

# Aluminium Etching



Aluminium etchings by Annie Day and Robin Ezra

This intaglio process results from the action of copper sulphate on the surface of the aluminium plate. The image can be drawn with an etching needle through a resistant ground on the surface of the plate. One outstanding feature of this method is the beautiful rich aquatints created without resorting to resin. We use safe resists and grounds to achieve great results. Bluestone/copper sulphate available at hardware or garden shops.

**Formula for the etching bath**      Adapted from Nik Semenoffs recipe

**CuSO<sub>4</sub>** (copper sulphate -- bluestone)..... 500g

**NaCl** (sodium chloride -table salt)..... 125g

**NaHSO<sub>4</sub>** (sodium bisulphate - Harpic Powder) 12g

H<sub>2</sub>O (water) ..... 5-10 litres

- Mix dry ingredients in a large plastic container, store dry until needed.
- Take 1 cup dry mixture and add to about 1 litre water. You may need to make the mixture stronger, test first. If you notice the mixture is not biting well it is a good idea to add a little more copper sulphate to the bath when the copper becomes exhausted during platemaking.



These stunning works were created by Robyn, Diana, Michelle and Marian in their first aluminium etching workshop.

## Cleaning and degreasing the plate

- Clean and degrease the aluminium plate with a cream cleanser such as Jiff and dry with a hairdryer. It may be necessary to use fine wet and dry sandpaper if there are scratches, rinse and dry.
- Protect the back of the plate with contact film.

## Applying the ground or stop out

- The best stopout and ground is Gripset Betta bitumen rubber paint. Use 3 or 4 thin layers of paint thinned with a little water for best results, dry between layers. See Betta bitumen paint notes. Apply with a sponge for a nice even coat.
- If using acrylic based stop outs such as Golden and One Go floor polish dry thoroughly by applying heat before immersing in the etching bath - a few minutes on the hot plate or in an oven should suffice.
- Wax crayon, copha and Sharpies make interesting stop outs
- After applying the ground the image can be drawn into the plate with an etching needle
- Photocopy transfer makes a good stop out

## Etching the plate

- For etched line work, use gloves to immerse the plate in the etching bath for 15-20 minutes until the depth of the etched line can be felt with a fingernail or etching needle. The time depends on the strength of the etching bath mixture. **The bath loses strength during use and must be replenished by adding a little more dry mixture to bring the colour back up**
- Clean off the ground - see bitumen paint notes below - degrease and dry then begin stopping out the lightest tone, immerse in the bath for 1 minute. Take plate out and rinse and dry before applying further stop-out for the next tone.
- Because of the action of the etchant on the metal a good aquatint is achieved without recourse to resin etc. Never be tempted to feather, it is best to leave the surface untouched while the plate is etching to avoid unwanted marks.
- Keep repeating the process from the lightest to darkest tones making the times longer eg. 2mins, 5 mins 10 mins between tones, the longer the time the darker the tone.
- When the darkest tone has been achieved, rinse with water and clean off the stop-out with whatever solvent is necessary then remove the backing contact. The plate is now ready for printing.

## Some safer stop-outs & grounds and their solvents

**Betta acrylic bitumen paint** - VCA or acetone to remove

**Golden stop-out varnish** - remove with cloudy ammonia and detergent in warm water

**Pledge One Go floor polish** - use a few drops of blue food colour to tint the polish - remove after etching with cloudy ammonia and detergent in warm water

**Wax based crayon** - remove with VCA or odourless solvent, then hot soapy water

**Copha coloured with toner & melted** - remove with tissue then hot soapy water

**Sharpie pen** - acetone to remove

**Photocopy transfer** - acetone to remove

## Notes:

- When using ammonia, acetone or odourless solvent - wear gloves and use a fume cupboard or complete the process outside.
- VCA - Vegetable Cleaning Agent, wear gloves when using then degrease with cream cleanser such as Jiff & rinse the plate well

## Acrylic bitumen rubber paint as a ground & stopout

Gripset Betta bitumen rubber paint is a product used in industry as a waterproofing agent for roofs etc. As a stopout it is a preferable alternative to the turps based traditional bitumen paint. It is **not** classified as hazardous according to criteria of Worksafe Australia.

Gripset bitumen rubber paint available at hardware stores.

There is no discernible odour when using the paint unlike the traditional counterpart and it is water mixable for ease of use. It can be applied as a ground (painted on with a sponge) and also as a stop out. Water needs to be added so that it is not too thick - where it was very thick it resisted the etching needle and where too thin it was foul bitten. A little practice will determine the best thickness.

To remove soak in a bath of VCA - Vegetable Cleaning Agent – a safe solvent.

Altogether it is far more pleasant to use than bitumen paint, no discernible fumes, easier to apply and dries quickly with the help of a hairdryer or a minute or two on the hotplate.

	Method
1	To degrease scrub the plate with a scouring pad, finish with a cream cleanser
2	Dry with a clean towel or a hairdryer
3	Cover the back of the plate with contact film to protect during etching
4	Keep fingers off the surface until the ground is brushed on



Ground painted on too thinly

optimal thickness

drawing with etching needle

etching as usual

## Bitumen rubber as a ground

Don't use the paint too thinly, see picture above left, a thin coat like this will foul bite. Conversely, a coat painted on too thickly may resist the etching needle. A little practice will determine the best thickness.

**After using this material for a few years we think that the best way to apply is to coat with 3 or 4 thin coats using a sponge & completely cover the plate, dry between coats and make sure the plate has cooled completely before adding the next coat. Keep your sponge in plastic to prevent it drying out.**

	Method
1	Use water to thin bitumen rubber paint down to a thin creamy consistency and brush two coats evenly all over with a soft brush. Dry between coats. See second picture above for optimal thickness.
2	Dry the plate on a hotplate for 1or 2 minutes or dry with a hairdryer then apply an image with the etching needle.
3	The plate is now ready to be immersed in the etching bath.
4	After plate has been etched remove ground by soaking in a bath of VCA. Or with acetone
5	Thoroughly degrease using cream cleanser applied with a soft sponge rinse, dry.



VCA used to remove ground      stopping out      drying on hotplate      etching      further stopping out

### Bitumen rubber as a stopout

For copper, zinc or steel apply a safer aquatint before stopping out. Expect perfect results without foul biting on aluminium but make sure each application is dried thoroughly before re-immersing in the etching bath

	Method
1	Apply the paint the same as regular stopout and dry thoroughly.
2	Immerse in the etching bath to etch - stopping out to gain various tones
3	After plate has been etched remove the ground by soaking in a bath of VCA or with acetone
4	Thoroughly degrease using cream cleanser applied with a soft sponge rinse, dry.
5	Sand edges smooth, ink and print.



Stopping out      final plate ready to ink      sanding the edges smooth      the print



Left: notice where the ground was thickly applied it resisted the etching needle.      Right: final print

- VCA removes the paint perfectly. After removal rinse the VCA off the plate and degrease with cream cleanser on a soft sponge.
- Keeping a small amount of the paint in a jar may be the best way to use this product - if the lid is left off the tin it will dry out.
- Gripset Betta non-toxic Bitumen Rubber paint available from hardware stores