1.10006.0001

MQuant™ Nickel Test

Ni

1. Method

Nickel(II) ions react with dimethylglyoxime to form a red complex. The nickel concentration is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
10 - 25 - 100 - 250 - **500 mg/l Ni**	100

3. Applications

This test is also suited for the detection of nickel in metallic materials and surfaces (see section 7).

Sample material:
Wastewater
Electroplating-bath solutions
Alloys and nickel-plated metals (e.g. jewelry)

4. Influence of foreign substances

This was checked in solutions with 10 and 500 mg/l Ni. The determination is not yet interfered with up to the concentrations of foreign substances given in the table.

Concentrations of foreign substances in mg/l					
Ag^+	1000	Cu^{2+}	1000	Na^+	1000
Al^{3+}	1000	Fe^{2+}	50	NH_4^+	1000
Ba^{2+}	1000	Fe^{3+}	50	NO_2^-	1000
Ca^{2+}	1000	**$[Fe(CN)_6]^{4-}$**	**10**	NO_3^-	1000
Cd^{2+}	1000	**$[Fe(CN)_6]^{3-}$**	**10**	Pb^{2+}	1000
Cl^-	1000	Hg^+	220	PO_4^{3-}	1000
CN^-	50	Hg^{2+}	750	SO_3^{2-}	1000
Co^{2+}	50	K^+	1000	SO_4^{2-}	1000
Cr^{3+}	1000	Mg^{2+}	1000	Zn^{2+}	1000
CrO_4^{2-}	1000	MnO_4^-	1000		

5. Reagents and auxiliaries

The test strips are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
Tube containing 100 test strips

Other reagents:
MColorpHast™ Universal indicator strips pH 0 - 14, Cat. No. 109535
Sodium acetate anhydrous for analysis EMSURE®, Cat. No. 106268
Sulfuric acid 0.5 mol/l TitriPUR®, Cat. No. 109072
Sodium thiosulfate pentahydrate for analysis EMSURE®, Cat. No. 106516
Sodium chloride for analysis EMSURE®, Cat. No. 106404
Ammonia solution 25 % for analysis EMSURE®, Cat. No. 105432
Potassium permanganate for analysis EMSURE®, Cat. No. 105082
Nickel standard solution CertiPUR®, 1000 mg/l Ni, Cat. No. 119792

6. Preparation

- Samples containing more than 500 mg/l Ni must be diluted with distilled water.
- **The pH must be within the range 2 - 7.**
  If necessary, buffer the sample with sodium acetate or, respectively, adjust the pH with sulfuric acid.

7. Procedure

Immerse the reaction zone of the test strip in the pre-treated sample (**15 - 25 °C**) **for 1 sec**.

Shake off excess liquid from the strip and **after 30 sec** determine with which color field on the label the color of the reaction zone coincides most exactly.

Read off the corresponding result in mg/l Ni.

Notes on the measurement:

- In the event that the reaction zone of the test strip assumes a color other than pink to red, **wait 1 min** and recompare with the color scale. If the reaction zone then still shows another color, this is due to an interference by foreign substances. This can be prevented by the addition of appropriate masking agents.

Color of the reaction zone	Cause	Masking agent
orange	>4000 mg/l Cu^{2+}	Sodium thiosulfate [1]
yellow	>750 mg/l Hg^{2+}	Sodium chloride [1]
grey	>220 mg/l Hg^+	Sodium chloride [1]
yellow to brown	>50 mg/l Co^{2+}	Ammonia solution approx. 10 % [2]
blue	Molybdenum blue	Potassium permanganate [3]

[1] To 5 ml of sample add 1 spatula-tip of the masking agent and shake to dissolve. Subsequently determine the nickel concentration anew.

[2] First immerse the reaction zone of the test strip in approx. 10 % ammonia solution and subsequently in the sample for 30 sec.

[3] Add some crystals of potassium permanganate to the sample until a pink color persists and subsequently determine the nickel concentration anew.

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
- If the color of the reaction zone is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 500 mg/l Ni is obtained.

  Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

Determination on metallic surfaces:

Moisten the reaction zone of the test strip with ammonia solution (10 - 25 %) and lightly press it on the surface to be tested. A pink color indicates the presence of nickel. The obtained measurement results are only guideline values.

8. Method control

To check test strips and handling:
Dilute the nickel standard solution with distilled water to 250 mg/l Ni and analyze as described in section 7.
Additional notes see under **www.qa-test-kits.com**.

9. Note

Reclose the tube containing the test strips immediately after use.

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