

Certificate of Analysis

Test	Specification	Result
Assay (C ₆ H ₅ CH ₃) (by GC)	≥ 99.5 %	99.9 %
Color (APHA)	≤ 10	< 5
Acidity (µeq/g)	≤ 0.2	0.1
Residue after Evaporation	≤ 2.0 ppm	< 1.0 ppm
Water (by KF, coulometric)	≤ 0.03 %	0.01 %
Substances Darkened by H ₂ SO ₄	Passes Test	Passes Test
Sulfur Compounds (as S)	≤ 0.003 %	< 0.001 %
Chloride (Cl)	≤ 2 ppm	< 2 ppm
Phosphate (PO ₄)	≤ 0.5 ppm	< 0.5 ppm
Trace Impurities – Aluminum (Al)	≤ 20 ppb	6 ppb
Arsenic and Antimony (as As)	≤ 10.0 ppb	< 10.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Calcium (Ca)	≤ 100.0 ppb	19.7 ppb
Trace Impurities – Chromium (Cr)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Cobalt (Co)	≤ 20 ppb	< 1 ppb
Trace Impurities – Copper (Cu)	≤ 20.0 ppb	3.9 ppb
Trace Impurities – Gallium (Ga)	≤ 50 ppb	< 1 ppb
Trace Impurities – Germanium (Ge)	≤ 50.0 ppb	< 10.0 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 500.0 ppb	< 500.0 ppb
Trace Impurities – Iron (Fe)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Lithium (Li)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 10.0 ppb	1.7 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 10 ppb

>>> Continued on page 2 >>>

Toluene
CMOS



Material No.: 9466-03
Batch No.: 22E1261002

Test	Specification	Result
Trace Impurities – Silicon (Si)	≤ 100.0 ppb	< 10.0 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 100.0 ppb	12.1 ppb
Trace Impurities – Strontium (Sr)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Tin (Sn)	≤ 30.0 ppb	< 10.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	11.6 ppb
Particle Count – 1.0 µm and greater	≤ 10 par/ml	1 par/ml

For Microelectronic Use

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

Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone 610.386.1700