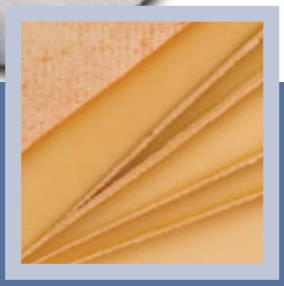
Broad supplier of analytical instruments for the dairy industry.

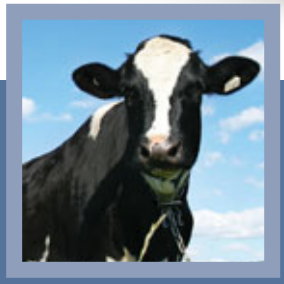
Acidity and pH Analysis

for Milk and Cheese

HI 84429 *Titratable Acids mini Titrator and pH Meter*

Perform a Complete Analysis with One Compact Meter!





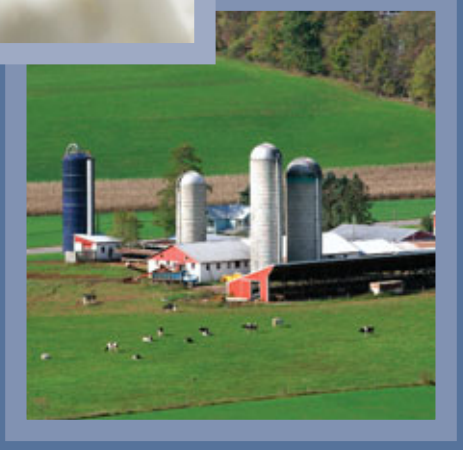
HANNA® instruments

With Great Products, Come Great Results™

HI 84429

Titratable Acids mini Titrator and pH Meter

A Better Product for quality production



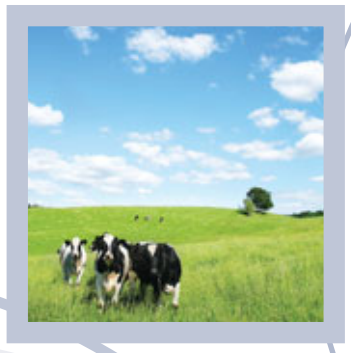
HI 84429 is a low cost, easy to use, microprocessor-based automatic titrator and pH meter that benefits from HANNA's years of experience as a manufacturer of analytical instruments. HI 84429 performs automatic analysis with all the necessary calculations through a clear and simple interface.

This advanced automatic titrator and pH meter has a powerful and effective built-in algorithm to analyze the shape of the pH electrode response and determines the reaction completion. By pressing the START key, the instrument automatically conducts an end point titration. The result is immediately displayed. The HI 84429 has a simple and reliable peristaltic pump to ensure accuracy and repeatability.

The HI 84429 comes with a pre-programmed analysis method designed for Total Titratable Acidity measurements on milk as well as a pH electrode, temperature probe, solutions and tubing. Please see ordering information on the back page for a list of included accessories.

The determination of total acids in dairy products is made according to a neutralization reaction; that is the reaction between the acids found in dairy products and a base. This type of reaction forms the basis of titration methods of analyzing acids.

Titratable acidity is measured on a degassed sample at the end point of 8.30 pH. The results are expressed in °SH, °Thm °D or % l.a.



HI 84429 is a low cost, easy to use automatic titrator and pH meter that provides professional results quickly and accurately.

About acidity measurement and its significance in the dairy industry

There are two fundamentally different conventions for expressing acidity in dairy products: **(a)** Titratable acidity and **(b)** hydrogen ion concentration, or pH. The former expresses total acidity but does not measure the strengths of the acid, while pH indicates acid strength.

Acidity affects taste, thus this parameter is tested to determine the quality of the milk product. As milk acidity increases over time, measuring this parameter is also a means of monitoring storage conditions. Acidity is determined by an end-point titration using sodium hydroxide (a base) and is defined as the consumption of base necessary to shift the pH value from 6.6 +0.1 (corresponding to fresh milk) to a determined basic pH value. While pH 7.0 is the actual point of neutralization, phenolphthalein is commonly employed as a color indicator to determine the end-point of reaction and with it, color change occurs at pH 8.3. Titratable acidity is expressed as one of a variety of units, the use of which reflects the titration method and strength of base employed during titration.

