

Product Data Sheet

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PRODUCT #: N5106

MAGNUM N-599

Neutralizer for Permanganate Desmear Process

DESCRIPTION: A neutralizer for oxidizer residue left on the hole wall following the permanganate desmear/etchback process. **MAGNUM N-599** is used following treatment with **MAGNUM K-OXIDIZER** or **MAGNUM N-OXIDIZER**. **MAGNUM GE-600** glass etch can be added to the solution to etch back the protruding glass bundles.

BENEFITS:

- **Sulfate system for reduced pink ring.**
- **Flexible process - neutralizer and glass etch can be combined for reduced process steps or separated for greater control**

BATH MAKE-UP: 84% by volume DI water
6% by volume sulfuric acid
10% by volume **MAGNUM N-599**
55 g per liter **MAGNUM GE-600** glass etch (optional)

INSTRUCTIONS:

Temperature:	110 - 120°F
Time:	4 - 6 minutes
Agitation:	Through hole mechanical
Tanks:	Polypropylene, polyethylene
Heater:	Teflon
Filtration:	Continuous filtration through a 5 micron polypropylene filter is recommended
Post Dip:	5 minute dip in 10% sulfuric acid is required

BATH MAINTENANCE and ANALYSIS:

Materials required:

Ferric ammonium sulfate solution, 21.8% w/v (218 g/l)
0.10N potassium permanganate (KMnO₄) standard solution
1.0N sodium hydroxide standard solution
Methyl Red indicator
Sodium chloride (crystal)
0.1M Aluminum chloride (AlCl₃) solution
Sulfuric acid, 25% by volume
Phosphoric acid, concentrated (85%)
50 ml, 20 ml, 10 ml and 5 ml pipettes
Burettes
Hot plate

Boiling chip
500 ml & 250 ml Erlenmeyer flasks

BATH MAINTENANCE and ANALYSIS cont'd.

MAGNUM N-599 concentration

Procedure:

1. Place a boiling chip into a 500 ml Erlenmeyer flask. Pipette 50 mls of 21.8% ferric ammonium sulfate solution into the flask.
2. Pipette 5 mls of **MAGNUM N-599** working bath into the flask.
3. Pipette 10 mls of 25% sulfuric acid into the flask.
4. Heat on a hot plate to boiling, and boil for at least 5 minutes.
5. Wash down the sides of the flask with DI water, and dilute to 200 ml.
6. Pipette 5 mls of phosphoric acid into the flask.
7. Titrate with 0.10N KMnO_4 to the first permanent pink color. Color should remain at least 1 minute. Record mls of titrant.

Calculation: mls of 0.10N KMnO_4 X 0.33 = Percent by volume **MAGNUM N-599**

Maintain **MAGNUM N-599** between 7.5 and 10% by volume.

Sulfuric Acid Concentration

1. Pipette 20 mls of working bath into a 250 ml Erlenmeyer flask, and add 50 mls of water.
2. Add 10 drops methyl red indicator.
3. Titrate with 1.0N sodium hydroxide from red through orange to a yellow endpoint. Save solution.

Calculation: mls NaOH X 0.139 = Percent by volume Sulfuric Acid

Maintain sulfuric acid concentration between 5.5 and 6.5%

MAGNUM GE-600 Glass Etch Concentration (optional)

1. To the solution from step 3 above, add 25 g of sodium chloride.
2. Heat the solution to 175°F. Add diluted NaOH as needed to maintain yellow color.
3. Titrate with 0.10 M AlCl_3 until the color changes from yellow to pink/orange.

Calculation: mls of 0.10 M AlCl_3 X 0.93 = grams per liter **MAGNUM GE-600**

Maintain **MAGNUM GE-600** concentration between 45 - 60 g/l.

This product should be used only for its intended purpose. The information stated above is based on our laboratory tests and experience, and is accurate to the best of our knowledge. Since actual use is beyond our control, the recommendations or suggestions are made without warranty, expressed or implied.