

Ammonium Hydroxide 29%  
CMOS



Material No.: 9731-03  
Batch No.: 0000004225  
Manufactured Date: 2012/05/24  
Retest Date: 2017/05/23

## Certificate of Analysis

Test	Specification	Result
Appearance	Passes Test	PT
Assay (as NH <sub>3</sub> )	28.0 – 30.0%	29.4
Color (APHA)	≤ 7	< 5
Insoluble Matter	≤ 1 ppm	< 1
Residue after Ignition	≤ 3 ppm	< 3
Carbon Dioxide (CO <sub>2</sub> )	≤ 10 ppm	< 10
Pyridine	Passes Test	PT
Substances Reducing Permanganate Chloride (Cl)	Passes Test	PT
Phosphate (PO <sub>4</sub> )	≤ 0.3 ppm	< 0.2
Total Sulfur (as SO <sub>4</sub> )	≤ 0.2 ppm	< 0.2
Trace Impurities – Aluminum (Al)	≤ 0.8 ppm	< 0.2
Trace Impurities – Arsenic (As)	≤ 10.0 ppb	< 5.0
Arsenic and Antimony (as As)	≤ 50.0 ppb	< 2.0
Trace Impurities – Barium (Ba)	≤ 30 ppb	< 5
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 10.0
Trace Impurities – Cadmium (Cd)	≤ 10.0 ppb	< 5.0
Trace Impurities – Calcium (Ca)	≤ 5.0 ppb	< 1.0
Trace Impurities – Chromium (Cr)	≤ 100.0 ppb	3.0
Trace Impurities – Cobalt (Co)	≤ 5.0 ppb	< 1.0
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 1.0
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0

Test	Specification	Result
Trace Impurities –Germanium (Ge)	<= 50.0 ppb	<10.0
Trace Impurities –Gold (Au)	<= 10.0 ppb	<5.0
Heavy Metals (as Pb)	<= 200 ppb	<100
Trace Impurities –Iron (Fe)	<= 10.0 ppb	<1.0
Trace Impurities –Lead (Pb)	<= 10.0 ppb	<10.0
Trace Impurities –Lithium (Li)	<= 10.0 ppb	<1.0
Trace Impurities –Magnesium (Mg)	<= 50.0 ppb	<1.0
Trace Impurities –Manganese (Mn)	<= 5.0 ppb	<1.0
Trace Impurities –Molybdenum (Mo)	<= 10.0 ppb	<5.0
Trace Impurities –Nickel (Ni)	<= 5.0 ppb	<5.0
Trace Impurities –Niobium (Nb)	<= 10.0 ppb	<1.0
Trace Impurities –Potassium (K)	<= 100.0 ppb	<10.0
Trace Impurities –Silicon (Si)	<= 150.0 ppb	<10.0
Trace Impurities –Silver (Ag)	<= 5.0 ppb	<1.0
Trace Impurities –Sodium (Na)	<= 100.0 ppb	<5.0
Trace Impurities –Strontium (Sr)	<= 10.0 ppb	<1.0
Trace Impurities –Tantalum (Ta)	<= 10.0 ppb	<5.0
Trace Impurities –Thallium (Tl)	<= 20.0 ppb	<5.0
Trace Impurities –Tin (Sn)	<= 20.0 ppb	<10.0
Trace Impurities –Titanium (Ti)	<= 10.0 ppb	<1.0
Trace Impurities –Vanadium (V)	<= 10.0 ppb	<1.0
Trace Impurities –Zinc (Zn)	<= 5.0 ppb	<1.0
Trace Impurities –Zirconium (Zr)	<= 10.0 ppb	<1.0
Particle Count –0.5 µm and greater	<= 80 par/ml	16
Particle Count –1.0 µm and greater	<= 10 par/ml	8

For Microelectronic Use

Storage Conditions:

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  
 Selangor, Malaysia 9001.2008  
 Panoli, India 9001.2008  
 Gliwice, Poland 9001.2008, 17025.2005



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