

# pH

pH is a measure how acidic or alkaline the water is. The pH scale is from 0 to 14. pH of 7 is neutral, zero is the most acidic and 14 is the most alkaline.

Animals and plants are very sensitive to changes in pH. When a pH value changes by a unit of 1, e.g. from 6 to 5, this equals a change in strength by 10 times. So a pH of 5 is 10 times more acidic than pH of 6, a pH of 4 is 100 times more acidic than the pH of 6. So a large increase or decrease in pH outside the normal range of a stream will have a dramatic effect on the number and diversity of species found within the water body. To maintain a healthy diversity of life, pH must be kept within range of the natural variation for the water body. The pH of natural waterways is largely determined by the geology and soil type of the catchment, some are naturally more acidic or alkaline.

## Equipment

- LAQUA-Twin pH 11 Meter
- pH 4.01 and pH 7.00 buffer solutions
- sample for testing
- pipette
- tissues and water for cleaning



## Calibration Procedure

1. Keep cover closed. Press the **ON** button on the meter until P 11 appears on the screen.
2. Open the light shield cover. Rinse the sensor with distilled water and remove moisture on the sensor and meter by dabbing gently with a soft tissue. **NOTE:** The flat sensor is made of thin glass, do not wipe or push the flat sensor. Place the meter on a flat surface.
3. Keep the light shield cover open and rinse the sensor with a small amount of pH 7 buffer to reduce sample crossover contamination. Gently blot dry.
4. Place a few drops of the pH buffer 7 on the flat sensor taking care to cover the entire sensor. Give the sensor a little jiggle to help spread the buffer solution.
5. Close the light shield cover and press the **CAL** button until a black box with **CAL** written in it and a **smiley face** starts blinking on the screen.
6. When the calibration is complete the meter will return to measurement mode (there will be a black box with **MEAS** written in it).
7. Open the light shield cover and tip out the pH buffer 7. Then remove moisture on the sensor by gently dabbing with a soft tissue.
8. Repeat steps 4 -7 using pH buffer 4.
9. Rinse the flat sensor with distilled water and remove moisture by gently dabbing with a soft tissue. It is now ready for use. Calibration will hold for day of testing.

## Measurement Procedure

1. Keep cover closed. Press the ON button on the meter until P 11 appears on the screen. A black box with **MEAS** in the left hand corner of the screen to indicate you are in measurement mode.

2. Open the light shield cover. Using a pipette, place a few drops of the water sample to be tested on the flat sensor to rinse and prepare the sensor. Blot away the sample on the sensor gently with a soft tissue. **NOTE:** The flat sensor is made of thin glass, do not wipe or push the flat sensor. Place the meter on a flat surface.
3. Once again using the pipette, place a few drops of the water sample to be tested on the flat sensor taking care to cover the entire sensor. Give the sensor a little jiggle to help spread the sample.
5. Close the light shield cover. The meter is measuring the water sample when the display shows only a black box with **MEAS** written on the screen. The **smiley face** will only appear when the measured value is stable.
6. When the measurement is stable a **smiley face** will display. Record this result on your data sheet.
7. To finish, open the light shield cover and tip out the sample. Clean with distilled water and remove moisture on the sensor by gently dabbing with a soft tissue. Close cover. Turn off the unit by pressing the power button firmly.

**Note.**

Bucket or dropper? These instructions are based on delivering small sample volumes with a pipette. The meter can also be used in a bucket of sample by sliding open the window on the light shield cover and using the auto-hold (AH) function. When this mode has been setup, you can press the MEAS button to activate the auto hold function. Your Waterwatch coordinator will do this set up for you if you prefer to measure from a bucket.

## Measuring pH with pH strips

You will need: pH strips and water sample in a small container

1. Rinse out a small container with sample water 3 times.
2. Fill the container with sample water or test straight from the sample bottle or bucket.
3. Check the expiry date on the box of pH strips.  
Remove strip from the plastic box.  
Be careful not to touch the coloured squares with your fingers.  
(Note: some pH strips range from 0 – 14 and others only range from 4.5 – 10).
4. Dip the coloured squares into the sample until wet.  
Make sure all colours are underwater.
5. Leave the strip in the water for 2 minutes.
6. Remove the strip and match its colour against the colour chart on the box to work out your pH. If you can't match the colours exactly you can estimate between two colours to 0.5 of a pH unit.
7. Put the pH strip in the bin and record your result.

