

**PRODUCT NUMBER: IQ-01**

LOT NUMBER: 1107080

RELEASE DATE: September, 2007

EXPIRY DATE: September, 2010

## CERTIFICATE OF ANALYSIS

| Tests                           | Maximum Specification | Actual Value | Units    |
|---------------------------------|-----------------------|--------------|----------|
| ASSAY (HNO <sub>3</sub> , w/w): | 67 - 70%              | 68%          | % by w/w |
| Colour:                         | 10                    | <10          | APHA     |

**HNO<sub>3</sub> (67 - 70%): Properties**

Molar Mass: 63.01g/mol

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)    | 0.5 ppb               | <0.1                  |
| Antimony (Sb)   | 1 ppb                 | <0.1                  | Nickel (Ni)       | 1 ppb                 | <0.1                  |
| Arsenic (As)    | 1 ppb                 | <0.1                  | Niobium (Nb)      | 0.5 ppb               | <0.1                  |
| Barium (Ba)     | 1 ppb                 | <0.1                  | Palladium (Pd)    | 0.5 ppb               | <0.1                  |
| Beryllium (Be)  | 1 ppb                 | <0.1                  | Platinum (Pt)     | 0.5 ppb               | <0.1                  |
| Bismuth (Bi)    | 1 ppb                 | <0.1                  | Potassium (K)     | 1 ppb                 | <0.2                  |
| Boron (B)       | 1 ppb                 | <0.5                  | Praseodymium (Pr) | 0.5 ppb               | <0.1                  |
| Cadmium (Cd)    | 1 ppb                 | <0.1                  | Rhenium (Re)      | 0.5 ppb               | <0.1                  |
| Calcium (Ca)    | 1 ppb                 | <0.5                  | Rhodium (Rh)      | 0.5 ppb               | <0.1                  |
| Cerium (Ce)     | 0.5 ppb               | <0.1                  | Rubidium (Rb)     | 0.5 ppb               | <0.1                  |
| Cesium (Cs)     | 0.5 ppb               | <0.1                  | Ruthenium (Ru)    | 0.5 ppb               | <0.1                  |
| Chromium (Cr)   | 1 ppb                 | <0.5                  | Samarium (Sm)     | 0.5 ppb               | <0.1                  |
| Cobalt (Co)     | 1 ppb                 | <0.1                  | Scandium (Sc)     | 0.5 ppb               | <0.1                  |
| Copper (Cu)     | 1 ppb                 | <0.1                  | Selenium (Se)     | 1 ppb                 | <0.1                  |
| Dysprosium (Dy) | 0.5 ppb               | <0.1                  | Silver (Ag)       | 1 ppb                 | <0.1                  |
| Erbium (Er)     | 0.5 ppb               | <0.1                  | Sodium (Na)       | 1 ppb                 | <0.2                  |
| Europium (Eu)   | 0.5 ppb               | <0.1                  | Strontium (Sr)    | 1 ppb                 | <0.1                  |
| Gadolinium (Gd) | 0.5 ppb               | <0.1                  | Tantalum (Ta)     | Information Only      | <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)    | 0.5 ppb               | <0.1                  | 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                 | <0.1                  | Zinc (Zn)         | 1 ppb                 | <0.2                  |
| Mercury (Hg)    | 1 ppb                 | <0.02                 | 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)        | 0.2 ppm               | <0.2                  | Total Sulfur (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.

  
Dr. B. McKelvey  
QA/QC Manager