**Agilent Product Name:** Manganese AA Standard: 1000 µg/mL Mn in 5% $HNO_3$
**Agilent Part No:** 5190-8293
**Lot No:** 0000987343

## Product Specifications

| Analyte | Starting Material | CAS # | Matrix | Certified Concentration |
|---|---|---|---|---|
| Mn | Mn | 7439-96-5 | 5% $HNO_3$ | 1010 ± 2 µg/mL (w/v) |
| | | | | 1001 ± 2 µg/g (w/w) |

**Intended Use**: This solution is intended for use as a certified reference material or calibration standard for atomic absorption spectroscopy (flame AAS or graphite furnace AAS), and other techniques for elemental analysis.

**Certification & Traceability**: This CRM was manufactured under a quality management system that is accredited to **ISO Guide 34**, **ISO/IEC 17025**, and registered to **ISO 9001**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.98% pure manganese (Mn) metal dissolved in high purity nitric acid ($HNO_3$) and diluted with ASTM Type I Water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST and both the certified concentration and uncertainty values are traceable to NIST SRM 3132, lot #050429. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

**Instructions for Use**: Agilent Technologies recommends that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy the analyst should: (1) use only pre-cleaned containers and transferware, (2) avoid pipetting directly from the CRM's original container, (3) use a minimum sub-sample size of 500 µL, (4) make dilutions using calibrated balances or certified volumetric class A flasks and pipettes, (5) dilute to volume using the same matrix as the original CRM, and (6) never pour used product back into the original container. The solution should be kept tightly capped. Store at controlled room temperature per USP 35 (10.30.60). Do not freeze, heat, or expose to direct sunlight. Minimize exposure to moisture or high humidity.

**Period of Validity**: Agilent Technologies ensures the accuracy of this solution until the expiration date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

**Sample lot approver:**

Julie M. MacIntosh

QA Manager

**Date of release:** 13 August 2015
**Date of expiration:** 07 October 2017