

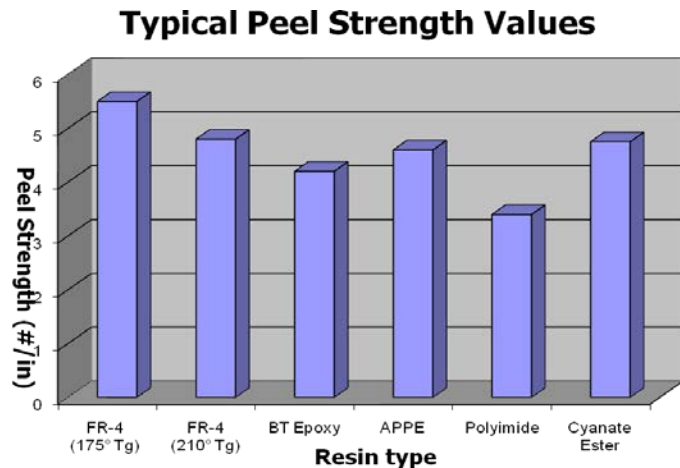
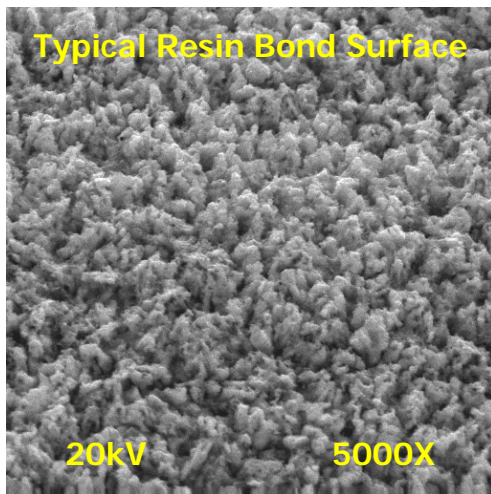


FOCUS TECH PROCESS CHEMICALS

Technical Data Sheet

Resin Bond 320

Innerlayer Adhesion Promoter



Product Description

Resin Bond 320 is a concentrated microetch additive designed to promote innerlayer bonding. Resin Bond 320 offers several benefits over other "oxide alternatives" currently available. Resin Bond 320 provides excellent bond strength across a wide range of resin systems. Resin Bond 320 develops the desired surface with shorter dwell times and less copper removal to provide higher process throughput at lower operating costs.

Features

- 💡 Effective at very low operating concentrations
- 💡 Rate enhancing additives
- 💡 Etch modifiers

Benefits

- 💰 Reduces operating cost through decreased consumption
- ⚙️ Faster etch rates, shorter dwell times, greater throughput
- 👉 Develops desired surface with less copper removal

Physical Properties

Specific gravity: 1.15
pH: <2
Appearance: clear to amber color
Freezing point: <45 °F

Compatible Materials of Construction

Plastics	PVC, CPVC, PVDF, polypropylene and polyethylene
Metals and alloys	Stainless steel
Elastomers	EPDM, Viton and Buna-N

Typical Process Cycle

ALC-1 Alkaline Cleaner
Triple Cascade DI Water Rinse
Resin Bond 320 Pre-dip
Resin Bond 320 Etching Solution
Triple Cascade DI Water Rinse
Dryer

Bath Make-Up

Important: Components must be added in order listed.

Pre-Dip Solution

1. Add 50% v/v DI water.
2. Add 1.0% v/v Resin Bond 320.
3. Add 0.7% v/v Resin Bond 321.
4. Fill to volume with DI water.

Etching Solution

1. Add 50% v/v DI water.
2. Add 4% v/v Resin Bond 320.
3. Add 5% v/v electrolytic grade sulfuric acid (93-99 wt%).
4. Allow bath to cool below 110 °F before proceeding.
Add 4% v/v Resin Bond 321.
6. Fill to final volume with DI water.

