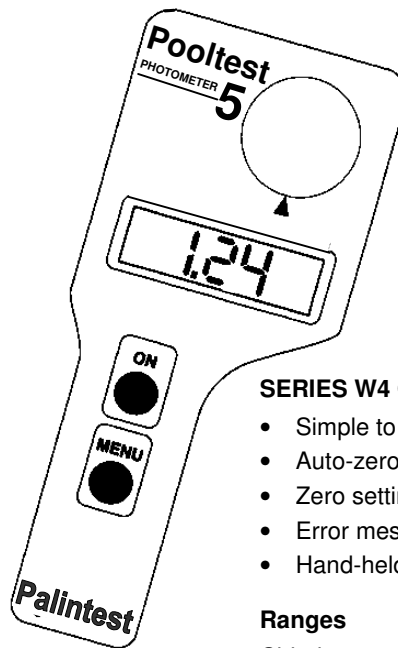


Pooltest
PHOTOMETER

PRECISION PHOTOMETER FOR MEASURING
CHLORINE, BROMINE, pH, ALKALINITY AND
CYANURIC ACID

**SERIES W4 OPTICAL SYSTEM**

- Simple to use
- Auto-zeroing
- Zero setting held in memory
- Error message display
- Hand-held or bench use

Ranges

Chlorine	0.00 – 5.00 mg/l
Bromine	0 – 10.00 mg/l
pH	6.80 – 8.40 mg/l
Alkalinity	0 – 500 mg/l
Cyanuric Acid	0 – 100 mg/l

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OPERATING INSTRUCTIONS

Blank and Sample Tubes

The Pooltest 5 uses a BLANK tube to set the instrument to zero and a SAMPLE tube to take the test measurement.

A BLANK tube is a test tube filled with untreated water sample. A SAMPLE tube is a test tube containing the sample to which reagents have been added in accordance with the test procedures described.

The zero setting is held in memory. It is not necessary to reset the zero each time a reading is taken or between different types of test provided the conditions of use are the same.

To Select Test

- 1 Press the MENU key. The currently selected test will appear on the display :-

Chlorine	CL
Bromine	Br
pH	PH
Alkalinity	Alc
Cyanuric Acid	CYA

- 2 To change the test selected, press the MENU key until the required test appears on the display.

To Set Zero

- 1 Insert the BLANK tube into the test chamber.
- 2 Press and hold down the ON key until the '---' symbol appears on the display (2 seconds).
- 3 Release the ON key when the display shows '0.00'. This zero setting will be held in memory.

To Take Test Reading

- 1 Insert the SAMPLE tube into the test chamber.
- 2 Press the ON key until the test name appears on the display (1 second). Release the key and the test result will be displayed. (Do not hold the key down or the instrument will attempt to blank on the sample and cause errors in the readings).
- 3 The test reading for the sample will be displayed.

TECHNICAL SPECIFICATION

Instrument Type	Single beam colorimeter pre-programmed for direct-reading of chlorine residual, bromine residual, pH, alkalinity and cyanuric acid.
Optics	Palintest W4 optical system with pulsed white LED, wavelength filter and photodetector
Operating Ranges	Chlorine 0.00 - 5.00 mg/l Bromine 0 - 10.00 mg/l pH 6.80 - 8.40 Alkalinity 0 - 500 mg/l Cyanuric acid 0 - 100 mg/l
Operating Temperature	0 - 40 °C / 32 - 104 °F
Display	10 mm character LCD
Test Cells	For use with round test tubes 10 ml, 20 mm OD, 18 mm path length
Operation	Two button operation
Blank/Zero Setting	Optionally held in memory or reset for each reading
Internal Calibration	Factory set. Recalibration through internal software
Instrument Case	Splash-proof case with membrane keypad
Power Supply	2 x 1.5v batteries. Power management system with auto-switch off
Size	Instrument only 173 x 75/44 x 41 mm

ERROR MESSAGES

The Pooltest 5 Photometer displays error messages to assist the operator in the event of any problems with the sample or instrument :-

Display	Cause	Action
E1	Coloured, dirty or scratched BLANK tube used.	Re-zero instrument on a correct BLANK in a clean, dry tube.
E2 or E3	a) Incorrect BLANK used to zero instrument. b) Electrical fault in instrument.	a) Re-zero instrument on a correct BLANK. b) Return instrument for repair.
E4	Battery voltage too low for correct reading.	Change batteries.
E5	Stray light has affected the reading.	a) Remove instrument from vicinity of spotlights or other bright light sources. b) Check instrument case for damage.

CALIBRATION CHECK

Certified colour standards are available for checking instrument calibration. Use only Palintest Series W4 Standards. Instrument calibration should not change in use.

CARE AND MAINTENANCE

Keep the test tubes clean. Place the plastic caps on the tubes before taking a reading. Prevent test solutions being spilt into the instrument and avoid excessive amounts of moisture entering the instrument under outdoor conditions. Wipe off spillages and moisture immediately with a dry cloth. On no account should solvents or abrasive materials be used to clean the instrument.

