



ADVANCED CHEMICAL ETCHING LTD

COPPER ALLOYS



COPPER ALLOY ETCHING

Advanced Chemical Etching (ACE) is a market leader of precision Copper alloy etching; we chemically etch millions of components each month using a wide variety of different grades, such as Brass, Copper, Phosphor Bronze, Nickel Silver, Cupronickels and Beryllium Copper.

When parts are etched in any of the Copper alloys the process does not affect the mechanical properties of the metal, meaning the metal remains unaltered by the process. Areas of the surface can be etched or reduced and the metal shows no distortion or warping. Multi complex profile shapes can be etched and the edges will remain burr free.

ACE can etch in thicknesses of 0.025mm to 2.0mm in all Copper alloys, in hardnesses from soft (annealed) to mill hard condition and to a maximum sheet size of 1500mm x 600mm.

ALL ROUND METAL

Copper and Copper alloys are an important group of metals with many excellent properties. They have *good electrical and thermal conductivities*, are *easy to form*, include some alloys with *incredible strength* (Beryllium Copper alloys) and exhibit *high resistance to corrosion*. The characteristics of Copper alloys have resulted in ACE etching a wide range of parts for many different applications. They can be etched then formed or deep drawn into the most *complex of shapes*.

MULTI-PURPOSE

Due to its *versatility*, Copper alloys are *used in a wide variety of products in many industry sectors*.

BENEFITS OF THE ETCHING PROCESS

GO-TO PROCESS – Low set-up costs and incredibly fast lead times make etching a go-to process in batch sizes of ones to millions

LOW-COST TOOLING – The tooling for etching Copper and its alloys is digital, low-cost and can be modified quickly

NET SHAPE – No heat or force is used when processing Copper and its alloys, so the mechanical properties of the metal remain unaltered and parts are free from stresses and burrs

ANY COMPLEXITY – Component features are etched at the same time so part/feature complexity is not an issue.

Contact ACE today on +44 (0)1952 416 666 to find out what we could produce for you – whether it's 1s or millions.

TYPICAL ETCHED COMPONENTS

» Electrical contacts

» Heat Exchanger Plates

» Bus Bars

» Heater Elements

» Clips

» Electric Brackets

» Leadframes

» Relay & Switch Springs

» Springs

» Conductive Springs

» Pressure Membranes

» RFI Shielding

A PROCESS OF INNOVATION

METAL GRADES FOR COPPER ETCHING

TECHNICAL CAPABILITY

GRADES	THICKNESS RANGE	MAXIMUM SHEET SIZE
High Conductivity Copper		
Cu-ETP (C101)	0.025mm – 2.00mm	600mm x 1500mm
Cu-HCP (C102)	0.025mm – 2.00mm	600mm x 1500mm
Cu-OF (C103)	0.025mm – 2.00mm	600mm x 1500mm
Cu-DHP (C106)	0.025mm – 2.00mm	600mm x 1500mm
Brass		
CuZn30 (CZ106)	0.025mm – 2.00mm	600mm x 1500mm
CuZn33 (CZ107)	0.025mm – 2.00mm	600mm x 1500mm
CuZn37 (CZ108)	0.025mm – 2.00mm	600mm x 1500mm
Phosphor Bronze		
CuSn5 (PB102)	0.025mm – 2.00mm	600mm x 1500mm
CuSn6 (PB103)	0.025mm – 2.00mm	600mm x 1500mm
Nickel Silver		
CuNi10Zn27 (NS103)	0.025mm – 2.00mm	600mm x 1500mm
CuNi12Zn24 (NS104)	0.025mm – 2.00mm	600mm x 1500mm
CuNi18Zn20 (NS106)	0.025mm – 2.00mm	600mm x 1500mm
CuNi18Zn27 (NS107)	0.025mm – 2.00mm	600mm x 1500mm
Beryllium Copper		
Alloy 174	0.025mm – 2.00mm	600mm x 1500mm
Alloy 25	0.025mm – 2.00mm	600mm x 1500mm
CuBe2	0.025mm – 2.00mm	600mm x 1500mm
High Performance Alloys		
Alloy 194	0.025mm – 2.00mm	600mm x 1500mm
Alloy 195	0.025mm – 2.00mm	600mm x 1500mm
Cupronickel grade CuNi9Sn2 (Alloy 725)	0.025mm – 2.00mm	600mm x 1500mm
Copper Coated Kapton	0.025mm – 2.00mm	600mm x 1500mm

PROCESS CAPABILITY

METAL THICKNESS	MINIMUM SLOT / HOLE	BAR	MINIMUM INTERNAL RADIUS	MINIMUM EXTERNAL RADIUS	MINIMUM TOLERANCE	ETCH PROFILE CUSP
0.050mm	0.100mm	0.100mm	0.050mm	0.040mm	±0.025	0.012mm
0.100mm	0.110mm	0.110mm	0.100mm	0.080mm	±0.025	0.025mm
0.150mm	0.170mm	0.170mm	0.150mm	0.120mm	±0.025	0.030mm
0.200mm	0.220mm	0.220mm	0.200mm	0.160mm	±0.025	0.040mm
0.250mm	0.275mm	0.275mm	0.250mm	0.200mm	±0.030	0.050mm
0.500mm	0.550mm	0.550mm	0.500mm	0.400mm	±0.055	0.100mm
0.700mm	0.770mm	0.770mm	0.700mm	0.560mm	±0.077	0.140mm
1.000mm	1.100mm	1.100mm	1.000mm	0.800mm	±0.110	0.200mm
1.500mm	1.650mm	1.650mm	1.500mm	1.200mm	±0.165	0.300mm
2.000mm	2.200mm	2.200mm	2.000mm	1.750mm	±0.250	0.370mm