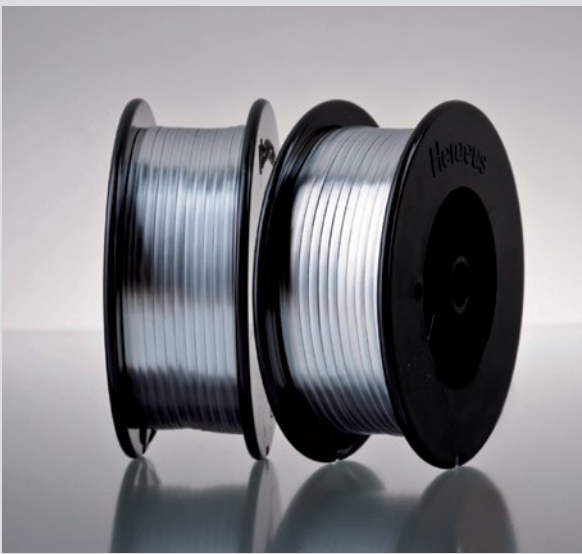


AluBond Prime Bonding Ribbons

Aluminum Bonding Ribbon For Extended Corrosion Resistance
And UPH Improvement



Heraeus Aluminum Bonding Ribbon – maintaining the strength of Heraeus Bonding Wire materials and outperforming the technical feasibilities in power electronics assembly.

The increasing demands for transmitting high currents in electronic power devices have driven the industry to investigate alternative interconnect solutions. Ultimate reliability and extreme robustness, together with improvements in productivity are always considered to be the main objectives of technical enhancements. Heraeus' Aluminum Ribbons for power applications provide an evolutionary extension to its well proven thick aluminum wire program – utilizing the strength of thick wire technology for ribbon products.

For the demands in fulfilling high electrical load requirements in today's power devices, the aluminum thick wire bonding has its limitations, e.g. Once it becomes necessary to bond a significant number of parallel wires. In such cases, Heraeus Aluminum Bonding Ribbon can

AluBond Prime Bonding Ribbons Benefits

- High electrical loads
- High reliability
- Corrosion resistant
- A significant number of wires replaced by one ribbon
- Saves space and time in electronic housing concepts
- Softest bonding with ribbon
- Potential for higher manufacturing yields
- Bondable on all common surfaces that are applicable for Al bonding

be an alternative. Due to ribbon's larger cross-section compared to wire, Heraeus Aluminum Bonding Ribbon can carry higher currents.

The idea behind using Heraeus Aluminum Bonding Ribbon for interconnect purposes is to give up some of the overall flexibility of Aluminum wire bonding, in order to gain a one-dimensional interconnect design with at least comparable or even better reliability and the potential of higher electrical performance. Quality and consistency of the alloys used in manufacture of Heraeus' Aluminum Bonding Ribbons is an important factor to achieve best reliability and robustness. Heraeus decided to transfer the advantages of its enhanced Aluminum materials, already successfully in use in today's automotive electronic devices, to Aluminum Ribbon manufacture.

The material composition and mechanical properties are equivalent to those of aluminum wires. In order to satisfy the requirements on the dimensional tolerances. Heraeus is using a fully computer controlled rolling equipment.

Recommended Technical Data of AluBond Prime

Dimension	mm	0.1 x 1	0.2 x 1	0.3 x 1	0.1 x 1.5	0.2 x 1.5	0.3 x 1.5	0.2 x 2	0.3 x 2
	mils *	4 x 40	8 x 40	12 x 40	4 x 60	8 x 60	12 x 60	8 x 80	12 x 80
Medium	Elongation	% > 10							
	Breaking Load	cN	620-950	1240-1890	1860-2850	930-1450	1860-2850	2790-4250	2480-3800
Soft	Elongation	% > 10							
	Breaking Load	cN	400-650	850-1300	1100-1800	650-1000	1250-1850	2000-2800	1400-2400

For other diameters, please contact Heraeus Electronics Product Management.

* 1 mil \approx 25 μ m

1cN \approx 1g

Dimension Table - Equivalent Numbers of Wires Per One Ribbon

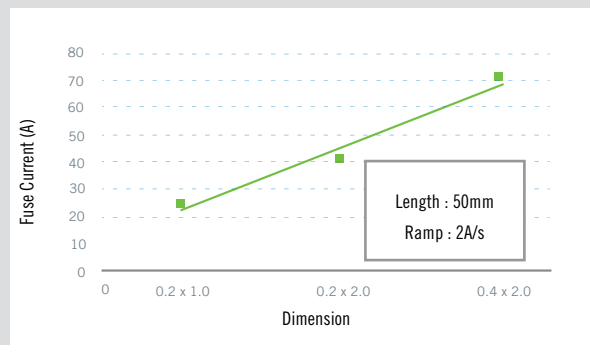
Al-Prime Ribbon Mils	Al-Prime Wire	Mils	8	10	12	15	20
	μ m	μ m	200	250	300	380	500
40 x 4	1000 x 100		3.2	2.0	1.4		
60 x 8	1500 x 200		9.5	6.1	4.2	2.7	1.5
80 x 8	2000 x 200		12.7	8.1	5.7	3.6	2.0
80 x 12	2000 x 300		19.1	12.2	8.5	5.4	3.1

Alternative dimension on request.

Characteristics of AluBond Prime Bonding Ribbons

Melting Point	$^{\circ}$ C	660
Modulus of rigidity	kN / mm ²	27
Thermal conductivity at 20 $^{\circ}$ C	W / m-K	230
Linear expansion coefficient (20 $^{\circ}$ C – 30 $^{\circ}$ C)	$10^{-6} * K^{-1}$	25.3
Electrical Resistivity at 20 $^{\circ}$ C	$\mu\Omega * cm$	2.8
Temperature coefficient of electrical resistance (0 $^{\circ}$ C – 300 $^{\circ}$ C)	$10^{-3} * K^{-1}$	4.14
Relative electrical conductivity (IACS) at 20 $^{\circ}$ C	%	64.0
Meter resistance at dimension 0.2 x 2.0 mm (20 $^{\circ}$ C)	Ω / m	0.07
Thermal emf against Cu (0/100 $^{\circ}$ C)	mV	-0.35

Fuse Current of AluBond Prime Bonding Ribbons



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