

OZONE METHOD 3

Using Indigo (Potassium Indigo Trisulphonate) Reagent

INTRODUCTION

Sterilization of water by ozonation is a well-established process. Advantages of this as a sterilization method include the removal of unpleasant tastes and odours and, in the absence of excessive amounts of iron or manganese, a significant reduction in colour. Ozonation is also used for the purification of water in swimming baths and for the production of high quality water in breweries and mineral water plants.

This test method, based on the indigo colorimetric method¹, is quantitative and selective; it therefore has advantages over those methods based on the measurement of total oxidants.

PRINCIPLE OF METHOD

In acidic solution, ozone rapidly decolorizes indigo. The reduction in colour of a standard indigo solution is related to the amount of ozone present in a water sample. Ozone concentration may be measured by comparison against permanent colour glass standards using a Lovibond Comparator and Disc. For convenience, the indicator is used in a tableted formulation, overcoming the problem associated with the limited stability of indicator solutions.

Chlorine, which may also be present, is prevented from interfering by the use of malonic acid, which is incorporated in the tablet formulation. Bromine, at normal levels, also does not interfere.

REAGENT REQUIRED

1. Lovibond Ozone Tablets

THE STANDARD LOVIBOND COMPARATOR DISC 3/148

The disc covers the range 0 to 0.50mg./l. Ozone (O₃) in steps of: 0, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.40 and 0.50mg./l. and is used with 40mm. cells.

METHOD

1. Rinse out a 40mm. cell with the fresh water sample.
2. Crush one tablet in the freshly rinsed cell.
3. Carefully add sample up to the 20ml. line, avoiding air bubbles.
4. Mix gently to complete solution of the tablet, avoiding vigorous stirring. When solution is complete, place cell in the right-hand compartment of the Comparator.
5. Fill another 40mm. cell with sample. Place this in left hand compartment of the Comparator. Hold the Comparator facing North daylight (South daylight in southern hemisphere) and compare the colour produced in the test solution with the colours on the disc by rotating the latter until the nearest colour match is obtained. The figure displayed in the bottom right-hand corner of the Comparator is the concentration of Ozone in mg./l.

REFERENCE

American Public Health Association "*Standard Methods for Examination of Water and Wastewater*" 17th Edition 1989 4-162.

REVISION HISTORY

Date	Change Note	Issue
18/6/02	36/460	2
19/10/06	JC95	3