

NITRITE METHOD 5

Using Nitrite LR tablets

INTRODUCTION

This simplified procedure for the determination of Nitrites in water and wastewater is based on current standard and recommended methods. For maximum stability and convenience in practice, the reagents are combined together in the form of tablets using one per test.

PRINCIPLE OF THE METHOD

Nitrites, in acid solution, diazotise sulphanilic acid. The resulting diazo compound couples with N-(1-naphthyl)-ethylenediamine to form a reddish dye. The intensity of this colour, which is proportional to the Nitrite concentration, is measured by comparison against Lovibond permanent colour glass standards.

REAGENTS REQUIRED

1. **Lovibond Nitrite LR Tablets**
2. **Lovibond Nitrite LR Acidifying Tablets (required only for use with Nessleriser disc NJP)**

THE STANDARD LOVIBOND COMPARATOR DISC 3/103 and NESSLERISER DISC NJP

Disc 3/103 covers the range 0.05 to 0.5mg./l. Nitrite Nitrogen (N) in steps of 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40 and 0.5mg./l. N and is used with 13.5mm./10ml. moulded cells.

Disc NJP covers the range 0.002 to 0.05 mg/l Nitrite Nitrogen (N) in steps of 0.002, 0.004, 0.006, 0.01, 0.015, 0.02, 0.03, 0.04 and 0.05mg./l. N and is used with 50ml. Nessler cylinders.

METHOD (DISC 3/103)

1. Place a 10ml. cell, containing the sample only, in the left-hand compartment of the Comparator. This serves as a blank to compensate for any inherent colour in the sample.
2. Rinse a similar cell with the water sample then fill to the 10ml. mark. Add one Nitrite LR tablet, crush and mix to dissolve. Place in the right-hand compartment of the Comparator.
3. After standing 10 minutes, match by holding the Comparator against a standard source of white light, such as the Lovibond Daylight 2000 Unit, or against North daylight (not fluorescent lighting), then rotate the disc until the nearest colour match is obtained.
4. The figure displayed in the indicator window is the concentration, in milligrams per litre (mg./l.), of Nitrite, in terms of Nitrogen (N), present in the sample.
5. Concentrations of Nitrite greater than 0.5mg./l. may be determined by diluting the sample with Nitrite-free deionised water as follows:-

First rinse the cell with deionised water, add the required volume of sample and make up to the 10ml. mark with the same dilution water. Continue by adding the Nitrite LR tablet, dissolving and, after 10 minutes, matching the colours as before. The disc readings are to be multiplied by the appropriate factor; for instance, if ml. of sample is diluted to 10ml., multiply by 10.

METHOD (DISC NJP)

1. The instructions for the Comparator should be followed except that 50ml. of sample is taken in a Nessler cylinder, the standing period increased from 10 minutes to 30 minutes and a Nitrite LR Acidifying tablet added with the Nitrite LR tablet.
2. For concentrations greater than 0.05mg./l. N measure 10ml (or other suitable volume) into an empty cylinder, dilute to the 50ml. line with deionised water then test the diluted sample as before. Multiply the reading by the dilution factor.

NOTES

1. The presence of free chlorine and nitrogen trichloride could interfere in the test, but because of chemical incompatibility they are unlikely to co-exist in the same sample with nitrite.
2. The following ions are given as sources of interference because of precipitation under the conditions of the test - antimonous, auric, bismuth, ferric, lead, mercurous, silver, chloroplatinate and metavanadate. Cupric ion may cause low results by catalysing the decomposition of the diazonium salt. In practice it is unlikely that these various sources of interference will be found in sufficiently high concentrations to cause significant errors.
3. The results obtained by the use of the Nessleriser and disc are accurate only if the Nessler cylinders conform to the specification used when the disc was standardized i.e. that the 50 ml mark is at a height of 113 ± 3 mm. measured internally.

REFERENCES

1. American Public Health Association, American Water Works Association and the Water Pollution Control Federation. Standard Methods for the Examination of Water and Waste-Waters (17th Edition) Washington, D.C., U.S.A., 1989.
2. "Nitrate, Nitrite, Ammonia, Kjeldahl Nitrogen and Related Determinants in Waters, Effluents and some Solids" in the series Methods for the Examination of Waters and Associated Materials, HMSO, London, 1980.

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