# CHLORINE USING LIQUID DPD

## PRINCIPLE OF THE METHOD

DPD Indicator is specific for Free Chlorine at a controlled pH. This is achieved with Solutions A and B used together. Subsequent addition of excess Potassium Iodide (Solution C) causes any combined chlorine (Mono and Dichloramine) to respond.

## REAGENTS REQUIRED

| | |
|---|---|
| **Free chlorine** | DPD No.1 Solution A<br>DPD No.1 Solution B |
| **Free, combined and total chlorine** | DPD No.1 Solution A<br>DPD No.1 Solution B<br>DPD No.3 Solution C |
| **Total chlorine** | DPD No.1 Solution A<br>DPD No.1 Solution B<br>DPD No.3 Solution C |

## THE STANDARD LOVIBOND DISCS

The test procedure covers the range of 0.01 - 4.0mg./l. chlorine and applies to the following discs:

**Comparator Discs**. 3/40A, 3/40J, 3/40S, 3/40B, 3/40E & 3/40F.
**Nessleriser Discs.** NDPB, NDPC, NDP & NDPD

## FREE CHLORINE

**Comparator Method** using discs 3/40A, 3/40J, 3/40S & 3/40B.

1. Fill a 13.5mm./10ml. moulded cell to the 10ml. mark with the water sample and place in the left hand compartment of the Comparator.
2. Rinse another cell with the water sample and leave empty.
3. Add 3 drops of DPD No.1 solution A (white bottle) and 3 drops of DPD No.1 solution B (blue bottle).
4. Fill the cell to the 10ml. mark with sample and fit the cap.
5. Invert the cell a few times to mix the contents.
6. Place the cell in the right hand compartment of the Comparator.
7. Hold the Comparator against a standard source of white light such as the Lovibond Daylight 2000 Unit or North daylight and rotate the disc until a colour match is obtained. Record the reading as free chlorine (Reading A).

**Reading A = mg. /l. Free Chlorine**

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**TOTAL CHLORINE**

8 After taking the free chlorine reading above, remove the cap and add 3 drops of DPD No.3 solution C (red bottle)

9 Refit the cap and invert the cell a few times to mix the contents.

10 Replace the cell in the Comparator

11 Leave for 2 minutes.

12 Hold the Comparator against a standard source of white light such as the Lovibond Daylight 2000Unit or North daylight and rotate the disc until a colour match is obtained. Record the result as total chlorine.

**Reading B = mg. /l. Total Chlorine**

Rinse out the test cell thoroughly.

**COMBINED CHLORINE**

The combined chlorine content is calculated as follows:

**Combined chlorine mg. /l. = Reading B – Reading A.**

**FREE CHLORINE**

**Comparator Method** using discs 3/40E & 3/40F

1. Fill a 40mm. cell to the 20ml. mark with the water sample and place in the left-hand compartment of the Comparator.
2. Rinse another cell with the sample and leave empty.
3. Add 3 drops of DPD No.1 solution A (white bottle) and 3 drops of DPD No.1 solution B (blue bottle).
4. Fill the cell to the 20ml. mark with sample and stir with a clean stirring rod to mix.
5. Place the cell in the right-hand compartment of the Comparator.
6. Hold the Comparator against a standard source of white light such as the Lovibond Daylight 2000 Unit or North daylight and rotate the disc until a colour match is obtained. Record the result as free chlorine (Reading A).

**Reading A = mg. /l. free chlorine**

7. The procedures for the determination of combined and total chlorine are the similar to steps 8 to 12 above for the 3/40A etc. except that as the final volume is 20ml. the solution should be stirred as in 4 above.

**Nessleriser Method** using discs NDPB, NDPC, and NDP & NDPD

Use 6 drops of Solution A, B and C in a 50ml. Nessler cylinder, following the Comparator method (3/40A) but filling to the 50ml. mark.

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**Important Notes**

1. When taking samples, to minimise loss of chlorine, take care to avoid shaking or general aeration. Carry out the test immediately after sampling.

2. Colour development occurs at pH 6.3 - 6.5. The reagents contain a buffer to adjust to the range. Highly alkaline or acidic samples should be neutralised before testing.

3. Chlorine concentration above 4mg./l. can lead to low results due to bleaching of the colour. In these cases the sample should first be diluted with chlorine-free water and the test repeated: - remember to multiply the result by the dilution factor.

4. After use replace the bottle caps securely noting the colour coding.

5. Store the reagent bottles in a cool, dry place ideally at between 6°C and 20°C.

6. Reagents should be discarded after the 'use before' date (see label).

Use reagents within 1 month of opening.

| Date | Change Note | Issue |
|---|---|---|
| 23/05/02 | 36/460 | 2 |
| 19/04/05 | CA243 | 3 |

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