

MI-905, MI-915, 8-900 and 16-900 CONDUCTIVITY MICROELECTRODES OPERATING INSTRUCTIONS

The electrode is ready to use. Some of the smaller diameter probes are shipped to you in a protective glass tube. If so, carefully unwind the green tape and remove the probe from the protective glass tube.

Calibration

Any cell that has been stored dry should be soaked in distilled or de-ionized water for 24 hours prior to use to assure complete wetting of the cell.

Each conductivity cell manufactured is calibrated to obtain, as close as possible, a cell constant (K) of 1.0/cm using the 0.01 N KCl solution method as determined by Jones and Bradshaw in 1937. However, to obtain more accurate results, you should calibrate the cell and calculate a new cell constant using conductivity standards that more closely resemble the anticipated range of your sample as well as the size of your samples.

You may use the standard solution and the following table to check the accuracy of the cell's constant or to determine an unknown constant.

The formula is $K = (k_1 + k_2)(1/R)$

K = cell constant in c.g.s. metric units (/cm)

1/R = measured conductance in micromhos

k₁ = conductivity in absolute micromhos/cm from table below

k₂ = Conductivity in absolute micromhos/cm of the distilled water used in making the solution

Note: *1/R, k₁ and k₂ must either be determined at the same temperature or corrected to the same temperature to make the equation valid.*

Temperature (T) vs. Conductivity (k₁), 0.01 N KCl

T	Cond. (k ₁)	T	Cond. (k ₁)
15	1141.5	23	1353.6
16	1167.5	24	1380.8
17	1193.6	25	1408.1
18	1219.9	26	1435.6
19	1246.4	27	1463.2
20	1273.0	28	1490.9
21	1299.7	29	1518.7
22	1326.6	30	1546.7

T = Degrees Celsius k₁ = Absolute Micromhos/cm

MICROELECTRODES, INC

40 Harvey Road
Bedford, New Hampshire 03110
United States of America
Tel. 603.668.0692 Fax 603.668.7926

MI-905, MI-915, 8-900 and 16-900 CONDUCTIVITY MICROELECTRODES OPERATING INSTRUCTIONS

Handling

When handling the conductivity cell, be careful not to allow any sharp objects to enter the area of the cell. Damage to the platinum black coating can result. This coating is extremely important to cell operation especially in solutions of high conductivity. Always rinse the cell between standards and samples. Remove any excess solution from the cell using a piece of absorbent towel to prevent carry-over contamination.

Cleaning

A clean cell is the most important requirement for accurate and reproducible results. The cell can be cleaned using any one of the foaming acid tile cleaners such as Dow Chemical "Bathroom Cleaner". When a stronger cleaning solution is required, a solution of equal parts of isopropyl alcohol and 10 N HCl can be used.

Caution: *Cells should not be cleaned in aqua regia or in any solution known to etch platinum.*

Dip the cell into the cleaning solution and agitate it for 2 - 3 minutes. Rinse the cell thoroughly with distilled water (several times). Inspect the platinum black coating for flaking or bare spots (replatinization may be required).

Storage

Long-term (over 2 weeks): Return the electrode to its original container. It can be stored dry or in de-ionized water. Electrodes stored in water will require less frequent replatinization than those stored dry. Any probe that has been stored dry should be soaked in distilled or de-ionized water for 24 hours before use to assure complete wetting of the cell.

Short-term: The electrode can be left in distilled or de-ionized water.

MICROELECTRODES, INC

40 Harvey Road
Bedford, New Hampshire 03110
United States of America
Tel. 603.668.0692 Fax 603.668.7926