

CHLORINE/ CHLORAMINES (DPD)

**TEST FOR FREE CHLORINE,
MONOCHLORAMINE AND
DICHLORAMINE IN WATER**

Photometer Method

**AUTOMATIC
WAVELENGTH
SELECTION**

0 – 5.0 mg/l

Chlorine and chlorine release compounds are widely used for the disinfection of water. When dissolved in water chlorine forms hypochlorous acid and hypochlorite ions. Chlorine remaining in the water in this form is known as the free chlorine residual.

Chlorine does however react with ammonia and nitrogen-based species to form chloramines. These compounds are poor disinfectants and can also impart a characteristic taste or odour to the water. It is important therefore in certain applications to be able to distinguish between chlorine residual present as free chlorine and as chloramines.

The Palintest DPD Chlorine/Chloramines method provides a simple means of measuring free chlorine ($\text{HOCl}/\text{HOCl}^{\cdot}$), monochloramine (NH_2Cl) and dichloramine (NHCl_2).

Method

The Palintest Chlorine/Chloramines test uses the DPD method. This method is internationally recognised as the standard method of testing for chlorine and other residuals. In the Palintest method the reagents are provided in tablet form for maximum convenience and simplicity of use.

Free chlorine reacts with diethyl-p-phenylene diamine (DPD) in buffered solution to produce a pink coloration. The intensity of the colour is proportional to the free chlorine concentration. Addition of a trace amount of potassium iodide induces further reaction with any monochloramine present. The increase in colour intensity is therefore proportional to the monochloramine concentration. Subsequent addition of excess potassium iodide causes dichloramine to react in a similar manner. The increase in colour intensity is now proportional to the dichloramine concentration.

In this way it is possible to differentiate between free chlorine, monochloramine and dichloramine residuals present in the sample. The colour intensities at each stage of the test are measured using a Palintest Photometer.

Reagents and Equipment

Palintest DPD No 1 Tablets

Palintest DPD No 2 Tablets

Palintest DPD No 3 Tablets

Palintest Automatic Wavelength Selection Photometer

Round Test Tubes, 10 ml glass (PT 595)

Separation of Chlorine Residuals

The photometer is programmed for free chlorine and for the chloramine stages. Use program Phot 71 Free Chlorine then select 'Follow On' from screen options to continue test for program 72 Monochloramine and again for program 73 Dichloramine.

Test Procedure

- 1 Rinse test tube with sample leaving two or three drops of sample in the tube.
 - 2 Add one DPD No 1 tablet, crush tablet and then fill test tube with sample to the 10 ml mark. Mix to dissolve tablet.
 - 3 Select Phot 71 on photometer.
 - 4 Take photometer reading **immediately** (as result may drift on standing), in usual manner - see photometer instructions. The result represents the free chlorine residual as mg/l Cl₂.
 - 5 To measure monochloramine, continue the test on the same test portion. Select 'Follow On' from screen options to continue the test program.
 - 6 Add one DPD No 2 tablet, crush and mix to dissolve.
 - 7 Take the photometer reading immediately. The result displayed is the monochloramine concentration as mg/l Cl₂.
 - 8 To measure dichloramine, continue the test on the same test portion. Select 'Follow On' option from screen options to continue the test program.
 - 9 Add one DPD No 3 tablet, crush and mix to dissolve. Stand for two minutes to allow full colour development.
 - 10 Take the photometer reading. The photometer displays the dichloramine concentration as mg/l Cl₂.
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