Method Summary

Determination of Dissolved Oxygen using the Winkler Titration

Scope and Range

This analysis determines the level of dissolved oxygen present in aqueous samples using the Winkler titration method. The method is applicable to most natural waters, ground/surface waters, treated waters, landfill leachates and industrial effluents. This method is only suitable for pre preserved samples. Samples must be analysed within 4 days of receipt. The method determines the dissolved oxygen content of the sample under the conditions of the test. The usual concentration range is up to approximately 9.1mg/l oxygen at 20°C which represents 100% saturation at the stated temperature. The method is accredited to ISO17025 for ground waters, landfill leachates, treated and untreated sewage, and trade effluents.

References

Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442
Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888.

Standard Methods for the examination of waters and wastewaters 20th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-235-7.

BS 6068 : Section 2.3 : 1984 ISO 5813-1983 Determination of dissolved oxygen iodometric method.

Principle

The dissolved oxygen content of water samples is determined using the Winkler titration method. A precipitate of manganous hydroxide is produced in the sample under test. Dissolved oxygen in the sample rapidly reacts with manganous hydroxide to form hydroxides of manganese in higher valency states. Subsequent acidification with sulphuric acid in the presence of iodide stoichiometrically liberates free iodine equivalent in amount to the original dissolved oxygen content of the sample. The released iodine is titrated with standard sodium thiosulphate solution, the end point detected by an iodine indicator (starch) in the manual titration method, or potentiometrically, in the auto titrator method, and the dissolved oxygen calculated from the titre.

Interferences

Interferences are iodine and oxidising or reducing agents, e.g. ferric and ferrous salts, residual chlorine, sulphites, sulphides, nitrite, chromate, tannins, humic acid and thiourea.
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