



ALUMINUM WIRE & RIBBON



Coining's Al Wire & Ribbon

Coining specializes in supplying Aluminum wire which is used in microelectronics devices as an electrical interconnect, either between a chip and substrate or between two chips. Coining also offers Al ribbon which is typically utilized in microwave and high power applications.

Our in-house drawing, rolling, annealing and analytic capabilities ensure we deliver homogeneous high purity wire & ribbon with ultra clean surfaces and smooth finish.

Why Use Al Wire & Ribbon

Al wire is used throughout the electronics industry due to its low cost, suitability for ultrasonic wedge bonding and eliminates the problem of "purple plague" associated with gold wire bonded to an aluminum contact.

Alloyed Al wires are generally preferred to pure Al because of greater drawing ease to fine sizes and higher pull test strengths in finished device. Also, the addition of nickel makes the Al wire corrosion resistant.

When To Choose Al Ribbon

Choice between wire or ribbon is determined by several factors. Ribbon offers better electrical characteristics, improved heat dissipation, fewer bonds, improved throughput and increased reliability over wire.

To illustrate, one (1) 40x4 mil ribbon can replace eight (8) 5mil Al wires.



Coining Bond Wire Products

Material Specification

99.999% Aluminum:

Al - 99.998% min.; Ni < 2ppm;
Cu, Mg, Si, Fe < 5ppm

99.99% Aluminum + Ni:

Al - 99.99%; Ni - 47-53ppm;
Cu, Mg < 20ppm; Si, Fe < 10ppm

Other Alloy Compositions:

Coining also offers Al-Si, Al-Cu and Al-Mg wire. Please contact us for details.

Physical Properties

Density: 2.7 g/cm³

Melting Point: 660°C

Electrical Resistivity (@20°C): 2.7x10⁻⁶ Ω/cm

Electrical Conductivity (@20°C): 64 (%IACS)

Thermal Conductivity (@20°C): 230W/m²K

Mechanical Properties

See Tables 1 and 2 on the following page.

Custom Al Wire & Ribbon

Contact Coining Engineering to discuss a custom Al wire or ribbon designed to meet your requirements.

Direct inquiries may be submitted through our website: www.ametek-ecp.com under Ask An Engineer.



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Table 1. Aluminum Wire Mechanical Properties *

Composition	Diameter		Tensile Strength (gm)	Elongation (%)
99.999% Aluminum	5 mil	125µm	60 min.	2 – 6
	8 mil	200µm	100 min.	5 – 15
	10 mil	250µm	180 min.	10 – 18
	12 mil	300µm	325 min.	10 – 20
	15 mil	375µm	400 min.	10 – 25
	20 mil	500µm	700 min	15 – 35
99.99% Aluminum + 50ppm Ni	5 mil	125µm	70 – 120	10 – 30
	6 mil	150µm	90 – 120	10 – 25
	8 mil	200µm	140 – 200	9 – 25
	10 mil	250µm	210 – 300	10 – 30
	12 mil	300µm	300 – 420	10 – 30
	15 mil	375µm	500 – 700	10 – 30
	16 mil	400µm	550 – 800	10 – 30
	20 mil	500µm	800 – 1100	10 – 30

* Typical specifications

Table 2. Aluminum Ribbon Mechanical Properties *

Composition	Dimensions (mils)	Tensile Strength (gm)	Elongation (%)
99.99% Aluminum + 50ppm Ni	30 x 3	250 – 350	15 – 25
	40 x 4	400 – 550	10 – 30
	50 x 5	1000 – 1500	20 – 35
	40 x 6	700 -1100	20 – 35
	60 x 6	1300 – 1700	20 – 35
	80 x 6	1800 – 2200	20 – 35
	50 x 8	1500 – 2000	20 – 35
	60 x 8	2000 – 2500	20 – 35
	80 x 8	2300 – 2800	20 – 35
	60 x 10	2200 – 2600	25 – 40
	80 x 10	2700 – 3400	25 – 40

* Typical specifications