pH Measurement in Specialty Chemicals

Controlling and adjusting the pH value of a formulation

The Polilyte Plus H is used with the RetractoFit retractable housing and inserted in a specially designed flow through chamber.

Biocides are chemicals used to suppress organisms (like pests and germs, i.e. mold and bacteria) that are harmful to human or animal health, or that cause damage to natural or manufactured materials. They are widely used as disinfectants for water treatment, wood preservation, paper, paints, plastics, and personal care. Biocidal products contain one or more biocidal active substances and may contain other non-active co-formulants that ensure the effectiveness as well as the desired pH, viscosity, color, etc. of the final product.

Improvements due to the Polilyte Plus H sensor

When biocidal active substances and non-active co-formulants are mixed their chemical and physical properties, like solubility and reactivity, have to be respected in order to ensure the effectiveness of the formulation. The solubility of chemicals depends very much on the temperature and the pH value of the solvent and thus need to be controlled precisely.

Each formulation has its own pH requirements, i.e. pH value needs to be adjusted either from pH 2.0 to pH 5.0 or from 11.5 to pH 9.0 with an accuracy of ± 0.1. The measurement is not performed in the 10 m^3 reactors but in a bypass to get an accurate reading during the mixing process.

The Polilyte Plus H sensors are built in RetractoFit housings in order to clean and eventually replace them without disrupting the process. These housings are easy to use and robust enough to handle harsh environments. Some years ago, newly introduced formulations required pH sensors with long lasting reference electrolytes and precise pH measurements. The Polilyte Plus H sensor was ideal for such applications. For more than 3 years now the sensors show stable and accurate readings, and still counting.

Even if organic solvents are present in the formulation the operators can rely on the pH readings of the Polilyte Plus H sensor. The single pore technology and the polymer electrolyte allowed reducing the required maintenance to a minimum, and the reliability of the formulating process increased.

Technical data

Measuring Range	pH 0 to 14
Diaphragm	Single Pore
Autoclavable	Yes, max. temperature 130°C
CIP	No
Steam Sterilisable	Yes, max. temperature 130°C
Process Temperature	0 to 130°C
Pressure Range	0 to 16 bar (100°C), 0 to 10 bar (130°C)
O-ring Material	FPM
Sample min Conductivity	2 µS/cm
Process Connection	PG13,5
Medium Affected Materials	Glass, FPM
Electrolyte	Polisolve Plus
Membrane / Cap	Hamilton type H glass

Benefits

Stable readings in a wide pH range

Insensitive to organic solvents

Single pore technology prevents clogging

Long sensor lifetime

Easy maintenance

After more than 3 years of operation the Forbes Marshall pH sensor and RetractoFit are still in good shape and require only minimum maintenance.

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