

# ISE Application Note No. I - 2

|               |                                             |
|---------------|---------------------------------------------|
| <b>Title:</b> | <b>Low level ammonia in distilled water</b> |
|---------------|---------------------------------------------|

|                 |                                                                                                    |
|-----------------|----------------------------------------------------------------------------------------------------|
| <b>Summary:</b> | Determination of ammonia (ammonium) in dist. water by direct potentiometry using the Ammonium ISE. |
|-----------------|----------------------------------------------------------------------------------------------------|

|                |                                  |
|----------------|----------------------------------|
| <b>Sample:</b> | Distilled or demineralised water |
|----------------|----------------------------------|

|                            |      |
|----------------------------|------|
| <b>Sample Preparation:</b> | none |
|----------------------------|------|

|                                     |                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Instruments and Accessories:</b> | 692 pH/Ion Meter, 725 Dosimat, 728 Magnetic Stirrer, 6.0506.010 NH <sub>3</sub> ISE, printer |
|-------------------------------------|----------------------------------------------------------------------------------------------|

|                  |                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reagents:</b> | <b>Ammonia standard:</b><br>100 mg/L NH <sub>3</sub> , prepared from NH <sub>4</sub> Cl (0.3141 g/L NH <sub>4</sub> Cl)<br><b>NaOH:</b><br>c(NaOH) = 10 mol/L |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                  |                                                                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Analysis:</b> | Pipette 50 mL of sample into the measuring vessel and add 1 mL NaOH. Immediately start the determination by automatic standard addition (4 steps) using a preselected delta U of 15 mV. |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Remarks:</b> | <p>For low NH<sub>3</sub> contents dilute the inner electrolyte of the electrode 1:9 with dist. water. In this case the drift criteria must be set to 0.1 mV/min, otherwise the variance gets too high.</p> <p>Before each determination dip the electrode into buffer solution pH = 4.0</p> <p><b>Results:</b></p> <p>Doped demin. water (*) AVG(3) = 0.220 +/- 0.008 mg/L NH<sub>3</sub></p> <p>Distilled water AVG(3) = 0.039 +/- 0.004 mg/L NH<sub>3</sub></p> <p>(*) addition of 0.2 mg/L NH<sub>3</sub></p> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|