ALUMINIUM METHOD 5
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INTRODUCTION

The determination of aluminium (residual alum) is usually required for the control of alum coagulation and filtration processes in water treatment. The test may also be applied to waters generally.

The simplified Lovibond procedure is based on the American standard method using eriochrome cyanine R as indicator[1]. For maximum stability and convenience in practice the reagents are combined together in the form of tablets using two per test.

PRINCIPLE OF THE METHOD

The sample is first reacted with the indicator after which the addition of the buffer tablet produces an orange to red complex with aluminium. The colour, which provides a measure of the aluminium concentration, is matched against a series of Lovibond permanent colour glass standards.

REAGENTS REQUIRED

1. **Lovibond Aluminium No. 1 Tablets (from Batch A onwards)**

2. **Lovibond Aluminium No. 2 Tablets (from Batch A onwards)**

THE STANDARD LOVIBOND COMPARATOR DISC 3/127A

The disc covers the range 0.0 to 0.50mg./l. aluminium in steps of:

0.0, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.40 and 0.50mg./l. and is used with 13.5mm./10ml. cells.

SAMPLE COLLECTION

Collect samples in clear acid-rinsed bottles, preferably plastic, and test as soon as possible after collection.

METHOD

1. Place a 13.5mm./10ml. cell, containing sample only, in the left-hand compartment of the Comparator.

2. Rinse a similar cell with the sample, and then fill to the 10ml. mark. Add one Aluminium No. 1 tablet, crush with a clean stirring rod and mix until completely dissolved.

3. Add one Aluminium No. 2 tablet, crush and mix well until completely dissolved.

4. Place the cell in the right-hand compartment of the Comparator. After standing for five 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.

5. The value displayed in the bottom right-hand corner of the Comparator is the concentration of aluminium present in the sample in mg./l.

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NOTES

1. Interference by iron and manganese is eliminated by the ascorbic acid incorporated in the tablets.

2. The presence of fluorides or polyphosphates can lead to negative errors but in practice this interference should not be of any significance except where fluoridation is practised. In that case the waterworks control samples of filtered water should be taken before the final fluoridation stage. For samples taken after fluoridation, such as those from water distribution systems, or for samples containing natural fluoride, it is necessary first to determine the fluoride content. Having determined the fluoride as mg./l. F the corrected aluminium reading as mg./l. A1 may be obtained by multiplying the aluminium disc reading by $(1 + 0.4 F)$ where F is the fluoride concentration.

REFERENCES

Standard Methods for the Examination of Water and Waste Water, American Public Health Association, American Water Works Association, Water Control Federation, Washington DC, 17th Edn. 1989.

REVISION HISTORY

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23/05/02	36/460	2
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