3	1.5	2.0
Elongation	%	5–15	6–16	7–17	7–18	9–21	11–21	11–21	13–25
Breaking Load	*g*	3–6	5–8	7–10	9–13	10–16	18–26	26–34	52–60

For other diameters, please contact Heraeus sales representative.

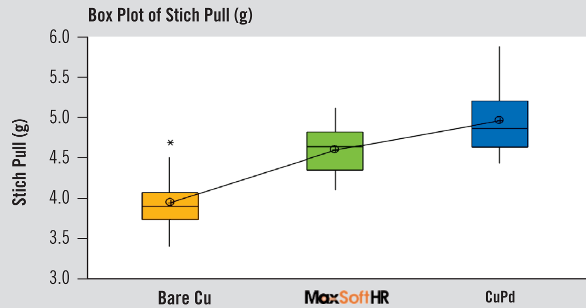
MaxSoftHR Characteristics for 0.7mil diameter

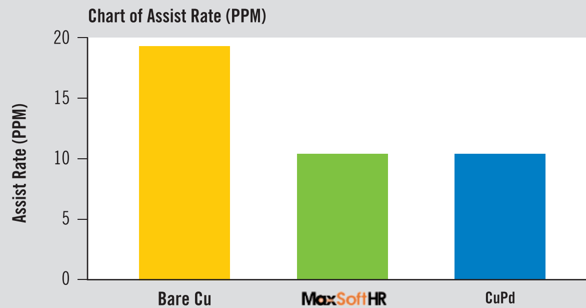
Physical Properties	
Density	8.93 g/cm³
Melting Point	1054°C
Specific Heat Capacity @ 25°C	0.71 J/g ·°C
Coeff. of Thermal Expansion (0 - 100 °C)	14.95 µm/m ·°C
Electrical Resistivity	1.74 µΩ · cm
FAB Hardness	90 – 100 HV (0.01 N/5 s)
Wire Hardness	95 – 105 HV (0.01 N/5 s)
Elastic Modulus	90 – 100 GPa

Chemical Composition	
Cu Purity	99 % min. (2N Cu)
Non-Cu elements	< 1 %

Other Guidelines	
Floor Life	10 days
Shelf Life Time	6 months
Shielding Gas	Forming Gas ($95N_2$:$5H_2$)

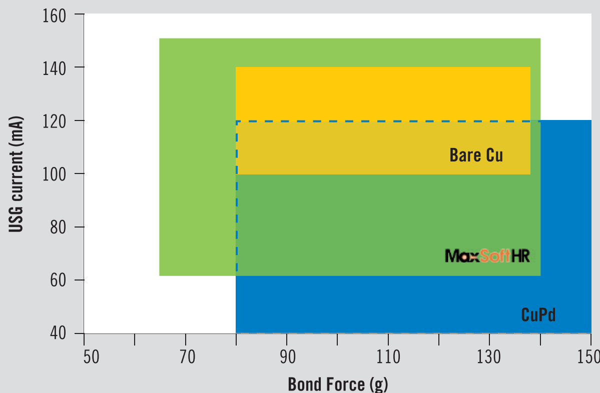
2nd Bond Stitch Pull & Assist Rate





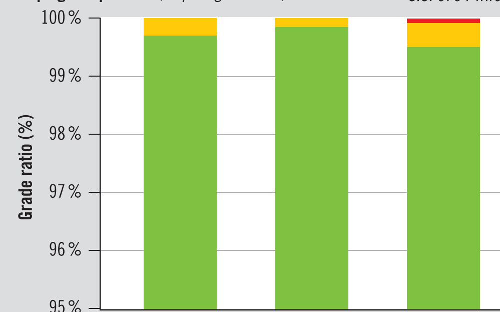
Wire Diameter: 0.7mil, Package Type: BGA

2nd Bond Process Window



Wire Diameter: 0.7mil, Package Type: BGA

Looping Performance



	Pd/Au_Cu	MaxSoftHR	Bare Cu
Grade C (wire touch)	0,00%	0,00%	0,06%
Grade B (slight varience)	0,30%	0,15%	0,58%
Grade A (good leaner)	99,70%	99,85%	99,36%

Wire Diameter: 0.7mil, Package Type: BGA

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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 Heraeus logo, Heraeus, Condura®, DTS®, Die Top System® and the Condura, DTS, Die Top System figurative mark are trademarks or registered trademarks of Heraeus Holding GmbH or its affiliates. All rights reserved.

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12.2017/ Layout: datagraphis_HET13002-1217-3

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