



ADVANCED CHEMICAL ETCHING LTD

# ALUMINIUM



## ALUMINIUM ETCHING

*Advanced Chemical Etching (ACE) have developed an Aluminium etching process which produces high quality parts both dimensionally and with excellent cosmetic appearance, a process that is highly consistent and capable of serial production volumes.*

*This process is now used in full production to etch thousands of Aluminium parts daily, and through continuous improvement work over the years controlling and certifying the chemical process the capability & capacity has now reached a very high level achieving some stunning results.*

*Aluminium* and its *alloys* are increasingly prized in engineering for their *lightweight durability* that enables *energy saving*. However, they are generally considered to be difficult, slow and inefficient to etch using conventional chemistry. Consequently, many users resort to punching, stamping or laser cutting to produce profiles but this comes at cost... stressing and heat distortion of the metal and the production of burr edges that have to be removed in a separate process.

### A UNIQUE PROCESS

With the introduction of this *unique Aluminium etching process* ACE has a proven production route that is not only far *quicker* but also *safer*, and *more controllable* than etching industry standard. It produces *higher quality components* with *burr-free, crisp edges* and *higher definition features* that could not have been achieved using the industry standard process technology.

### BENEFITS OF THE ETCHING PROCESS

- ▶ SMOOTH EDGE PROFILE AND SMOOTH SURFACE ETCH PROFILE
- ▶ NO SURFACE BURRS
- ▶ TIGHT TOLERANCES POSSIBLE  $\pm 10\%$  OF MATERIAL THICKNESS
- ▶ COMPLEX GEOMETRIES AT NO EXTRA COST
- ▶ 1:1 APERTURE ASPECT RATIO POSSIBLE
- ▶ MICRO ETCHED CHANNELS
- ▶ THICKNESSES FROM 0.025MM TO 2.5MM
- ▶ SHEET SIZE UP TO 1500MM X 600MM
- ▶ FAST TURNAROUND
- ▶ SERIAL PRODUCTION CAPACITY
- ▶ NO HEAT-AFFECTED ZONES

*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

- » Cooling Plates
- » Automotive Interior Trim (Speaker Grilles, Tread Plates)
- » Electric Vehicle Components
- » Filters & Meshes
- » Heat Exchanger Plates / Shims
- » Shims & Gaskets

## INDUSTRY SECTORS

- ▶ Precision Engineering
- ▶ F1 and Automotive
- ▶ Aerospace
- ▶ Medical
- ▶ Energy

A PROCESS OF INNOVATION

# METAL GRADES FOR ALUMINIUM ETCHING

## TECHNICAL CAPABILITY

GRADES	THICKNESS RANGE	MAXIMUM SHEET SIZE
1000 Series	0.025mm – 2.500mm	600mm x 1500mm
2000 Series	0.025mm – 2.500mm	600mm x 1500mm
3000 Series	0.025mm – 2.500mm	600mm x 1500mm
4000 Series	0.025mm – 2.500mm	600mm x 1500mm
5000 Series	0.025mm – 2.500mm	600mm x 1500mm
6000 Series	0.025mm – 2.500mm	600mm x 1500mm
7000 Series	0.025mm – 2.500mm	600mm x 1500mm
8000 Series	0.025mm – 2.500mm	600mm x 1500mm
Clad Aluminium	0.025mm – 2.500mm	600mm x 1500mm
Aluminium Bronze	0.025mm – 2.500mm	600mm x 1500mm
Brazing Foil 4047	0.025mm – 2.500mm	600mm x 1500mm
Kapton Coated Aluminium	0.010mm – 0.500mm	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	1.600mm	±0.220	0.400mm
2.500mm	2.700mm	2.700mm	2.500mm	1.900mm	±0.300	0.500mm

## HIGHLY QUALITY STANDARDS

» The ACE Aluminium etching process is more controllable and more consistent than the industry standard, and produces parts that meet much higher quality standards each time, every time.