

Ammonia Ion Selective Electrode Instruction Manual

This electrode is designed for the detection and analysis of dissolved ammonia in aqueous solutions and is suitable for laboratory applications.

Required equipment

- An ion meter
- A magnetic stirrer
- Beakers

Required solutions

- Distilled or Deionized water
- Ionic Strength Adjuster (Order Code: ISA-NH3)
- pH4.01 and 7.00 buffers
- Filling solution
- Ammonia Standard Solution 0.1M (for measurement in units of mol/L):
To prepare this solution, half fill a 1 liter volumetric flask with distilled water and add 5.35 grams of reagent-grade ammonium chloride (NH_4Cl). Swirl the flask gently to dissolve the solid and fill to the mark with distilled water. Cap the flask and upend several times to mix the solution.
- Ammonia Standard Solution 1000ppm (for measurement in units of ppm):
To prepare this solution, half fill a 1 liter volumetric flask with distilled water and add 3.82 grams of reagent-grade ammonium chloride. Swirl the flask gently to dissolve the solid and fill to the mark with distilled water. Cap the flask and upend several times to mix the solution.

Prior to use

1. Unscrew the electrode cap. Carefully take out the glass electrode from the outer body.
2. Soak the glass electrode in the filling solution or pH4.01 buffer for at least 1 hour. Ensure that the annular ceramic junction is thoroughly immersed.
3. Fill the outer body with filling solution.
4. Rinse the glass electrode with distilled water and place the electrode into the outer body. Ensure that the key pin at the top of the glass electrode is properly seated in the slot at the top of the outer body.
5. Install the electrode cap to previous position. Do not over tighten.
6. Immerse the electrode in the stirring distilled water for 5 minutes.

Electrode slope

If necessary, follow the steps below to check the electrode slope.

1. Pour 100ml of distilled water and 2ml of ionic strength adjuster into a 150ml beaker.
2. Place the beaker on the magnetic stirrer and begin stirring at a constant rate. Set the mode switch on the meter to mV.
3. Place electrodes in the solution. To prevent air entrapment on the membrane surface, we recommend that using an electrode holder and keeps the electrode at a 20° angle.
4. Pipette 1ml of 0.1M or 1000ppm standard solution into the beaker. When the reading is stable, record the mV value "E1".
5. Pipette 10ml of 0.1M or 1000ppm standard solution into the beaker. When the reading is stable, record the mV value "E2".
6. Determine difference between the first and second mV readings. The slope value should be 56 ± 4 mV at 25°C .

Troubleshooting

If the electrode slope is not within the normal range, the filling solution must be replaced.

- Hold the electrode and gently pull the cable.
- Release the cable. Fresh filling solution will now occupy the space between the tip of the inner glass electrode and the membrane. If this does not restore electrode response, follow the steps below:

1. Take out the glass electrode from the outer body.
2. Connect the electrode to a pH/mV meter.
3. Place the electrode into the pH7.00 buffer. The annular ceramic junction should be immersed in the buffer. Record the stable mV reading, it should be 0 ± 25 mV.
4. Rinse the electrode with distilled water and place the electrode into the pH4.01 buffer. Record the stable mV reading.
5. The millivolt difference in the two readings should be greater than 168mV. If the difference is less than 160mV, please contact the manufacturer.

If the glass electrode functions properly, but the assembled ammonia electrode does not function properly in the standards, please replace the outer body of electrode. If the electrode slope is still outside the normal range after this procedure, please contact the manufacturer.

Measurement

- The ionic strength of the standards and solutions should be kept constant between all standards and samples. This is achieved by the simple addition of an ionic strength adjustment buffer (ISAB). A typical addition would be 2ml ISAB to 100ml of standard and sample.
 - Samples and standards must be adjusted to above 11pH. For best accuracy, use the recommended ISA to adjust the pH.
 - Ensure that the temperature of all standards and samples are the same to reduce errors.
 - Using a magnetic stirrer for laboratory analysis is recommended but not essential.
 - Prior to sample measurement ensure that the electrode is thoroughly rinsed with deionised water.
 - Begin calibration from the lowest concentration standard to avoid cross contamination. Calibration should cover the anticipated range of the samples.
1. Calibrate the meter according to the manufacturer's instructions.
 2. Rinse the electrode in deionised water.
 3. Place the beaker with sample on the magnetic stirrer, and begin stirring.
 4. Place the electrode in the sample and record the stable reading.

Storage and maintenance

- Short Term (over night or the weekend): The assembled electrode should be stored in pH4.01 buffer between measurements or over night.
- Long Term: Completely disassemble the electrode. Rinse the glass electrode and housing with deionised water. Wipe dry all of the parts. Cover the tip of the glass electrode with tissue paper. Do not reassemble. Store all parts securely in the original box.

Specification

PARAMETER	SPECIFICATION
Concentration Range	1×10^{-6} ~1M, 0.02~17000ppm
pH Range	>11pH
Temperature Range	0~50°C, 32~122°F
Cable Length	100cm
Dimensions	120 (L) × 12 (Dia.)mm
Connector	BNC
