

**PRODUCT NUMBER: S010201**

**LOT NUMBER: 2112024**

**RELEASE DATE: July, 2013**

**EXPIRY DATE: July, 2016**

## CERTIFICATE OF ANALYSIS

| Tests                            | Maximum<br>Specification | Actual<br>Value | Units    |
|----------------------------------|--------------------------|-----------------|----------|
| ASSAY (HClO <sub>4</sub> , w/w): | 65 - 71%                 | 68%             | % by w/w |
| Colour:                          | 10                       | < 10            | APHA     |

| HClO <sub>4</sub> (67 - 71%): | Properties     |
|-------------------------------|----------------|
| Molar Mass:                   | 100.46g/mol    |
| Density:                      | 1.67 g/ml      |
| Molarity:                     | 12 moles/litre |
| Normality:                    | 12 moles/litre |

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

  
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