Material No.: 9539-33
Revision No.: 0

Product Specification

Test	Specification
Assay (as HCl) (by acid-base titrn)	37.0 - 38.0 %
Color (APHA)	≤ 10
Residue after Ignition	≤ 3 ppm
Extractable Organic Substances	≤ 3 ppm
Bromide (Br)	≤ 0.005 %
Free Halogen (as Cl_2)	Passes Test
Ammonium (NH_4)	≤ 1 ppm
Phosphate (PO_4)	≤ 0.05 ppm
Sulfate (SO_4)	≤ 0.3 ppm
Sulfite (SO_3)	≤ 0.8 ppm
Trace Impurities - Aluminum (Al)	≤ 50.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb
Trace Impurities - Barium (Ba)	≤ 20.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb
Trace Impurities - Boron (B)	≤ 20.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 5.0 ppb
Trace Impurities - Calcium (Ca)	≤ 100.0 ppb
Trace Impurities - Chromium (Cr)	≤ 10.0 ppb
Trace Impurities - Cobalt (Co)	≤ 5.0 ppb
Trace Impurities - Copper (Cu)	≤ 5.0 ppb
Trace Impurities - Gallium (Ga)	≤ 20.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb
Heavy Metals (as Pb)	≤ 100 ppb
Trace Impurities - Iron (Fe)	≤ 50.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb
Trace Impurities - Lithium (Li)	≤ 20.0 ppb

>>> Continued on page 2 >>>

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Test	Specification
Trace Impurities - Magnesium (Mg)	≤ 50.0 ppb
Trace Impurities - Manganese (Mn)	≤ 5.0 ppb
Trace Impurities - Molybdenum (Mo)	≤ 10.0 ppb
Trace Impurities - Nickel (Ni)	≤ 10.0 ppb
Trace Impurities - Niobium (Nb)	≤ 10.0 ppb
Trace Impurities - Potassium (K)	≤ 50 ppb
Trace Impurities - Silicon (Si)	≤ 100.0 ppb
Trace Impurities - Silver (Ag)	≤ 20.0 ppb
Trace Impurities - Sodium (Na)	≤ 100.0 ppb
Trace Impurities - Strontium (Sr)	≤ 20.0 ppb
Trace Impurities - Tantalum (Ta)	≤ 10.0 ppb
Trace Impurities - Thallium (Tl)	≤ 20.0 ppb
Trace Impurities - Tin (Sn)	≤ 50 ppb
Trace Impurities - Titanium (Ti)	≤ 10.0 ppb
Trace Impurities - Vanadium (V)	≤ 10.0 ppb
Trace Impurities - Zinc (Zn)	≤ 30.0 ppb
Trace Impurities - Zirconium (Zr)	≤ 10.0 ppb
Particle Count - 0.5 µm and greater	≤ 50 par/ml
Particle Count - 1.0 µm and greater	≤ 10 par/ml

>>> Continued on page 3 >>>

Material No.: 9539-33

Test	Specification

For Microelectronic Use
Storage Condition: Store below 25 °C.

Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Ethier
Vice President Global Quality