**REF 918 60**

# Test 1-60 01.15

# *NANOCOLOR*® Manganese

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**Method:**
Photometric determination of total manganese with formaldoxime

| | | | |
|---|---|---|---|
| Cuvette rectangular: | **50 mm** | **20 mm** | **10 mm** |
| Range (**mg/L Mn**): | **0.01–2.00** | **0.05–5.00** | **0.1–10.0** |
| Factor: | **01.36** | **03.39** | **006.8** |
| Wavelength (HW = 5–12 nm): | **470 nm** | | |
| Reaction time: | **5 min (300 s)** | | |
| Reaction temperature: | **20–25 °C** | | |

**Contents of reagent set:**
100 mL Manganese R1
100 mL Manganese R2
100 mL Manganese R3

**Hazard warning:**
Reagent R1 contains paraformaldehyde 1–10 % and hydroxylammonium chloride 5–10 %, reagent R2 contains ammonia 10–25 %, reagent R3 contains hydroxylammonium chloride 10–25 % and methanol 3–10 %.
H314, H317, H351 Causes severe skin burns and eye damage. May cause an allergic skin reaction. Suspected of causing cancer.
P201, P202, P260, P261, P272, P280, P301+330+331, P302+352, P303+361+353, P304+340, P305+351+338, P308+313, P333+313, P363, P405, P501 Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapors. Avoid breathing dust. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves / eye protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN: Wash with plenty of water / … IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice / attention. If skin irritation or rash occurs: Get medical advice / attention. Wash contaminated clothing before reuse. Store locked up. Dispose of contents / container to regulated waste treatment. For further information ask for a safety data sheet.

**Interferences:**
The following quantities of ions will not interfere: < 1000 mg/L $Mg^{2+}$, $Zn^{2+}$, $PO_4^{3-}$; < 500 mg/L $Ca^{2+}$; < 100 mg/L $Cu^{2+}$; < 20 mg/L $Fe^{3+}$, $PO_4^{3-}$ when $Ca^{2+}$ ions (10 mg/L) are present too; < 10 mg/L $Ni^{2+}$; < 1 mg/L $Co^{2+}$; < 0.1 mg/L Cr(III)

The method cannot be applied for the analysis of sea water.

**Notes:**
- For the determination of lowest manganese concentrations (< 0.05 mg/L Mn), the sample or standard solution must be stabilized with hydrochloric acid.
- Please contact MACHEREY-NAGEL for special working instructions concerning a simplified procedure in a beaker (without filling up) an evaluation in 50 mm cuvette.

**Procedure:**
Requisite accessories: volumetric flasks 25 mL, piston pipette with tips

Pour into two separate volumetric flasks 25 mL:

| **Test sample** | **Blank value** |
|---|---|
| **20 mL** test sample *(the pH value of the sample must be between pH 1 and 13)* | **20 mL** test sample *(the pH value of the sample must be between pH 1 and 13)* |
| **1 mL** R1, mix | – |
| **1 mL** R2, mix, wait **1 min** | – |
| **1 mL** R3, mix | – |

Fill up sample and blank value to 25 mL mark with distilled water and mix again. After 5 min pour into cuvettes and measure.

**Measurement:**
For *NANOCOLOR*® photometers see manual, test 1-60.

**Measurement when samples are colored or turbid:**
For all *NANOCOLOR*® photometers see manual, use key for correction value.

**Photometers of other manufacturers:**
Verify factor for each type of instrument by measuring standard solutions.

**Analytical quality control:**
*NANOCONTROL* Multistandard Drinking Water (REF 925 018)

**Decreasing volume of analytical preparation:**
In order to increase the number of determinations, you can work with volumetric flasks of 10 mL: 8 mL test sample + 0.4 mL R1 + 0.4 mL R2 + 0.4 mL R3, semi-micro cuvette (REF 919 50).

**Disposal:**
The contents of tubes and flasks can be washed into drain with plenty of water.

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