Replace the battery when the 'B' symbol remains on the display. To remove the battery compartment cover press gently on the sides of the cover and pull downwards. Use 2 x 1.5v alkaline 'AA' batteries, MN 1500, LR6, E91, AM3 or equivalent. Remove batteries from instrument if it is to be stored or left unused for a long period of time. The Pooltest 5 Photometer is guaranteed for a period of one year from the date of purchase excluding accidental damage or damage caused by unauthorised repair or misuse. Should repair be necessary, contact our Technical Services Department quoting the serial number. This guarantee does not affect statutory rights.

REORDERING REAGENTS

It is important to specify Palintest Photometer Grade tablets when ordering replacement reagents for this instrument. The rapid dissolving type DPD No 1 and Phenol Red tablets sold for use with the Pooltester must not be used. These tablets give a slightly cloudy solution and will give a false reading if used with a photometer instrument.

DPD CHLORINE TEST

Reagents and Equipment

Palintest DPD No 1 Tablets - Photometer Grade
Palintest DPD No 3 Tablets - Photometer Grade
Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 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 the test tube with sample to the 10 ml mark. Mix to dissolve tablet.
- 3 Take photometer reading immediately. The reading represents the free chlorine residual as milligrams per litre (parts per million). Stop the test at this stage if only free chlorine determination is required.
- 4 If it is desired to measure combined or total chlorine residual continue the test on the same test portion. Add one DPD No 3 tablet, crush and mix to dissolve.
- 5 Stand for two minutes to allow full colour development.
- 6 Take photometer reading. The reading represents the total chlorine residual as milligrams per litre (parts per million).
- 7 The combined chlorine residual is obtained by subtracting the free chlorine residual result from the total chlorine residual result :-
$$\text{Combined Chlorine} = \text{Total Chlorine} - \text{Free Chlorine}$$

Note that a too high chlorine level (above 10 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.

Standard Methods

The DPD method is a published standard method in the UK, the European Community, the USA and in many other countries. The Palintest DPD free and total chlorine tests are approved by the USEPA as accepted versions of the Standard Method 4500-C1-G.

DPD BROMINE TEST

Reagents and Equipment

Palintest DPD No 1 Tablets - Photometer Grade
Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 1 Rinse test tube with sample leaving two or three drops of sample in the tube.
- 2 Add DPD No 1 tablet, crush tablet and then fill the test tube with sample to the 10 ml mark. Mix to dissolve tablet.
- 3 Take the photometer reading. The reading represents the total bromine residual as milligrams per litre (parts per million).

For most purposes it is sufficient to simply measure the total bromine residual since both free and combined bromine are active disinfectants. However it is possible to separate between free and combined bromine in applications where this is required. A leaflet describing the separate determination of free and combined bromine is available on request.

Note that a too high bromine level (above 20 mg/l) can cause bleaching of the pink colouration formed in the DPD test and give a false negative or low result. If a colourless or weakly coloured test solution is obtained when bromine is known to be present, check for the possibility of bleaching by repeating the test on a sample diluted with bromine-free and chlorine-free water.

pH PHENOL RED TEST

Reagents and Equipment

Palintest Phenol Red Tablets - Photometer Grade
Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 1 Fill test tube with sample to the 10ml mark.
- 2 Add one Phenol Red tablet, crush and mix to dissolve.
- 3 Take photometer reading. The reading represents the pH of the sample.

Ionic strength, temperature and other water factors may have an effect on pH readings. This test has been calibrated for conditions most likely to be encountered in a typical swimming pool.

The colour range of the phenol red test is yellow, through orange, to red. The formation of an intense purple coloration shows that the indicator has been affected by high chlorine or bromine residuals. In such cases the result should be disregarded.

ALKALINITY TEST

Reagents and Equipment

Palintest Alkaphot Tablets
Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 1 Fill test tube with sample to the 10 ml mark.
- 2 Add one Alkaphot tablet, crush and mix until all the particles have dissolved. It is important to ensure that all the tablet particles have dissolved otherwise a too high result may be obtained.
- 3 Take the photometer reading. The reading represents the total alkalinity of the sample as milligrams per litre (parts per million) CaCO₃.

Note that the Total Alkalinity is also sometimes referred to as Alkalinity M or simply as Alkalinity.

CYANURIC ACID TEST

Reagents and Equipment

Palintest Cyanuric Acid Tablets - Photometer Grade
Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 1 Fill test tube with sample to the 10 ml mark.
- 2 Add one Cyanuric Acid tablet and allow to disintegrate for at least two minutes. A cloudy solution indicates the presence of cyanuric acid.
- 3 Crush any remaining undissolved tablet and mix to ensure uniformity.
- 4 Take photometer reading. The reading represents the cyanuric acid concentration of the sample as milligrams per litre (parts per million).

The range of the cyanuric acid test is 0 - 100 mg/l. Higher levels can be tested by first diluting the sample with mains or deionised water and then applying the appropriate dilution factor. Palintest Dilution Tube (PT 512), which is available as an optional extra, should be used for making the dilution.