

- 6.1 Standard potassium chloride solutions, 0.01 M: Dissolve 0.7456 gm of pre-dried (2 hour at 105°C) KCl in distilled water and dilute to 1 liter at 25°C.

7.0 Cell Calibration

- 7.1 The analyst should use the standard potassium chloride solution (6.1) and the table below to check the accuracy of the cell constant and conductivity bridge.

Conductivity 0.01 m KCl °C	Micromhos/cm
21	1305
22	1332
23	1359
24	1386
25	1413
26	1441
27	1468
28	1496

8.0 Procedure

- 8.1 Follow the direction of the manufacturer for the operation of the instrument.
8.2 Allow samples to come to room temperature (23 to 27°C), if possible.
8.3 Determine the temperature of samples within 0.5°C. If the temperature of the samples is not 25°C, make temperature correction in accordance with the instruction in Section 9 to convert reading to 25°C.

9.0 Calculation

- 9.1 These temperature corrections are based on the standard KCl solution.
9.1.1 If the temperature of the sample is below 25°C, add 2% of the reading per degree.
9.1.2 If the temperature is above 25°C, subtract 2% of the reading per degree.
9.2 Report results as Specific Conductance, $\mu\text{mhos/cm}$ at 25°C.

10.0 Precision and Accuracy

- 10.1 Forty-one analysts in 17 laboratories analyzed six synthetic water samples containing increments of inorganic salts, with the following results:

Increment as Specific Conductance	Precision as Standard Deviation	Bias, %	Accuracy as Bias, umhos/cm
100	7.55	-2.02	-2.0
106	8.14	-0.76	-0.8
808	66.1	-3.63	-29.3
848	79.6	-4.54	-38.5
1640	106	-5.36	-87.9
1710	119	-5.08	-86.9

(FWPCA Method Study 1, Mineral and Physical Analyses.)

10.2 In a single laboratory (EMSL) using surface water samples with an average conductivity of 536 umhos/cm at 25°C, the standard deviation was ± 6 .

Bibliography

1. The procedure to be used for this determination is found in:
Annual Book of ASTM Standards Part 31, "Water," Standard D1125-64, p. 120 (1976).
2. Standard Methods for the Examination of Water and Wastewater, 14th Edition, p. 71,
Method 205 (1975).
3. Instruction Manual for YSI Model 31 Conductivity Bridge.
4. Peden, M. E., and Skowron. "Ionic Stability of Precipitation Samples," Atmospheric
Environment, Vol. 12, p. 2343-2344, 1978.