

**KCMC Biotechnology  
Laboratory, Microbiology**

**STANDARD  
OPERATING  
PROCEDURE**

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**Title: OPERATION OF JENWAY PH METER FOR MEASURING pH OF SOLUTIONS**

**Author/Date: Susan Morpeth, June 2007**

**Approvals/Date:**

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**John A. Crump, MB, ChB, Microbiology Laboratory Director**

\_\_\_\_\_  
**Anne Morrissey, MS, MT(ASCP)SM, Microbiology Lab Supervisor**

**This SOP has been read and understood by:**

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**PRINCIPLE**

pH is a unit of measurement which defines the degree of acidity or alkalinity of a substance on a logarithmic scale of 0 to 14. Neutral pH is 7.0, pH <7.0 is acidic and pH >7.0 is alkaline.

**PURPOSE**

To check the pH of liquids.

**RESPONSIBILITY**

Technicians in the KCMC Biotechnology laboratory who have been trained and are competent in this procedure.

**SAFETY**

Wear gloves, lab coat and observe standard precautions if testing liquids that contain human blood or body fluids.

pH meter should be grounded.

See MSDS sheets for buffer solutions.

**MATERIALS**

Jenway pH meter, model 3510

Electrode

Buffer solutions: (stored in tightly closed test tubes at room temperature)

1. pH 4.0
2. pH 7.0
3. pH 10.0

Distilled water

Paper towels

Empty beaker

**PROCEDURE**

**The pH meter must be calibrated prior to each use:**

**CALIBRATION**

1. Turn pH meter on and attach the solid media probe at the rear right of the unit.
2. Carefully remove the probe from its storage bottle and hang it on the stand by the pH meter.
3. Rinse probe with distilled water and gently blot excess water off
4. Use the left arrow key to enter the SETUP mode on the pH meter

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5. It will say 3 CALPTS. Press the STO key to store this so that you can calibrate to all 3 buffers.
6. The screen will now say AUTO BUFFER. Scroll using the up/down arrow keys until you get to MAN for manual buffers. Press STO.
7. The screen will read 7.0 CAL 1. The digit 7 will be flashing. Use the up/down arrow keys to change this to 4.0. Press STO.
8. Do the same for CAL 2 and CAL 3. Set CAL 2 to 7.0 and CAL 3 to 10.0. Press STO to save each.
9. Then the screen will read 0.001 PH RES. You can change this to 0.1 using the up/down arrow keys and press STO. Press escape to exit the SETUP menu.
10. Now you are ready to calibrate.
11. Select the MODE menu using the left/right arrow keys and the pH mode using the up/down keys.
12. Press the CAL key. Check that the automatic temperature is displayed.
13. The screen will say CAL 1. Immerse the electrode probe in the buffer solution of pH 4.0 and allow the reading to stabilize. When it has stabilized a little graph icon will appear. Press STO and the reading will calibrate to 4.0.
14. Rinse the electrode in distilled water and blot.
15. The screen will say CAL 2. Immerse the electrode in buffer 7.0, allow to stabilize and press STO.
16. Rinse the electrode in distilled water and blot.
17. Do the same for CAL 3 with buffer pH 10.0.
18. The screen should read CAL OK. If it gives an error message instead repeat the procedure using new buffer solutions. Buffers must be stored in sealed containers.

**CHECK PH OF SOLUTION**

1. After calibrating the instrument, rinse probe in distilled water and blot gently dry
2. Place end of probe in liquid to be tested and wait for reading to stabilize.
3. Rinse probe with distilled water and store in pH 4.0 buffer.

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**MAINTENANCE**

1. Keep Jenway pH meter clean, dry and free from dust.
2. Always rinse probe in distilled water immediately after each use and store it upright in pH 4.0 solution in tightly sealed container, away from direct sunlight.
3. Check for air bubbles trapped inside electrode and gently shake or tap them free if present.
4. Ensure fill solution inside electrode remains above the internal elements of the probe. Probe must be replaced if not.
5. Do not touch the sensitive measuring end of the probe. Do not rub the electrode as this may induce an electrostatic charge. Blot it gently dry with absorbent paper if necessary.

**REFERENCES**

Model 3510 pH/mV/Temperature meter Operating Manual. 351 050/REV A/03-03. Jenway Essex, CM6 3LB, England.