

HF Resistant pH Sensor

- ENHANCED RESISTANCE TO PROCESS ATTACK provided by field-proven pH glass formulation.
- EXTENDED SENSOR LIFE provided by double junction reference cell for process solutions that contain poisoning ions.
- MULTIPLE MOUNTING OPTIONS are accommodated by one-piece construction with process threads in two places.
- SUPERIOR CHEMICAL RESISTANCE due to rugged Ultem¹ body, completely sealed to eliminate sensor leakage.



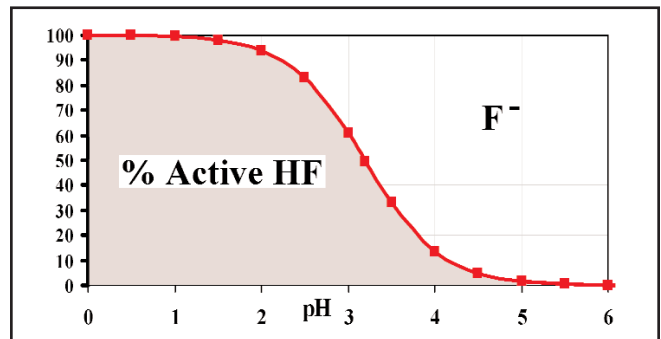
¹ Ultem is polyetherimide.

FEATURES AND APPLICATIONS

pH measurement has historically been conducted using thin glass membrane electrodes that slowly dissolve in water, creating a pH sensitive surface layer. Some chemicals and/or conditions accelerate this dissolution process, causing the electrodes to become very fragile and prone to breakage. Examples include high temperatures, caustic exposure, steam exposure, and exposure to hydrofluoric acid. Hydrofluoric acid (HF) is commonly used to etch glass and chemically attacks the silicon-oxygen bonds that hold the glass matrix together. Rosemount Analytical's new Model 372 sensor uses a new glass formulation that slows down this attack considerably, making measurements in up to 1% (10,000 ppm) HF cost effective and economical.

The presence of hydrofluoric acid in an application is affected by the pH. When the pH is high, nearly all the fluoride ion will be present in the relatively benign free F⁻ form. Lower pH values will convert the free fluoride to HF and present a much harsher solution to measure. The relationship between HF concentration and pH is shown in Figure 1. Note that whether the stream chemical analysis indicates F⁻ or HF, the same pH relationship will apply (i.e. a process with 5000 ppm of fluoride will have the same percentage of HF at pH 3 as a process containing 5000 ppm of HF).

The Rosemount Analytical Model 372 is an easy to install combination sensor that enables pH measurement of solutions containing HF. Although sensor lifetime will differ based on the temperature, pH, and HF exposure, it will last much longer than conventional glass electrodes.



SENSOR FEATURES:

- Cross linked polymer reference system is resistant to heat, solvents, acids, and most other chemicals
- Reference holds an excess of KCl, assuring saturation at all temperatures and extending in situ sensor life
- The Fluoride and Acid Resistant pH Glass formulation reduces the buildup of fluoride precipitates on the surface, minimizing cleaning and calibration requirements.
- Glass Composition reduces HF attack by more than a factor of ten.

RECOMMENDED APPLICATIONS:

- Waste water containing fluoride or HF
- Etching solutions
- Water quality devices requiring long service life and/or operation at remote locations with no supervision

PHYSICAL SPECIFICATIONS:

Materials of Construction: Ultem, Viton¹, glass, Kynar

Process Connections: 3/4" forward (insertion) and 1" reverse (submersion) MNPT

Insertion Depth: 2.2 in. to 8.3 in.

Measured Range: 0 to 12 pH (0-14 pH if no sodium ions are present)

Pressure Range: -13 to 135 psig (6.9 to 1035 kPa abs)

Temperature Range: -5 to 50°C [23 to 122°F] (100°C [212°F] if no fluoride ions are present)

Temperature Compensation: Pt 100

Weight/Shipping Weight: 0.4 kg/0.9 kg (1 lb/ 2 lb)

pH Glass Type: Hemispherical

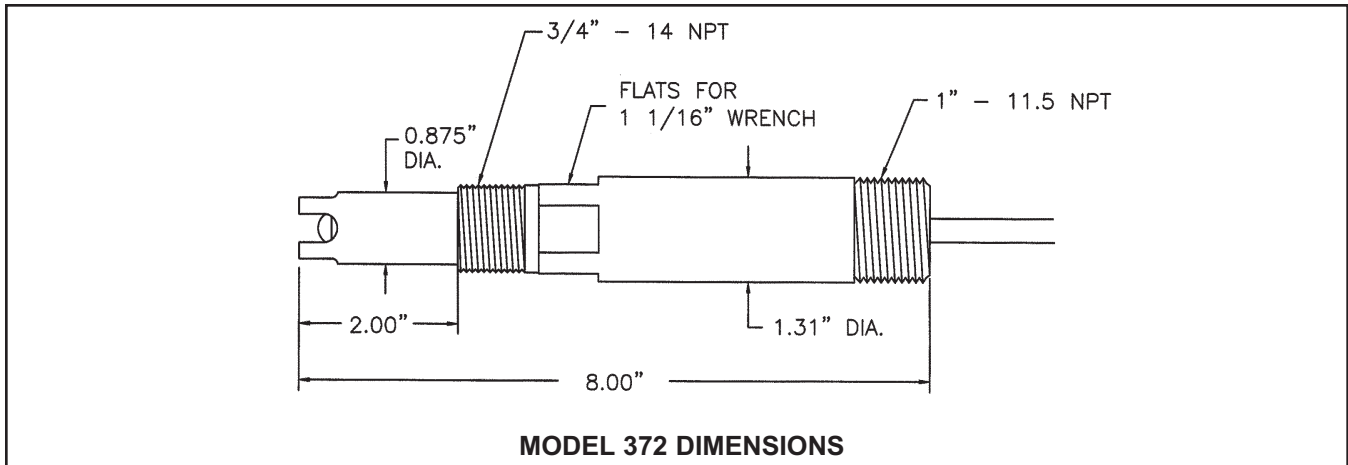
Glass Diameter: 7.8mm

Glass Impedance: Less than 400 MΩ @ 25°C.

Acidic Error: Less than .01 pH in 1.0M HCl @0.0pH

Reference Type: Double junction with saturated KCL in cross-linked polymer

¹ Viton is a registered trademark of E.I. du Pont de Nemours and Co.



ORDERING INFORMATION

Model 372 pH Sensor is designed for extended lifetime in processes containing fluoride ions. It includes a Pt 100 RTD for temperature measurement and is available with or without a preamplifier.

MODEL 372 pH SENSOR

Code	Cable (Required Selection)
01	25 ft cable with integral preamp for Models 54e, 1055, 3081, 4081, and 5081
02	15 ft cable for remote preamp (Models 54e, 1055, 3081, 4081, and 5081)

372 -01 EXAMPLE



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Emerson Process Management

Liquid Division

2400 Barranca Parkway
Irvine, CA 92606 USA
Tel: (949) 757-8500
Fax: (949) 474-7250

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