°SH — Soxlet Henkel degrees: obtained by titrating 100 mL of milk with 0.25N NaOH, using phenolphthalein as the indicator. This method is common in Central Europe.

°Th — Thorner degrees: obtained by titrating 100 mL of milk thinned with 2 parts distilled water, with 0.1 N NaOH, using phenolphthalein as an indicator; Used mostly in Sweden and the CIS.

°D — Dornic degrees: obtained by titrating 100 mL of milk thinned with two parts distilled water, with N/9 NaOH, using phenolphthalein as an indicator. Used mostly in the Netherlands and France.

% l.a. — percent lactic acid: obtained as °D divided by 100. Frequently used in the UK, USA, Canada, Australia and New Zealand.

Note: Taking into account the concentration of sodium hydroxide, the results expressed in one value can be easily converted into any other unit value by consulting this convenient chart:

	°SH	°Th	°D	% l.a.
NaOH concentration (N)	0.25	0.1	0.111	0.111
	1	2.5	2.25	0.0225
	0.4	1	0.9	0.009
	4/9	10/9	1	0.01

The HI 84429 mini Titrator makes measuring both pH and acidity of dairy products possible within one compact unit. The titration method is a potentiometric end-point determination at a pre-determined pH value. HI 83329 mini Titrator eliminates the subjective end-point color-change detection determined by the human eye, and instead employs the sensitivity and accuracy of a pH sensor, virtually eliminating error.

Acidity of dairy products can be expressed in any one of the units described earlier, simply by selecting the desired unit value. After performing a pump calibration with the supplied standard, you can then make titrations, expressed in the desired unit, using the same titrant. This eliminates the inconvenience of changing tubes, purging the titrant for tube cleaning and being sure that you have the right titrant concentration – thus eliminating wasted time and titrant. The quantity of sample needed is much smaller in comparison with the classical method, where 100 mL of product is used.

HI 84429 Titratable Acids mini Titrator and pH Meter Specifications

SPECIFICATIONS for HI 84429 Titrator	°SH	°Th	°D	% l.a.
Titratable Acidity Range	0.0 to 15.0 °SH	0 to 40 °Th	0 to 30 °D	0.00 to 0.35 % l.a.
Titratable Acidity HR (High Range) Range	10 to 75 °SH	20 to 200 °Th	20 to 175 °D	0.0 to 2.0 % l.a.
Titratable Acidity Resolution	0.1 °SH	1 °Th	1 °D	0.1% l.a.
Titratable Acidity HR Resolution	0.5 °SH	1 °Th	1 °D	0.1% l.a.
Accuracy	5% of reading			
Titration Methods	Acid-base titration			
Principle	End point titration, 8.30 pH			
Pump Debit	0.5 mL/min			
Stirring Speed	1500 rpm			

SPECIFICATIONS for HI 84429 pH and Temperature Meter		
Range	pH	-2.0 to 16.0 pH; -2.00 to 16.00 pH
	Temperature	-20.0 to 120.0 °C (-4 to 248°F)
Resolution	pH	0.1 pH; 0.01 pH
	Temperature	0.1°C
Accuracy	pH	±0.01 pH
	Temperature	±0 to 4°C without probe error
pH Electrode		FC 210 B (included)
Temperature Probe		HI 7662-T (included)

GENERAL SPECIFICATIONS for HI 84429	
Environment	0 to 50°C (32 to 122°F); max 95% non-condensing
Power Supply	220V/50Hz; 10VA
Dimensions	208 x 214 x 163 mm (8.2 x 8.4 x 6.4") with beaker
Weight	2200 g (77 oz.)

ORDERING INFORMATION

HI 84429 is supplied with a reagent set for 20 titrations, (2) 50 mL beakers, (2) 20 mL beakers, tube set with cap, pH electrode, temperature probe, stir bar, 1 mL syringe, (2) milk deposit cleaning solution sachets, (2) pH 7.01 buffer sachets, (2) pH 4.01 buffer sachets, power cable and instructions.

REQUIRED REAGENTS

HI 84429-50 Titrant
HI 84429-55 Standard, 2 mL
HI 84429-60 pH 8.30 buffer solution, 50 mL

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Use the above details to contact us if this literature doesn't answer all your questions.

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.