Fluoride Electrode

8001 Series

Specification DataFile

- Fast and accurate response
- High sensitivity
- Robust construction
- Easy to use

General Fluoride Measurements
The fluoride electrode Model 8001 enables precise determinations of fluoride concentrations in solution to be made in minutes.

Applications
The fluoride electrode has been used in a wide range of applications including:

Water — drinking water, river water and sea waters.
Food and beverages industries — bacon, pressed meats, wines and beer.
Dental — toothpaste, mouthwash
Biological — soils, serum, urine, sweat and saliva.
Others — pharmaceuticals, minerals, electroplating, glass industry, semi-conductor industry.
**Theory**
The fluoride electrode and the reference electrode when immersed in a sample constitute an electrochemical cell whose potential is dependent on the fluoride ion activity in the sample. The potential of the cell has a value given by the Nernst Equation.

**Range**
Model 8001 has a linear (Nernstian) response in the range 1 M F⁻ to 5x10⁻⁶ M (19gl⁻¹ to 0.1mg/l⁻¹).

**Response Time**
The response time of Model 8001 is temperature dependent. At 25°C the response time for a decade change in concentration from 10⁻⁴ M to 10⁻³ M is typically 2 seconds.

**Temperature**
This electrode can be used over the range 0 to 60°C but as its response time is temperature sensitive, samples and standards must be of similar temperature. Operation up to 70°C is possible for short periods (less than 1 hour).

**Selectivity**
Significant interference occurs from Hydroxyl ions (OH⁻) but this effect is easily eliminated by adjusting samples and standards to between 5 and 6pH.

**Reproducibility**
Better than 2% of concentration.

**Drift**
Less than 1mV in 12 hours.

**Calibration**
A 2-point calibration is recommended with concentration points a decade apart – for example 10ppm and 100ppm. These points can then be plotted on semi-log paper as a calibration curve.

Alternatively, if your pH/mV meter will display concentration directly, then follow meter manufacturer’s advice.

**Application Advice**
Ensure that pH of both samples and standards is between 5 and 6. Below pH 5 some fluoride complexes with hydrogen ions to form HF and HF₂⁻, neither of which are detected by the fluoride electrode. Above pH 7 hydroxyl ions are present in high enough concentrations to interfere.

The sensing element of the fluoride electrode is a crystal of Lanthanum Fluoride, prepared to give a flat surface. This electrode is robust in use and easy to clean.

The fluoride electrode readily replaces standard fluoride determinations such as the Alizarin test.

**Reference**
Use calomel reference electrode type 1431-510.

**Electrode Range**
- 8001-205 – fluoride electrode BNC
- 8001-050 – fluoride electrode detachable cable

Other terminations are available on request.

For further information please contact your local distributor or our sales office at Stonehouse.