

pH of Milk

Orion 3-Star pH Benchtop Meter

Food & Beverage

The pH or acidity of milk is generally used to determine processing requirements and applicability of GMP regulations for regulatory purposes. Methods and conditions for determining the pH and acidity of foods are also summarized in 21 CFR 114.90. The direct measurement of pH using a pH meter and electrode is a well-established technique frequently used as a standard method of analysis in chemistry laboratories today.

Thermo Electron Corporation offers a wide range of meters, electrodes and consumables to accurately measure pH levels of a variety of samples.



For instructions on pH measurements using Orion products, download our Star Series meter information at www.thermo.com/water.



Orion 3-Star pH of Milk

The pH of milk at 25° C normally varies within a relatively narrow range of 6.5 to 6.7 due to the many components in milk, which provide a buffering action. The major buffering groups of milk are caseins and phosphate. At normal pH the protein (Casein) in the milk remains dispersed evenly in the solution. As the pH is lowered by the addition of an acid, the protein can no longer remain in solution, and it coagulates into an insoluble mass. The pH where this occurs for milk is at about 4.6. Common examples of where pH is critical in the process are the gelation phase of cheese making and fermentation by bacteria in yogurt production.

Many manufacturers use Thermo products everyday for purposes of research & development and quality control. Our meters, electrodes and solutions help to ensure the accuracy of the pH of foods. With the easy to use Orion 3-Star pH meter (Cat. No. 1112000) and Orion ROSS™ Sure-Flow® pH electrode (Cat. No. 8172BNWP), pH measurements are fast and accurate. This rugged meter offers a full complement of GLP-related features and can store up to 10 set-up parameters and calibrations; a valuable feature for busy multi-user labs. Orion products offer top quality meter features with proven electrode technology to provide a complete package needed to measure the pH of milk.

Orion 3-Star pH

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Orion ROSS™ Sure-Flow® pH electrode (Cat. No. 8172BNWP) offers an optimum solution to meet pH measurement needs.

Orion 3-Star pH Specifications:

Specifications		Benefit
pH		
Readout Range / Resolution	-2.000 to 19.999 or 0 to 14 in aqueous solutions / 0.1,0.01,0.001	Bracket your sample pH
Relative Accuracy	± 0.002	Better for calibration points
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	More precise measurement
AUTO-CAL™ and/or Manual Calibration	1 to 5 points; US/NIST, DIN, and custom buffers recognized	Reduces set up time
Temperature		
Range / Resolution	-5 to 105 °C / 0.1 up to 99.9 °C, 1.0 over 99.9 °C	Allows for temperature variation
Relative Accuracy	± 0.1 °C	
Temperature Compensation	Auto/Manual	
Display	Custom backlit LCD, for easy viewing	Simple to read
Special GLP Software Features		
# Of Data Logging Points	200 points by time, stability or manual read with time/date stamp	Flexibility to meet your needs
Calibration Log	Last 10 Calibrations	
User Method Storage	10 Saved	Expanded data storage available
Power	Universal power adapter and battery power 4 x AA batteries	Data is secure
Regulatory and Safety	CE, CSA, UL, TÜV, FCC Class A limits	Meets all necessary regulations
Environmental Operating Conditions		
Ambient Operating Temperature	5 to 45 °C	Meets normal sample conditions
Relative Humidity	5 to 85% Non-Condensing	
IP Rating	IP54, splashproof and dustproof	
Warranty	36 months (from date of purchase)	Reduces service costs

Above data generated under optimal/controlled circumstances.

Equipment needed for pH measurement using the Orion 3-Star pH meter:

Description	Orion Cat. No.
pH Application Package (includes all items listed below)	1010137
Star Series Method Note: pH of Milk	M-1406-E
3-Star benchtop pH meter	1112000
Orion ROSS™ Sure-Flow® pH electrode	8172BNWP
Star Stainless Steel ATC probe	927007MD
pH 4.01 Buffer (475 mL)	910104
pH 7.00 Buffer (475 mL)	910107
pH 10.01 Buffer (475 mL)	910110
ROSS Reference Filling Solution	810007
ROSS pH electrode storage solution	810001
Benchtop Electrode Stand	1110001
Benchtop Stirrer	096019

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T-1406-E 02/05 RevB

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