Ammonium Hydroxide 29% CMOS





Material No.: 9731-03 Batch No.: 0000073312 Manufactured Date: 2014/03/07 Retest Date: 2019/03/06

## Certificate of Analysis

Test	Specification	Result
Appearance	Passes Test	РТ
Assay (as NH₃)	28.0 - 30.0 %	28.9
Color (APHA)	<= 7	5
nsoluble Matter	<= 1 ppm	< 1
Residue after Ignition	<= 3 ppm	< 3
Carbon Dioxide (CO2)	<= 10 ppm	< 10
Pyridine	Passes Test	РТ
Substances Reducing Permanganate	Passes Test	РТ
Chloride (Cl)	<= 0.3 ppm	< 0.2
Phosphate (PO4)	<= 0.2 ppm	< 0.1
Fotal Sulfur (as SO4)	<= 0.8 ppm	< 0.2
Frace Impurities – Aluminum (Al)	<= 10.0 ppb	< 5.0
Frace Impurities – Arsenic (As)	<= 50.0 ppb	< 2.0
Arsenic and Antimony (as As)	<= 30 ppb	< 5
Frace Impurities – Barium (Ba)	<= 10.0 ppb	< 1.0
Frace Impurities – Beryllium (Be)	<= 10.0 ppb	< 1.0
Frace Impurities – Bismuth (Bi)	<= 20.0 ppb	< 10.0
Frace Impurities – Boron (B)	<= 10.0 ppb	< 5.0
Frace Impurities – Cadmium (Cd)	<= 5.0 ppb	< 1.0
Frace Impurities – Calcium (Ca)	<= 100.0 ppb	< 1.0
Frace Impurities – Chromium (Cr)	<= 5.0 ppb	< 1.0
Frace Impurities – Cobalt (Co)	<= 1.0 ppb	< 1.0
Frace Impurities – Copper (Cu)	<= 10.0 ppb	< 1.0
Frace Impurities – Gallium (Ga)	<= 10.0 ppb	< 1.0

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

Test	Specification	Result
Frace Impurities – Germanium (Ge)	<= 50.0 ppb	< 10.0
Frace Impurities – Gold (Au)	<= 10.0 ppb	< 5.0
Heavy Metals (as Pb)	<= 200 ppb	< 100
Frace Impurities – Iron (Fe)	<= 10.0 ppb	< 1.0
Frace Impurities – Lead (Pb)	<= 10.0 ppb	< 10.0
Frace Impurities – Lithium (Li)	<= 10.0 ppb	< 1.0
Frace Impurities – Magnesium (Mg)	<= 50.0 ppb	< 1.0
Frace Impurities – Manganese (Mn)	<= 5.0 ppb	< 1.0
Frace Impurities – Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Frace Impurities – Nickel (Ni)	<= 5.0 ppb	< 5.0
Frace Impurities – Niobium (Nb)	<= 10.0 ppb	< 1.0
Frace Impurities – Potassium (K)	<= 100.0 ppb	< 10.0
Frace Impurities – Silicon (Si)	<= 150.0 ppb	< 10.0
Frace Impurities – Silver (Ag)	<= 5.0 ppb	< 1.0
Frace Impurities – Sodium (Na)	<= 100.0 ppb	< 5.0
Frace Impurities – Strontium (Sr)	<= 10.0 ppb	< 1.0
Frace Impurities – Tantalum (Ta)	<= 10.0 ppb	< 5.0
Frace Impurities – Thallium (TI)	<= 20.0 ppb	< 5.0
Frace Impurities – Tin (Sn)	<= 20.0 ppb	< 10.0
Frace Impurities – Titanium (Ti)	<= 10.0 ppb	< 1.0
Frace Impurities – Vanadium (V)	<= 10.0 ppb	< 1.0
Frace Impurities – Zinc (Zn)	<= 5.0 ppb	< 1.0
Frace Impurities – Zirconium (Zr)	<= 10.0 ppb	< 1.0
Particle Count – 0.5 µm and greater	<= 80 par/ml	41
Particle Count - 1.0 µm and greater	<= 10 par/ml	4

For Microelectronic Use

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



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

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