

ETCHING SOLUTION

	Calc. stock solution	..	40 oz.
For Zinc	Iron perchloride (lump) ..	..	$\frac{3}{4}$ oz.
	Hydrochloric acid ..	..	$\frac{3}{4}$ oz.
For Aluminium	Stock solution ..	..	265 cc.
	Zinc chloride ..	..	100 grms.
	Iron perchloride sol. (51°B.) ..	..	75 cc.
	Hydrochloric acid ..	..	4 cc.

Etching time  $1\frac{1}{2}$ —2 minutes.

BASES FOR DEEP ETCH

Butyl acetate ..	1000 cc.
Frehne resin ..	150 grms.
Castor oil ..	12 cc.
5% Methyl violet in 74 O.P. meths.	50 cc.
Butyric alcohol ..	120 cc.
Castor oil ..	20 cc.
Methyl violet ..	2 grms.

PLATE SURFACE TREATMENT

ALUMINIUM—PATRAL (alternative to Brunak)

1. Hydrofluosilicic acid (S.G. 1.42) .. .. 15 mls. or 2fl. oz.  
Water .. .. 1 litre or 1 gal.
2. Hydrofluosilicic acid (S.G. 1.42) .. .. 7½ mls. or 1¼ fl. oz.  
Amonium bichromate .. .. 55 grms. or 9 oz.  
Water .. .. 1 litre or 1 gal.  
(must be exact)
3. Gum Arabic solution 14°B. (S.G. 1.107) (can be preserved with Phenol  $\frac{1}{4}$  oz. per gal. or 1 grm. per litre)

All the above are stock solutions.

No. 1 is used as a counter etch, then followed by—

- |               |          |
|---------------|----------|
| { No. 2 .. .. | 30 vols. |
| { No. 3 .. .. | 1 vol.   |

Make up daily as required.

Department of

Printing and Photographic Technology

# Photo-lithography PRINTING DOWN

## Class Notes

### Formulae

(SURFACE AND DEEP ETCH PLATE MAKING)

SURFACE METHODS

COUNTER ETCHING (preliminary cleaning)

For zinc—3% acetic acid solution.  
or 1% nitric acid solution.

For Aluminium—3% hydrochloric acid solution.  
or 5% citric acid solution.  
or 1.5% hydrofluosilicic acid solution.

COATING (Albumen)

A	Egg albumen scales	15. oz. (av.)
	Water	80 oz. (liq.)
	Ammonia 0.880	2 oz. (liq.)

Suspend albumen in a muslin bag just below the water surface, stand 2½—3 hours. Remove bag, allow to drain, do not squeeze. Add ammonia. Adjust Beaumé reading to 5.2° (4 oz. water reduces density 0.2° B.)

B	Ammonium bichromate	3½ oz. (av.)
	Water to make	18 oz. (liq.)

Beaumé reading 14.2°.

For use take:—A solution	88 oz. (liq.)
B solution	18 oz. (liq.)
Water	22 oz. (liq.)

This is suitable for medium grain plates. Reduce still further for fine grains, to a maximum of 45 oz. of water in the above solution. This solution will keep for 2—3 weeks in a refrigerator. Adjust pH. to 7.6.

COATING (Albumen—alternative formula)

Dried egg albumen	170 grms. or 6 oz.
Ammonium bichromate (20% solution)	250cc. or 9 fl. oz.
Water to	2000cc. or 80 fl. oz.
Ammonia 0.880	28cc. or 1 fl. oz.

Whirl speed 90 r.p.m. Do not heat above 98°F.

COATING (Fish glue)

Process engraving glue	25cc.
Ammonium bichromate 20% solution	50cc.
Water	200cc.
Ammonia 0.880	7cc.

DEEP ETCH METHODS

COUNTER ETCHING, as for surface methods

COATING (bichromated gum arabic)

A	Gum arabic	55 grms.
	Water	100cc.
	Approximately	18°B.
B	Ammonium bichromate	20 grms.
	Water	100cc.

For use take 10 parts of A } by volume.  
6 " " B }

Add 0.880 Ammonia 2%

Adjust to 12°—14°B. Allow to stand 3—4 hours before use. Whirl speed 60 r.p.m.

COATING (alternative formula)

Gum arabic solution 10°B	1500cc.
Ammonium bichromate 20% solution	500cc.
Ammonia	50cc.

Adjust to 10°—12°B. Whirl speed 60 r.p.m.

STOP-OUT LACQUER

Orange shellac (flake)	2½ oz.
Methylated spirit 74 O.P.	10 oz.

Add methyl violet to colour.

DEVELOPER

Calcium chloride (fused)	6 lb.
Water	100 oz.

This is the stock solution—41°B.

For use { Stock solution	20 oz.
{ Lactic acid	1 oz.

Adjust the developing solution according to the room temperature as per table:—

65°—70°F.	36°B.
70°—75°F.	37°B.
75°—80°F.	38°B.
80°—85°F.	39°B.