

Calcium in Milk

Orion 4-Star pH/ISE
Benchtop Meter

Food & Beverage

The calcium content in milk is measured in accordance with quality control and nutrition facts labeling requirements. The FDA sets the "percent Daily Value" (%DV) for calcium in milk. The amount of calcium is listed on the nutrition facts panel on the package label.

The direct measurement of ions using Ion Selective Electrodes (ISE) 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 ISE levels in a variety of samples.



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



Orion 4-Star pH/ISE for ISE measurement

Most people receive the major portion of their daily calcium intake from dairy foods. Calcium is vital for healthy teeth and bones and also plays a crucial role optimizing healthy functioning of nerves and muscle tissue. The Food and Nutrition Board of the National Academy of Sciences recently released new national recommendations for calcium, which listed increased levels for most age groups.

Many manufacturers use Thermo products everyday for purposes of research & development, quality control and product labeling. Our meters, electrodes and solutions help to ensure the accuracy

of ingredient content. With the easy to use Orion 4-Star pH/ISE meter (Cat. No. 1115000) and Orion ionplus® Calcium electrode (Cat. No. 9720BNWP), pH and ISE 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 calcium in milk.

Orion 4-Star pH/ISE

The Orion 4-Star pH/ISE meter (Cat. No. 1115000) offers dual measurement capabilities at an affordable price. This new meter combined with the Orion ionplus® Calcium electrode (Cat. No. 9720BNWP) offers an optimum solution to meet pH and ISE measurement needs.

Orion 4-Star pH/ISE 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	Calibration point flexibility
Relative Accuracy	± 0.002	For exceptional accuracy
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	Optimized accuracy, precision & response time
AUTO-CAL™ and/or Manual Calibration	1 to 5 points; US/NIST, DIN, and custom buffers recognized	Protocol compliance
ISE		
Range / Resolution	0 to 19900 / 1,2, or 3 significant digits	Wide operating range/Increased accuracy
Relative Accuracy	± 0.2 mV or 0.05%, whichever is greater	
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	Optimized accuracy, precision, & response time
Units	M, mg/L, %, ppb, or no units	Choice of reporting units
# ISE Cal points	1 to 5	
Special ISE Calibration Features	Linear point to point, selectable auto-blank non-linear, low concentration range	
Temperature		
Range / Resolution	-5 to 105 °C / 0.1 up to 99.9 °C, 1.0 over 99.9 °C	Allows for temperature variations
Relative Accuracy	± 0.1 °C	
Temperature Compensation	Auto/Manual	
Display	Custom backlit LCD, for easy viewing	Easy to read
Special GLP Software Features		
# Of Data Logging Points	200 points by time, stability or manual read with time/date stamp	Expanded data storage available
Calibration Log	Last 10 Calibrations	Establish audit trail
User Method Storage	10 Saved	For easy retrieval of routine tests
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	
Relative Humidity	5 to 85% Non-Condensing	
IP Rating	IP54, splashproof and dustproof	
Warranty	36 months (from date of purchase)	Reduces service cost

Above data generated under optimal/controlled circumstances.

Equipment needed for pH/ISE measurement using the Orion 4-Star pH/ISE meter:

Description	Orion Cat. No.
Calcium Application Package (includes all items listed below)	1010134
Star Series Method Note: Ionized Calcium in Milk	M-1403-E
4-Star benchtop pH/ISE meter	1115000
Orion ionplus® Sure-Flow® Calcium electrode	9720BNWP
0.1 M Calcium as CaCl ₂ Standard	922006
Reference Filling Solution, Optimum Results™ A	900061
ISA (Ionic Strength Adjustor) for Calcium electrode	932011
Benchtop Electrode Stand	1110001
Benchtop Stirrer	096019

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