Ethylene Glycol
CMOS

Material No.: 9346-05
Batch No.: 0000031178
Manufactured Date: 2013/01/07
Retest Date: 2018/01/06

Certificate of Analysis

Test	Specification	Result
Assay ($HOCH_2CH_2OH$) (by GC)	>= 99.0 %	99.8
Color (APHA)	<= 10	<5
Acidity (µeq/g)	<= 0.8	<0.1
Acidity (as CH_3COOH)(by wt)	<= 0.01 %	<0.01
Residue after Ignition	<= 0.005 %	0.002
Water (H_2O)(by Karl Fischer titrn)	<= 0.2 %	<0.1
Chloride (Cl)	<= 1 ppm	<1
Phosphate (PO_4)	<= 2 ppm	<1
Sulfate (SO_4)	<= 2 ppm	<1
Arsenic and Antimony (as As)	<= 0.100 ppm	< 0.100
Trace Impurities - Iron (Fe)	<= 0.2 ppm	<0.1
Trace Impurities - Aluminum (Al)	<= 100.0 ppb	< 5.0
Trace Impurities - Barium (Ba)	<= 100.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 50.0 ppb	< 5.0
Trace Impurities - Calcium (Ca)	<= 300.0 ppb	2.3
Trace Impurities - Chromium (Cr)	<= 50.0 ppb	< 1.0
Trace Impurities - Copper (Cu)	<= 10.0 ppb	< 1.0
Trace Impurities - Gold (Au)	<= 50.0 ppb	< 5.0
Trace Impurities - Lead (Pb)	<= 200.0 ppb	< 10.0
Trace Impurities - Lithium (Li)	<= 100.0 ppb	< 1.0
Trace Impurities - Magnesium (Mg)	<= 100.0 ppb	< 1.0
Trace Impurities - Manganese (Mn)	<= 100.0 ppb	< 1.0
Trace Impurities - Nickel (Ni)	<= 100.0 ppb	< 5.0
Trace Impurities - Potassium (K)	<= 300.0 ppb	< 10.0

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.573.2600
Avantor ™ Performance Materials Inc.
3477 Corporate Parkway. Suite #200. Center Valley, PA 18034. U.S.A. Phone: 610.573.2600 . Fax: 610.573.2610

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Test	Specification	Result
Trace Impurities - Sodium (Na)	<= 300.0 ppb	< 5.0
Trace Impurities - Tin (Sn)	<= 100.0 ppb	< 10.0
Trace Impurities - Titanium (Ti)	<= 100.0 ppb	< 1.0
Trace Impurities - Zinc (Zn)	<= 400.0 ppb	53.7
Particle Count - 0.5 µm and greater	<= 200 par/ml	4
Particle Count - 1.0 µm and greater	<= 10 par/ml	3

For Microelectronic Use

Country of Origin: US
Packaging Site: Paris Mfg Ctr & DC

ISO
Phillipsburg, NJ 9001:2008, 14001:2004
Paris, KY 9001:2008
Mexico City, Mexico 9001:2008
Deventer, The Netherlands 9001:2008, 14001:2004, 13485:2003
Gliwice, Poland 9001:2008, 17025:2005
Selangor, Malaysia 9001:2008
Dehradun, India, 9001:2008, 14001:2004, 13485:2003
Mumbai, India, 9001:2008, 17025:2005
Panoli, India 9001:2008

Richard M Siberski
Global Director of Quality Assurance

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