CHLORINE DIOXIDE METHOD 2

Using DPD

PRINCIPLE OF THE METHOD

This method is an extension of the DPD method for determining Free Chlorine and Chloramines in water. Chlorine Dioxide reacts with DPD No. 1 but only to the extent of one fifth of its total available chlorine content.

If Free Chlorine is also likely to be present it is first necessary to react the sample with Glycine, which converts the Free Chlorine to monochloraminoacetic acid, which no longer reacts with DPD No. 1.

REAGENTS REQUIRED

1. **Lovibond DPD No. 1 Tablets (Comparator type)**

2. **Lovibond Glycine Tablets (if Free Chlorine present)**

THE STANDARD LOVIBOND COMPARATOR DISCS 3/40AD, 3/40BD, 3/40ED AND 3/40FD

Disc 3/40AD covers the range 0.19 to 1.9mg./l. chlorine dioxide in steps of 0.19, 0.38, 0.57, 0.76, 0.95, 1.14, 1.33, 1.52 and 1.9mg./l. as ClO_2.

Disc 3/40BD covers the range 0.38 to 7.6mg./l. chlorine dioxide in steps of 0.38, 0.76, 1.14, 1.9, 2.85, 3.8, 4.75, 5.7 and 7.6mg./l. as ClO_2.

Disc 3/40ED covers the range 0.04 to 0.57mg./l. chlorine dioxide in steps of 0.04, 0.08, 0.11, 0.15, 0.19, 0.28, 0.38, 0.48 and 0.57mg. /l. as ClO_2.

Disc 3/40FD covers the range 0.38 to 1.52mg./l. chlorine dioxide in steps of 0.38, 0.48, 0.57, 0.66, 0.76, 0.95, 1.14, 1.33 and 1.52mg. /l. as ClO_2.

Discs 3/40AD and 3/40BD are used with 13.5mm./10ml. moulded cells and Discs 3/40ED and 3/40 FD are used with 40mm. cells.

METHOD USING DISCS 3/40ED AND 3/40FD (Chlorine Dioxide Only)

1. Rinse two 40mm./20ml. cells with sample and then fill one to the 20ml. mark and place in the left-hand side of the Comparator to act as a blank.

2. To the other cell add **two** DPD No. 1 tablets and crush with a clean stirring rod.

3. Add sample up to the 20ml. mark and mix well to dissolve the tablets.

4. Place the cell in the right-hand compartment of the Comparator and, holding it up to a source of white light, such as the Lovibond Daylight 2000 Unit or failing this North Daylight (not fluorescent lighting); rotate the disc until the nearest colour match is obtained.

5. The figure in the bottom right-hand corner of the Comparator is the concentration of Chlorine Dioxide in mg. /l. (**Reading A**).

METHOD (Free Chlorine Present)

1. Carry out test above, noting **Reading A**.

2. Rinse a 40mm./20ml. cell with sample leaving in one or two drops. Add **two** DPD No. 1 tablets and crush with a clean stirring rod.

3. Take another 40mm. cell, fill to the 20ml. mark with sample and then add one Glycine tablet. Crush and mix to dissolve with the stirring rod.

4. Add the contents of this cell to the cell containing the crushed DPD No. 1 tablets.

5. Mix and match immediately against the disc as before (**Reading B**).

METHOD USING DISCS 3/40AD and 3/40BD (Chlorine Dioxide only)

1. Rinse two 13.5mm./10ml. moulded cells with sample and then fill one to the 10ml. mark and place in the left-hand side of the Comparator, behind the disc standards, to act as a blank.

2. To the other cell add one DPD No. 1 tablet and crush with a clean stirring rod.

3. Add sample up to the 10ml. mark and mix well to dissolve the tablet.

4. Place the cell in the right-hand compartment of the Comparator and, holding it up to a source of white light, such as the Lovibond Daylight 2000 Unit or failing this North Daylight (not fluorescent lighting); rotate the disc until the nearest colour match is obtained.

5. The figure displayed in the bottom right-hand corner of the Comparator is the concentration of Chlorine Dioxide in mg./l. (**Reading A**).

METHOD (Free Chlorine Present)

1. Carry out test above, noting **Reading A**.

2. Rinse a 13.5mm./10ml. moulded cell with sample leaving in one or two drops. Add one DPD No 1 tablet and crush with a clean stirring rod.

3. Take another 13.5mm./10ml. cell, fill to the 10ml. mark with sample and then add one Glycine tablet. Crush and mix to dissolve with the stirring rod.

4. Add the contents of this cell to the cell containing the crushed DPD No 1 tablet.

5. Mix and match immediately against the disc as before (**Reading B**).

CALCULATIONS

1. Chlorine absent: Chlorine Dioxide (mg./l.)as ClO_2 = **Reading A.**

2. Chlorine present:

Chlorine Dioxide + Free Chlorine as ClO_2	=	**Reading A**
Chlorine Dioxide (mg./l.) as ClO_2	=	**Reading B**
Free Chlorine (mg./l.) as ClO_2	=	**Readings (A – B)**

To convert **readings (A – B)** to mg./l. as Cl_2, multiply by 0.52

REVISION HISTORY

Date	Change Note	Issue
23/05/02	36/460	2
08/04/05	CA243	3