HYDROGEN PEROXIDE METHOD 1

Using Hydrogen Peroxide Low Range Tablets

INTRODUCTION

This simplified procedure for the determination of hydrogen peroxide in water is based on the use of N, N-diethyl-p-phenylene diamine (DPD) in the presence of potassium iodide and a suitable catalyst for rapid colour development. 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

Hydrogen Peroxide in the presence of potassium iodide reacts with the DPD to give a red colour. To ensure rapid and complete colour development a catalyst is used. The intensity of the colour, which is proportional to the Hydrogen Peroxide concentration, is measured by comparison against Lovibond permanent colour glass standards.

REAGENTS REQUIRED

1. **Lovibond Hydrogen Peroxide Low Range Test Tablets.**

THE STANDARD LOVIBOND COMPARATOR DISCS

Disc Code	Range (mg./l. H_2O_2)	Steps
3/50A	0.05 - 0.50	0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.50mg./l. H_2O_2
3/50B	0.1 - 3.0	0.1, 0.2, 0.3, 0.4, 0.6, 1.0, 1.5, 2.0, 3.0mg./l. H_2O_2
3/50C	0.50 - 2.0	0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.25, 1.5, 2.0mg./l. H_2O_2
3/50E	0.01 - 0.15	0.01, 0.02, 0.03, 0.04, 0.05, 0.07, 0.09, 0.12, 0.15mg./l. H_2O_2

Discs 3/50A, 3/50B and 3/50C are for use with 13.5mm. /10ml. moulded cells.
Disc 3/50E is for use with 40mm./20ml. cells.

METHOD

Using Discs 3/50A, 3/50B and 3/50C

1. Place a 13.5mm./10ml. cell, containing 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 and leave in two or three drops, sufficient to cover the tablet when added. Drop into this prepared tube one Hydrogen Peroxide low range test tablet and crush with a clean stirring rod.

3. Then add the water sample up to the 10ml. mark, mix to dissolve the remains of the tablet and place the cell in the right-hand compartment of the Comparator.

4. Match the colour after two minutes by holding the Comparator facing a standard source of white light, such as the Lovibond Daylight 2000 Unit, or North daylight, (not fluorescent lighting).

5. Rotate the disc until the nearest colour match is found. The figure displayed in the bottom right hand corner of the Comparator is the concentration in mg./l. of Hydrogen Peroxide, in terms of H_2O_2, present in the sample.

Using Disc 3/50E

1. The same general procedure as in a) is followed except that a 40mm. cell is used. This is rinsed with the water sample, following which **two** Hydrogen Peroxide low range test tablets are added and crushed with a stirring rod. Then add 20ml. of sample, mix to dissolve the remains of the tablets. Match the colour after two minutes.

NOTES

1. Dissolved oxygen in water can produce a faint colour with the reagent if allowed to stand. The suppression of trace metal catalysis by the EDTA, which is incorporated in the test tablets, minimises this effect and there is no interference within the period of the test.

2. The only interfering substance likely to be present in water is oxidised manganese. Its effect can be allowed for by developing the manganese colour in the "blank" as follows:

   To 10ml. of sample in a separate test tube add one thioacetamide tablet. Mix to dissolve. Rinse the 13.5mm. cell as before and add one Hydrogen Peroxide low range test tablet. Crush and then add the 10ml. of thioacetamide-treated sample. Mix to dissolve remains of tablet and then place in left-hand side of Comparator. In this way the colour due to manganese will have been developed equally in both fields and thus cancels out. The same procedure may be used with the 40mm. cell substituting 20ml. of sample for 10ml. One thioacetamide tablet is sufficient.

3. The quantity of indicator used in the tablets has been chosen to suit the range of Hydrogen Peroxide concentrations covered by the discs. Samples containing higher concentrations must be diluted with deionised water. The test tablet is first dissolved in the required volume of deionised water contained in the cell. The water sample is then added up to the mark. The appropriate factor, depending upon the relative volumes of deionised water and sample, is applied to the disc reading.

REVISION HISTORY

Date	Change Note	Issue
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