



# NITRIC ACID

**PRODUCT NUMBER: S010101**

**LOT NUMBER: 1112110**

**RELEASE DATE: November, 2012**

**EXPIRY DATE: November, 2015**

## CERTIFICATE OF ANALYSIS

Tests	Maximum Specification	Actual Value	Units	<u>HNO<sub>3</sub> (67 - 70%): Properties</u>
ASSAY (HNO <sub>3</sub> , w/w):	67 - 70%	69%	% by w/w	Molar Mass: 63.01g/mol
Colour:	10	< 7	APHA	Density: 1.41 g/ml
				Molarity: 16 moles/litre
				Normality: 16 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)	0.5 ppb	< 0.1	Nickel (Ni)	0.5 ppb	< 0.5
Arsenic (As)	0.5 ppb	< 0.1	Niobium (Nb)	0.1 ppb	< 0.1
Barium (Ba)	0.1 ppb	< 0.1	Palladium (Pd)	0.5 ppb	< 0.1
Beryllium (Be)	0.1 ppb	< 0.1	Platinum (Pt)	0.5 ppb	< 0.1
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)	0.5 ppb	< 0.1	Rhenium (Re)	0.1 ppb	< 0.1
Calcium (Ca)	1 ppb	< 0.5	Rhodium (Rh)	0.5 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)	0.5 ppb	< 0.1
Chromium (Cr)	1 ppb	< 0.5	Samarium (Sm)	0.1 ppb	< 0.1
Cobalt (Co)	0.5 ppb	< 0.1	Scandium (Sc)	0.1 ppb	< 0.1
Copper (Cu)	0.5 ppb	< 0.2	Selenium (Se)	1 ppb	< 0.1
Dysprosium (Dy)	0.1 ppb	< 0.1	Silver (Ag)	0.1 ppb	< 0.1
Erbium (Er)	0.1 ppb	< 0.1	Sodium (Na)	1 ppb	< 0.3
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)	0.1 ppb	< 0.1	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)	0.5 ppb	< 0.1
Lanthanum (La)	0.1 ppb	< 0.1	Tungsten (W)	0.1 ppb	< 0.1
Lead (Pb)	0.1 ppb	< 0.1	Uranium (U)	0.1 ppb	< 0.1
Lithium (Li)	0.1 ppb	< 0.1	Vanadium (V)	0.5 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)	0.5 ppb	< 0.2
Mercury (Hg)	0.1 ppb	< 0.02	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)	0.2 ppm	< 0.2	Total Sulphur (S)	0.3 ppm	< 0.3
Total Phosphorus (P)	0.01 ppm	< 0.01			

Element concentrations are at the point of bottling. Concentrations of some elements in particular, Ca, Si, K, Na, B, Al, Mg & Mn will increase due to storage in glass bottles.

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