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VELV-ETCH FILMING AGENT

ADDITIVE FOR ACID ETCHING OF ZINC PHOTOENGRAVING PLATES

Product Description

Velv-etch is an additive for use with nitric acid etching solutions for machine-etched zinc photoengraving plates in paddle machines.

Packaging

20 L concentrate Cat. No. 912246 Wt. 21 kg

Bath Preparation

Clean machine in normal way and then fill above spray pipes with water (20~23^{O}C). Add nitric acid(42^{O} Be) and Velv-etch as required and make tank volume up to final volume with water. A good starting recommendation is to prepare a solution containing 12% nitric acid and 3% Velv-etch. As experience is gained of the particular machine characteristics and metal performance these values can be adapted for optimum performance.

Bath Performance

For a given machine and source of metal, the degree and quality of etching will depend upon

1. Bath temperature
2. Acid concentration
3. Velv-etch concentration
4. Paddle speed
5. Zinc content in bath
6. Degree of paddle dip

High paddle speed leads to tight (more vertical) shoulders. Low paddle speed produces wide shoulders. High acid content leads to rough and wide shoulders.

Low acid content leads to short bath life, low etch rate and tight shoulders. High temperature produces wide shoulders and short bath life. Low temperature produces tight shoulders. High Velv-etch content leads to wide shoulders and carly dirt formation. Low Velv-etch content leads to tight shoulders and undercutting. Excessive paddle dip gives irregular etching. High zinc content leads to low etch rate and dirt.

Storage of Velv-etch Conc.

Velv-etch is a mixture of many oily constituents which will separate from solution if the temperature drops below 1^{O}C. If it is known or suspected that lower temperature have been attained the contents of the container must be well mixed to ensure a homogeneous solution before use. A non homogeneous product will not give correct etching characteristics.

Replenishment of Bath

As zinc is etched into the bath it is necessary to maintain acidity by replenishment with acid. It is usually necessary also to increase paddle speed to maintain the desired shoulder angle. Acid should be added after approx. 7 g. zinc have been dissolved per litre of bath volume. The exact quantity of zinc dissolved at which replenishment is necessary depends on the machine design. The table below gives values for several machines. After the zinc concentration has reached approximately 25g per litre the rate of addition of acid should be increased

Zinc Concentration	Acid addition / 50 g zinc dissolved
0 ~ 7 g/L	none
7 ~ 25 g/L	50 ml
25 ~ Exhaustion	75 ml

Recommendations for Use and Replenishment

Machine	Tank Vol. Litres	Acid 42° Be Litres	Velv-etch Litres	Starting RPM	Acid replenishment		
					No acid per 50 g dissolved zinc between these quantities of dissolved zinc	50 ml acid per 50 g dissolved zinc between these quantities of dissolved zinc	75 ml acid per 50 g dissolved zinc between these quantities of dissolved zinc
DM 24	75	9.0 - 9.5	2.0 - 2.4	500 - 550	0 - 550 g	550 g - 2250 g	more than 2250 g
DM 35	130	15.0 - 16.0	3.0 - 4.0	500 - 550	0 - 850 g	850 g - 3350 g	more than 3350 g
DM 48	200	24.0 - 25.0	5.0 - 6.0	500 - 550	0 - 1250 g	1250 g - 4900 g	more than 4900 g
M-32	80	9.2 - 9.8	1.8 - 2.2	330	0 - 550 g	550 g - 2250 g	more than 2250 g
Chemco 510	125	16.0 - 17.0	4.0	500 - 550	0 - 850 g	850 g - 3350 g	more than 3350 g
Dirats	85	10.2 - 10.8	2.2 - 2.6	400 - 440	0 - 550 g	550 g - 1950 g	more than 1950 g
Tasope 4-20	100	12	3.0	550	0 - 700 g	700 g - 2520 g	more than 2520 g
Tasope DP 4-20	200	24	6.0	550	0 - 1260 g	1260 g - 5040 g	more than 5040 g
Tasope DP 4-20	300	36	9.0	550	0 - 1820 g	1820 g - 7560 g	more than 7560 g

Probable Causes of Etching Problems

Tight shoulders
1. High paddle speed
2. Excessive paddle dip
3. Low bath temperature
4. Frozen or seperated conc.

Rough shoulders
1. High acid content
2. Excessive exhaust in machine
3. Incorrect curing of self-coated plates

Pimples
1. Pinholes in film negative
2. Improper descumming
3. Poor solution circulation
4. Dirty equipment or plates
5. High bath temperature

Uneven shoulders and irregular depth of etch
1. Loose head motion
2. Raffles improperly set (Dow machine)
3. Machine not level

Wide shoulders
1. Low paddle speed
2. High bath temperature
3. Machine not level
4. High Velv-etch concentration

Short bath life
1. Improper acid concentration or replenishment.
2. Excessive exhaust on machine

Bleeding
1. Non homogeneous Velv-etch
2. excessive Velv-etch conc.

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