Operating Parameters

Pre-Dip Bath

Resin Bond 320 concentration:	1.0% – 1.5%
Resin Bond 321 concentration:	0.7% – 1.5%
Temperature:	Ambient
Ventilation:	Recommended

Etching Solution

Resin Bond 320 concentration:	4% – 5%
Resin Bond 321 concentration:	3% - 5%
Sulfuric acid concentration:	4% – 6%
Copper removal:	40 – 80 μ in
Copper loading:	15 - 30 g/L
Temperature:	80 °F – 95 °F
Filtration:	Continuous recirculation through a 5 μ filter
Ventilation:	Recommended

Weight Loss Calculation

1. Weigh a copper coupon to the nearest 0.001g (W_i).
2. Process through microetch at standard operating conditions.
3. Dry coupon thoroughly and reweigh (W_f).

Calculation:

$$\text{Microinches removed } (\mu\text{in}) = \frac{(W_i - W_f)}{\text{*Surface area (in}^2\text{)}} \times 7000$$

* Include both sides of coupon i.e. a 3" X 3" is 18 in²

Analytical Procedures

Resin Bond 320 concentration

Materials required:

1. UV spectrophotometer
2. Quartz cuvette
3. 1 ml pipet
4. 500 ml volumetric flask

Procedure:

1. Pipette 1 ml of working solution into a 500 ml volumetric flask and fill to level with DI water.
2. Set up spectrophotometer to a wavelength of 259 nm.
3. Using a quartz cuvette, zero the spectrophotometer using a DI blank.
4. Using a quartz cuvette, determine the absorbance (ABS) of the diluted working solution.

Calculation:

$$\text{Resin Bond 320 concentration (\%v/v)} = [4.077 \times \text{ABS}] - 0.134$$

Copper concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 5 ml pipette
3. 0.10M EDTA
4. 25% ammonium hydroxide
5. methanol
6. PAN indicator

Procedure:

1. Pipette 5 ml of working solution into the Erlenmeyer flask and add 100 mls of DI water.
2. Add 20 mls of 25% ammonium hydroxide.
3. Add 10 mls of methanol.
4. Add 3 drops of PAN indicator.
5. Titrate with EDTA from purple to a yellow-gold endpoint.

Calculation:

$$\text{Copper concentration (g/L)} = \text{mls 0.10M EDTA used} \times 1.122$$

Analytical Procedures (continued)

Resin Bond 321 concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 1 ml pipet
3. 0.1 N ceric ammonium sulfate
4. 25% sulfuric acid
5. ferroin indicator

Procedure:

1. Pipette 1 ml of working etchant into the Erlenmeyer flask and add 100 mls of DI water.
2. Add 20 mls of 25% sulfuric acid.
3. Add 10 drops of ferroin indicator.
4. Titrate with ceric ammonium sulfate from orange to a blue-green endpoint.

Calculation:

Resin Bond 321 concentration (% v/v) = mls 0.1N ceric ammonium sulfate used X 0.289

Sulfuric acid concentration

Materials required:

1. 250 ml Erlenmeyer flask
2. 1 ml pipet
3. 0.1N sodium hydroxide
4. methyl orange indicator

Procedure:

1. Pipette 1 ml of working etchant into the Erlenmeyer flask and add 100 mls of DI water.
2. Add 5 drops of methyl orange indicator.
3. Titrate with sodium hydroxide from red to yellow endpoint.

Calculation:

Sulfuric acid concentration (% v/v) = mls 0.1N NaOH used X 0.278

Storage

Store in original containers above 40 °F.

Safety

Avoid contact with eyes, skin and clothing. Wear chemical handler's gloves, goggles and protective clothing when handling. Read and understand Material Safety Data Sheet before using this product.

Notice

The information and recommendations, contained herein, regarding this product are, to the best of our knowledge, true and accurate. We make no guarantee of results because the conditions of actual use are beyond our control. We assume no liability for damages or penalties resulting from the use of this product or following our recommendations. Our recommendations and suggestions for use of this product are not intended to grant license to operate under or infringe any patent.