°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. Method is used mostly in Sweden and the CIS.

°D – Dornic degrees: obtained by titrating 100 mL of milk thinned with two parts distilled water, with 0.9N 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 the chart at right.

The HI 84429 Mini Titrator eliminates the subjective endpoint color change detection determined by the human eye, and instead employs the sensitivity and accuracy of a pH sensor. The titration method is a potentiometric endpoint determination using a pre-determined pH value.

Acidity of dairy products can be expressed in any of the units described earlier by simply selecting the desired unit. 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 - saving time and titrant. The quantity of sample needed is much smaller in comparison to a traditional method, where 100 mL of product is used.

	°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

SPECIFICATIONS		HI 84429
Titrator	Titratable Acidity Low Range	0.0 to 15.0 °SH; 0 to 40 °Th; 0 to 35 °D; 0.00 to 0.35 % l.a.
	Titratable Acidity LR Resolution	0.1 °SH; 1 °Th; 1 °D; 0.01% l.a.
	Titratable Acidity High Range	10 to 75 °SH; 20 to 200 °Th; 20 to 175 °D; 0.0 to 2.0 % l.a.
	Titratable Acidity HR Resolution	0.5 °SH; 1 °Th; 1 °D; 0.1% l.a.
	Accuracy (@25°C/77°F)	5% of reading
	Titration Method	acid-base titration
	Principle	endpoint titration, 8.30 pH
	Pump Debit	0.5 mL/min
	Stirring Speed	800 rpm
	Logging Data	up to 50 samples
pH Meter	Range	-2.0 to 16.0 pH / -2.00 to 16.00 pH
	Resolution	0.1 pH / 0.01 pH
	Accuracy (@25°C/77°F)	±0.01 pH
	Calibration	one, two or three point calibration (pH 4.01, 6.00, 8.30)
	Temperature Compensation	manual or automatic from -20 to 120°C (-4 to 248°F)
	Logging Data	up to 50 samples
Temperature	Range	-20.0 to 120.0°C (-4.0 to 248.0°F)
	Resolution	0.1°C
	Accuracy (@25°C/77°F)	±0.4°C without probe error
Electrodes		FC 260B pH electrode with 1 m (3.3') cable (included), HI 5315 reference probe with 1 m (3.3') cable (included)
Temperature Probe		HI 7662-M stainless steel temperature probe with 1 m (3.3') cable (included)
Environment		0 to 50°C (32 to 122°F); RH max 95% non-condensing
Power Supply		12 VDC adapter (included)
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 84429-01 (115V) and **HI 84429-02** (230V) are supplied with FC 260B pH electrode, HI 5315 Reference electrode, HI 7072 Filling solution (30 mL), HI 7662-M temperature probe, HI 84429-50 titrant (100 mL), HI 84429-55 Standard (500 mL), HI 700640 cleaning solution for milk deposits (20 mL, 2), pH 4.01 buffer solution (230 mL), pH 6.00 buffer solution (230 mL), pH 8.30 buffer solution (230 mL, 50 mL beakers (2), 20 mL beakers (2), tube set with cap, stir bars (2 small, 2 large), power cord, 1 mL syringe, capillary dropper pipette and Instruction manual.

SOLUTIONS

HI 84429-50	Titrant solution, 100 mL
HI 84429-55	Pump calibration standard, 500 mL
HI 84429-65	pH 4.01 buffer solution, 230 mL (6)
HI 84429-70	pH 6.00 buffer solution, 230 mL (6)
HI 84429-60	pH 8.30 buffer solution, 230 mL (6)
HI 84429-20	Reagent set starter kit (20 tests)
HI 70640L	Cleaning solution for remaining milk deposits, 500 mL
HI 70641L	Cleaning and disinfecting for dairy products, 500 mL
HI 70642L	Cleaning solution for remaining cheese deposits, 500 mL
HI 7072	Reference electrode filling solution (4)

ACCESSORIES

HI 70483T	Tube set with cap for titrant bottle and tip
HI 731316	Stir bar 12 x 5 mm (5)
HI 731319	Stir bar 25 x 7 mm (10)
HI 740036P	50 mL plastic beaker (10)
HI 740037P	20 mL plastic beaker (10)
HI 740143	Syringe 1 mL (6)
HI 740144	Pipette tip 1 mL (6)

HI 84432

Titratable Acidity Mini Titrator and pH Meter for Fruit Juice

- **Internationally accepted methodology**
  Based on the AOAC International accepted method for acidity determination
- **Data logging**
  Log on demand up to 100 total samples
- **GLP features**
- **Eliminates subjective factors**
- **Three point calibration**
- **Automatic pH temperature compensation**
- **Automatic "anytime" help**
- **Intuitive user interface**

All-in-One Fruit Juice Titrator, pH Meter, pH Electrode and Magnetic Stirrer

FOODCARE line

The HI 84432 digital automatic mini titrator and pH meter is designed for quick and accurate analysis of total titratable acidity in fruit juices. By eliminating subjective factors including color indicators, errors in mathematical calculations or erratic titrant additions from the measurement, the HI 84432 provides quick and accurate, repeatable results without guesswork.

A clear and intuitive user interface allows users to navigate the HI 84432's menus and functions quickly. A HELP key located on the keypad aids in set-up, calibration status and troubleshooting.

By simply pressing the START key, the HI 84432 automatically starts pump operation and titrates the sample to the endpoint. This instrument employs a powerful and effective algorithm to analyze the pH response to determine the exact pH endpoint, then uses this algorithm to make the necessary calculations.

The titratable acidity determination is instantaneously displayed in selected measurement units on the large dot matrix display. The instrument is immediately ready for the next analysis.

The HI 84432 has a simple and accurate peristaltic pump to ensure the best accuracy and repeatability. To ensure instrument accuracy, perform a pump calibration with the provided HANNA standard.

Why This Instrument is So Important...

The measurement of titratable acidity in fruit juices measures the concentration of titratable hydrogen ions contained in the fruit juice samples by neutralization with strong base solution to a fixed pH. This value includes all the substances of an acidic nature in the fruit juice: free hydrogen ions, organic acids, acid salts and cathions.

Because the organic acid is the most acidic component of the fruit juices that react with strong base solutions, the titratable acidity is usually expressed as a percentage (mass/volume) of the predominant acid:

- **Citric acid is present in many fruit species.**
- **Tartaric acid is essentially found in grapes.**
- **Malic acid is present in many fruit species, sometimes together with citric acid or tartaric acid in unripe grapes.**

The HI 84432 Mini Titrator uses a method based on the Official Methods of Analysis of AOAC International. The fruit juice is titrated with a sodium hydroxide solution until the end point at 8.2 pH is reached (determined by potentiometric method). Additionally the HI 84432 has a built-in pH meter for pH measurement (electrode and meter must be calibrated).