1. Scope and Objectives

To determine Free residual chlorine in water sample by DPD indicator with the help of Palintest Chlorine meter PTH 027.

2. Principle

N,N-diethyl-p-phenylenediamine (DPD) is used as an indicator in a colorimetric procedure. Free chlorine reacts instantly with DPD indicator to produce a red color.

Palintest photometers calculate and then display the test results directly in milligrams per liter (mg/l) of the test factor, by comparing the amount of absorbed light to the calibration data programmed into the instrument. The chlorine test produces a pink colour proportional to the chlorine concentration in the sample (the greater the chlorine concentration, the darker the pink colour). In this case, a green filter gives the greatest sensitivity as a pinkish-red solution absorbs mostly green light.

3. Equipment and Materials

1. Palintest Chlorine meter *PTH 027*
2. Photometer Cell

3. Reagents

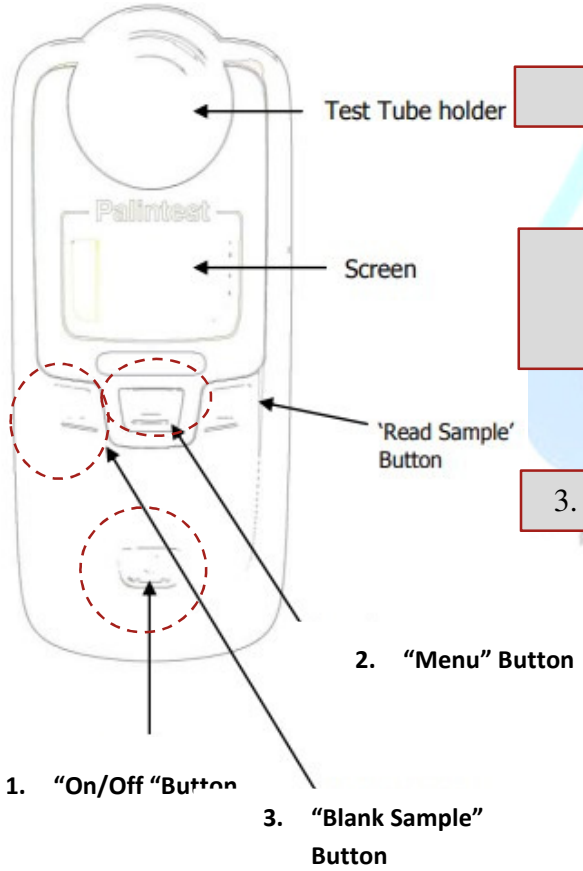
1. N,N-Diethyl-p-phenylenediamine indicator (DPD No.1)
2. Distilled Water

4. Sampling and Preservation

Sample collection will be done according to the water quality monitoring plan and SOPs for sample collection.

5. Procedure

A. Calibration



1. Press the 'on/off' button to start the unit.

2. Press the 'menu' button until the test you wish to perform is indicated on the screen.

3. Insert your blank tube and press the 'blank sample'

4. An image displaying a blank tube will be displayed on screen. When this is replaced by 0.00 the instrument is finished blanking and ready to take a reading.

B. Measure

1. Rinse test tube with sample leaving a few drops in the tube.
2. Crush the DPD #1 tablet in the drops of the water sample until the tablet is thoroughly crushed.

Note: Do not Crush DPD Tablet inside Chlorine Meter

3. Add the 10ml test solution, mix and seal the tube with the cap.

Note: Do not leave tubes standing in the photometer test chamber. Remove the tubes immediately after each test.

4. Gently invert the tube to remove any bubbles from the inner walls of the tube.
5. Wipe tubes on a clean tissue to remove drips or condensation before placing in the photometer.
6. Take photometer reading.
7. Press the 'Read Sample' button to take a reading.

Note: Do not pour out samples or prepare the tests directly over the instrument.

6. Precision and bias

1. A too high chlorine level (>8 mg/l) can cause bleaching of the pink coloration formed in the DPD test and give a false negative or low result. If a colourless or weakly coloured test solution is obtained when chlorine is known to be present, check for the possibility of bleaching by repeating the test on a sample diluted with chlorine-free water.

2. Very high levels of calcium hardness (>1000 mg/l as CaCO3) may lead to turbidity when performing the test. If this occurs, you need to add one EDTA to your sample prior to adding your DPD tablet.

7. Maintenance (After You Measure)

1. Rinse tube after use.
2. Always cap the test tubes after preparing the blank and test sample.
3. Do not leave tubes standing in the photometer test chamber. Remove the tubes immediately after each test.
4. Immediately wipe up any drips or spillages onto the instrument or into the test chamber with a clean tissue.
5. Keep the instrument clean. Clean the test chamber regularly using a moistened tissue or cotton bud.
6. Replace the battery when the symbol remains on the display.
7. Note*: Any build-up of dirt or deposits may interrupt light transmission and affect readings.*

   To clean the optics gently clean the internal surfaces of the optics with a soft, non-abrasive cloth. Do not use solvents. Deposits may be removed with a slightly dampened cotton bud.

8. Precautions

- Always ensure that test tubes, test tube caps and stirring rods are thoroughly washed between tests and when changing from one reagent system to another.
- Avoid handling the tablets as traces of the reagents on fingers can cause contamination.

9. References

- Palintest Chlorine meter 027 Manual
- APHA 4500-Cl G. DPD Colorimetric Method

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