



# AMMONIA SOLUTION

## CERTIFICATE OF ANALYSIS

PRODUCT NUMBER: IQ-07

LOT NUMBER: 7107040  
 RELEASE DATE: May, 2007  
 EXPIRY DATE: May, 2010

Tests	Maximum Specification	Actual Value	Units
ASSAY (NH <sub>3</sub> , w/w):	20 - 22%	20%	% by w/w
Colour:	10	<10	APHA

NH<sub>3</sub> (20 - 22%): Properties  
 Molar Mass: 17.03g/mol  
 Density: 0.92 g/ml  
 Molarity: 11 moles/litre  
 Normality: 11 moles/litre

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

Analyte	Maximum Specification	Actual Value (in ppm)	Analyte	Maximum Specification	Actual Value (in ppm)
Chloride (Cl)	0.5 ppm	<0.5	Sulfate (SO <sub>4</sub> )	1 ppm	<1
Phosphate (PO <sub>4</sub> )	0.5 ppm	<0.5			

Element concentrations are at the point of bottling.

*B McKelvey*  
 Dr. B. McKelvey  
 QA/QC Manager

