

Hydrochloric Acid
VLSI



Material No.: 5367-03
Batch No.: 0000012884
Manufactured Date: 2012/08/03
Retest Date: 2017/08/02

Certificate of Analysis

Test	Specification	Result
Assay (as HCl) (by acid-base titrn)	37.0 – 38.0 %	37.5
Color (APHA)	<= 10	5
Residue after Ignition	<= 3 ppm	< 1
Extractable Organic Substances	<= 3 ppm	< 1
Bromide (Br)	<= 0.005 %	< 0.005
Free Halogen (as Cl ₂)	Passes Test	PT
Ammonium (NH ₄)	<= 1 ppm	< 1
Phosphate (PO ₄)	<= 0.05 ppm	< 0.03
Sulfate (SO ₄)	<= 0.3 ppm	< 0.3
Sulfite (SO ₃)	<= 0.8 ppm	0.3
Trace Impurities – Aluminum (Al)	<= 100.0 ppb	24.0
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities – Barium (Ba)	<= 20.0 ppb	< 1.0
Trace Impurities – Beryllium (Be)	<= 10.0 ppb	< 1.0
Trace Impurities – Bismuth (Bi)	<= 20.0 ppb	< 10.0
Trace Impurities – Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities – Cadmium (Cd)	<= 5.0 ppb	< 1.0
Trace Impurities – Calcium (Ca)	<= 100.0 ppb	35.0
Trace Impurities – Chromium (Cr)	<= 50.0 ppb	4.0
Trace Impurities – Cobalt (Co)	<= 5.0 ppb	< 1.0
Trace Impurities – Copper (Cu)	<= 5.0 ppb	< 1.0
Trace Impurities – Gallium (Ga)	<= 20.0 ppb	< 1.0
Trace Impurities – Germanium (Ge)	<= 20.0 ppb	< 10.0
Trace Impurities – Gold (Au)	<= 20.0 ppb	< 5.0

Test	Specification	Result
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities – Iron (Fe)	<= 50.0 ppb	4.0
Trace Impurities – Lead (Pb)	<= 25.0 ppb	< 10.0
Trace Impurities – Lithium (Li)	<= 50.0 ppb	< 1.0
Trace Impurities – Magnesium (Mg)	<= 50.0 ppb	2.0
Trace Impurities – Manganese (Mn)	<= 5.0 ppb	< 1.0
Trace Impurities – Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities – Nickel (Ni)	<= 10.0 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)	<= 100.0 ppb	< 10.0
Trace Impurities – Silver (Ag)	<= 20.0 ppb	< 1.0
Trace Impurities – Sodium (Na)	<= 100.0 ppb	80.0
Trace Impurities – Strontium (Sr)	<= 20.0 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)	<= 50.0 ppb	< 10.0
Trace Impurities – Titanium (Ti)	<= 10.0 ppb	2.0
Trace Impurities – Vanadium (V)	<= 10.0 ppb	< 1.0
Trace Impurities – Zinc (Zn)	<= 50.0 ppb	1.0
Trace Impurities – Zirconium (Zr)	<= 10.0 ppb	< 1.0
Particle Count – 0.5 µm and greater	<= 50 par/ml	2
Particle Count – 1.0 µm and greater	<= 10 par/ml	1

For Microelectronic Use

Reported value is the average of all samples counted for this lot number, with no individual sample value exceeding the specification.

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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