



HYDROFLUORIC ACID

CERTIFICATE OF ANALYSIS

PRODUCT NUMBER: S010501

LOT NUMBER: 5111093
 RELEASE DATE: November, 2011
 EXPIRY DATE: November, 2014

Tests	Maximum Specification	Actual Value	Units
Assay (HF, w/w):	47 - 51%	49%	% by w/w
Colour:	10	< 10	APHA

HF (47 - 51%): Properties
 Molar Mass: 20.01g/mol
 Density: 1.18 g/ml
 Molarity: 29 moles/litre
 Normality: 29 moles/litre

Analyte	Maximum Specification	Actual Value (in ppb)	Analyte	Maximum Specification	Actual Value (in ppb)
Aluminum (Al)	1 ppb	< 0.5	Neodymium (Nd)	0.1 ppb	< 0.1
Antimony (Sb)	0.2 ppb	< 0.1	Nickel (Ni)	0.5 ppb	< 0.1
Arsenic (As)	0.5 ppb	< 0.1	Niobium (Nb)	0.1 ppb	< 0.1
Barium (Ba)	0.1 ppb	< 0.1	Palladium (Pd)	0.2 ppb	< 0.2
Beryllium (Be)	0.1 ppb	< 0.1	Platinum (Pt)	0.2 ppb	< 0.2
Bismuth (Bi)	0.1 ppb	< 0.1	Potassium (K)	1 ppb	< 0.2
Boron (B)	1 ppb	< 0.5	Praseodymium (Pr)	0.1 ppb	< 0.1
Cadmium (Cd)	0.1 ppb	< 0.1	Rhenium (Re)	0.1 ppb	< 0.1
Calcium (Ca)	1 ppb	< 0.5	Rhodium (Rh)	0.1 ppb	< 0.1
Cerium (Ce)	0.1 ppb	< 0.1	Rubidium (Rb)	0.1 ppb	< 0.1
Cesium (Cs)	0.1 ppb	< 0.1	Ruthenium (Ru)	0.1 ppb	< 0.1
Chromium (Cr)	1 ppb	< 0.1	Samarium (Sm)	0.1 ppb	< 0.1
Cobalt (Co)	0.1 ppb	< 0.1	Scandium (Sc)	0.1 ppb	< 0.1
Copper (Cu)	0.5 ppb	< 0.1	Selenium (Se)	1 ppb	< 0.1
Dysprosium (Dy)	0.1 ppb	< 0.1	Silver (Ag)	0.5 ppb	< 0.1
Erbium (Er)	0.1 ppb	< 0.1	Sodium (Na)	1 ppb	< 0.5
Europium (Eu)	0.1 ppb	< 0.1	Strontium (Sr)	0.1 ppb	< 0.1
Gadolinium (Gd)	0.1 ppb	< 0.1	Tantalum (Ta)	Information Only	< 0.1
Gallium (Ga)	0.1 ppb	< 0.1	Tellurium (Te)	0.1 ppb	< 0.1
Germanium (Ge)	0.1 ppb	< 0.1	Terbium (Tb)	0.1 ppb	< 0.1
Gold (Au)	0.2 ppb	< 0.2	Thallium (Tl)	0.1 ppb	< 0.1
Hafnium (Hf)	0.1 ppb	< 0.1	Thorium (Th)	0.1 ppb	< 0.1
Holmium (Ho)	0.1 ppb	< 0.1	Thulium (Tm)	0.1 ppb	< 0.1
Indium (In)	0.1 ppb	< 0.1	Tin (Sn)	0.5 ppb	< 0.1
Iron (Fe)	1 ppb	< 0.5	Titanium (Ti)	1 ppb	< 0.5
Lanthanum (La)	0.1 ppb	< 0.1	Tungsten (W)	0.5 ppb	< 0.5
Lead (Pb)	0.1 ppb	< 0.1	Uranium (U)	0.1 ppb	< 0.1
Lithium (Li)	0.1 ppb	< 0.1	Vanadium (V)	0.1 ppb	< 0.1
Lutetium (Lu)	0.1 ppb	< 0.1	Ytterbium (Yb)	0.1 ppb	< 0.1
Magnesium (Mg)	1 ppb	< 0.2	Yttrium (Y)	0.1 ppb	< 0.1
Manganese (Mn)	0.1 ppb	< 0.1	Zinc (Zn)	1 ppb	< 0.1
Mercury (Hg)	1 ppb	< 0.09	Zirconium (Zr)	0.1 ppb	< 0.1
Molybdenum (Mo)	0.1 ppb	< 0.1			

Analyte	Maximum Specification	Actual Value (in ppm)	Analyte	Maximum Specification	Actual Value (in ppm)
Chloride (Cl ⁻)	4 ppm	< 4	Total Sulphur (S)	0.1 ppm	< 0.1
Total Phosphorus (P)	0.05 ppm	< 0.05	Fluosilicic Acid (SiF ₆)	20 ppm	< 20

Element concentrations are at the point of bottling. Concentrations of some elements in particular, Ca, Fe, Zn & Al will increase due to storage in polyethylene bottles.

Dr. B. McKelvey
 QA/QC Manager

SEASTAR CHEMICALS INC
 A member of the AXYS Group

10005 McDonald Park Road, Sidney, BC Canada V8L 5Y2
 Phone: 250-655-5880 - Fax: 250-655-5888 - Toll Free: 1-800-663-2330
 www.seastarchemicals.com