Advanced
4250 Single-Sample Cryoscope

The high-performance freezing point cryoscope designed for reliable monitoring of added water in milk

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The Advanced® **4250 Single-Sample Cryoscope** employs the industry-preferred freezing point method to determine the amount of added water in milk, with rapid, precise, and reliable results. The 4250 Cryoscope uses a single, 2.0 or 2.5 mL sample size. It is designed to operate on either a m°C (Celsius) or the m°H (Hortvet) scale, offers both the International Reference and screening freezing point methods, and can display user prompts in multiple languages.

The Advanced 4250 Cryoscope allows your plant to ensure a premium milk supply, and improves your operating efficiency.

Assured monitoring of milk supply process, and product integrity

Though varying slightly by animal (cow, sheep, goat, buffalo, camel) and diet, the freezing point of pure samples of fresh, raw milk is fairly consistent. Milk samples found to have a freezing point warmer than established regional norms may be suspected of dilution. Furthermore, milks found to have a freezing point colder than normal may have soured or become contaminated. Combinations of both effects are quite possible and detected by the sample freezing point.

The Model 4250 Cryoscope is designed to sense sample temperature by using high precision thermistors. It then controls the degree of super-cooling and freeze induction, and measures the freezing point of the sample in just two minutes.

Specifically designed to satisfy ISO 5764 / IDF 108, HACCP, and QA/QC requirements

ADVANCED 4250 CRYOSCOPE FEATURES AND BENEFITS

- **Versatile operating mode** The 4250 Cryoscope can be used as a fixed or plateau timed (Reference Method) instrument
- **Customize user experience** Model 4250 instrument prompts are available in multiple languages, operates in either m°C or m°H scale
- **Full range data handling capabilities** Onboard data management capability enables retrieval by print-out or RS-233 output of up to 30 test results along with date and time, which minimizes transcription errors
- **Robust design** Frost-free cooling chamber eliminates most routine maintenance; sample probe and stir-wire are fully accessible for easy cleaning
- **Precise Measurement** The 4250 provides for the storage of a "base" freezing point so the instrument can calculate the deviation from this setting which indicates the percentage added water to the test sample.
- **Productivity rewards** Allows your plant to manage a premium milk supply, ensure quality products, and improve your operating efficiency

APPLICATIONS

- Determination of added water in raw cow*, sheep, goat, buffalo and camel milks
- Checkpoint indicator for sour or contaminated raw milk.
- Can indicate the presence of water in milking machine pipes, undrained bulk tanks, and other types of water dilution at the milk producer's site

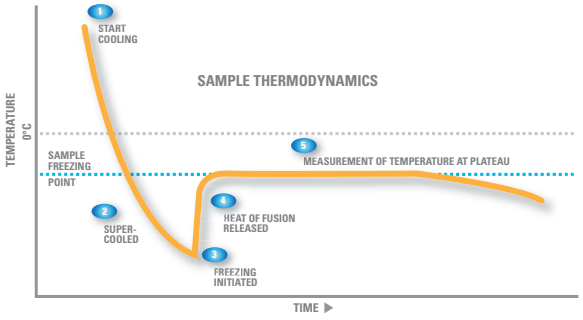
* Able to determine added water in pasteurized, UHT-treated, and sterilized whole or partially skimmed cow milk

Theory of Freezing Point Depression for Detection of Added Water in Milk

Freezing point is affected by solutes (particles) in a solvent (liquid). Water without solutes will freeze at 0°C. The freezing point of a milk sample depends upon the concentration of water-soluble components. As milk is more diluted, the freezing point will be closer to zero.

The reference method for freezing point of milk is ISO 5764 / IDF 108 which uses a plateau-seeking method of measuring the freezing point. This method specifies that a sample of milk is super-cooled to a temperature below its freezing point. Crystallization is induced causing the instantaneous release of heat, with the accompanying warming of the sample to a stable temperature or plateau and therefore, the true freezing point.

Another method for measuring the freezing point is the fixed time procedure, which measures the freezing point after a specified time period.



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ABOUT ADVANCED INSTRUMENTS

Advanced Instruments, Inc. is a leading supplier of instrumentation for clinical, pharmaceutical, biotechnology, microbiology and food laboratories around the world. Quality, reliability, service and support have been the company's guiding principles since our founding in 1955. Our innovative application of technology helps healthcare organizations improve the quality of care and industrial companies enhance quality and productivity.

Advanced 4250 Single-Sample Cryoscope Specifications

Sample Volume	2.0 or 2.5 mL
Test Time	Approximately 90 seconds in the 30-second timed mode
Sample Capacity	Single Sample
Units	-m°C or -m°H
Resolution	1 m°C or m°H
Range	0 to 1000 m°C or m°H
Communications	On-board printer, DTERS-232 serial port, and optional barcode scanner
Performance at Reference Conditions[1]	
Linearity	Less than ±0.5% from a straight line
Repeatability	±2 m°C or m°H (1 S.D.)
Drift	Less than 1 m°C or m°H per month
Performance Over Operating Conditions	
Temperature Effects	Less than 1 m°C or m°H per 5°C (9°F) ambient temperature change
Operating Conditions	
Temperature	18 to 35°C (64 to 95°F)
Humidity	5 to 80% relative humidity, (non-condensing)
Storage	Temperature -40 to +45°C (-40 to +113°F)
Electrical	
Voltage	100 to 240 VAC (50/60 Hz)
Power Consumption	95 Watts
Dimensions	16.0" H x 13.0" W x 18.0" D (40.6 cm x 33.0 cm x 45.7 cm)
Net Weight	28.0 lbs. (12.7 kg)
Shipping Weight	39.0 lbs. (17.7 kg)
Warranty	One year limited warranty on workmanship and all parts except glass, plastic, and parts warranted by their makers. Proper instrument operation and warranty protection is dependent upon the use of Advanced Instruments supplies, parts and accessories.
Certification	CE, Intertek — The management system governing the manufacturing of this product is ISO 9001 and ISO 13485 registered.
Installation Class	I
Over-voltage Category	II
Pollution Degree	2
Moisture Protection	IPX0 (ordinary)

[1]Performance at Reference Conditions: 20 to 25°C (68 to 77°F); 40 to 60% relative humidity; tolerances of reference or calibration solutions excluded

CryoLine™ Cryoscope Supplies

Proper instrument operation and warranty protection are dependent upon the use of Advanced Instruments supplies, parts, and accessories. Our products are superior to cheaper supplies and will ensure the high measurement accuracy that you expect from our instruments.

Part #	Description
3LA023	422 Milk Cryoscope Calibration Standard
3LA033	621 Milk Cryoscope Calibration Standard
3LA030	Lactrol® 530 Reference Solution
3LA823	Glass Sample Tubes
3DA811	Heat Transfer Fluid

Achieve the most accurate results with comprehensive CryoLine standards and laboratory supplies — designed specifically for use with freezing point cryoscopes

Specifications subject to change

Advanced Instruments products are available from a worldwide distributor network. For more information on our products and services or to find your nearest distributor, visit us at www.aicompanies.com or e-mail us at info@aicompanies.com.

Hot-Line® Technical Service

Advanced Instruments Hot-Line Service and worldwide distributor network provide comprehensive customer service and technical support.

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