

# Product Specification

## Chromium ICP-MS Standard, 1000 ppm Cr in 3% HNO<sub>3</sub>

**Lot Number:** SAMPLE

**Product Number:** MSCR1KN

**Manufacture Date:** N/A

**Expiration Date:** N/A

This is a single element solution that was prepared volumetrically to contain the certified value reported. The uncertainty associated with the certified value is the sum of the estimated errors due to the purity of the raw material, the volumetric preparation of the solution, and transpiration of the solution through the container wall.

The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3112. All trace level elements were determined by ICP or ICP-MS.

| Name                         | CAS#      | Grade           |
|------------------------------|-----------|-----------------|
| Water                        | 7732-18-5 | ACS/ASTM/USP/EP |
| Nitric Acid                  | 7697-37-2 | Trace Metals    |
| Chromium Nitrate Nonahydrate | 7789-02-8 | High Purity     |

| Test          | Specification    | Result | NIST SRM# |
|---------------|------------------|--------|-----------|
| Appearance    | Dark blue liquid | N/A    |           |
| Chromium (Cr) | 997-1003 ppm     | N/A    | 3112      |

### Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

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

| Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Reference           |                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|
| Chromium Standard, 1000 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | EPA (200.8)         |                                 |
| Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured. |                     |                                 |
| Part Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Size / Package Type | Shelf Life (Unopened Container) |
| MSCR1KN-100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 100 mL natural LDPE | 18 months                       |
| Recommended Storage: 15°C - 30°C (59°F - 86°F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                                 |

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