Products for the Maple Industry

Grading • Brix • Temperature

HANNA® instruments

Eliminate Subjectivity

The season of maple syrup production spans several months between winter and spring each year. As the days get longer and warmer and the nights stay below freezing, the sap from maple trees begins to flow and tapping begins. At the beginning of production season, the sap produces a lighter, sweeter syrup comprised of sucrose as the main sugar content. As the season progresses and temperatures rise, microorganisms grow and colonize the sap as it is collected. These bacteria, while not harmful, convert part of the sucrose present into invert sugars, glucose and fructose. The level of invert sugars in the sap, as well as the chemical processes that occur during boiling, are responsible for creating a darker and stronger flavored syrup product.

Maple syrup grading standards for the United States and Canada allow consumers to easily distinguish between the different grades of syrup, regardless of the place of origin.

State of Vermont Grades and Standards

(New IMSI* standards)

Grade A Color Classes	Taste	% Light Transmittance
Grade A Golden	Delicate	≥75
Grade A Amber	Rich	50 to 74
Grade A Dark	Robust	25 to 49
Grade A Very Dark	Strong	< 25

* International Maple Syrup Institute

The color grade of maple syrup is classified by measuring the amount of light that is transmitted through the syrup. Maple syrup that is lighter and produced earlier in the season has a high percent light transmittance. As the season progresses and the syrup becomes darker, the percent light transmittance decreases.

Many maple syrup producers grade their product by eye using a visual grading kit. However, grades assigned in this manner can be flawed if producers inspect their syrup on a cloudy day or use an expired grading kit. By using a meter that can read the percent light transmittance, any subjectivity is removed from grading, ensuring maple syrup is labeled accurately and instilling consumer confidence.

Hanna's **HI759 Maple Syrup Digital Grader** and **HI96759 Maple Syrup Portable Photometer** are two meters that measure the percent light transmittance through a maple syrup sample. The HI759 and HI96759 display results as the percent light transmittance. These easy to use meters take the uncertainty out of grading each batch of maple syrup you produce.

HI759

Maple Syrup Digital Grader

Checker®HC Handheld Colorimeter

- Easy to use
- Results are displayed % transmittance
- Small size, big convenience

The HI759 Maple Syrup Digital Grader is a handheld colorimeter designed for quick, accurate determination of maple syrup. The HI759 is designed as a more accurate alternative to temporary and permanent visual grading kits, providing quick, accurate results in four easy steps.

This Maple Syrup Digital Grader measures the percent light transmittance of the syrup and directly displays the percentage results on the large, easy to read LCD display. Located on the back of the meter is a chart referencing the percent light transmittance to the grade. Eliminating the subjectivity of grading by eye and the potential for mislabeling, the HI759 is grading made simple.

Specifications	HI759
Range	0 to 100% transmittance
Resolution	1% transmittance
Accuracy	±4% transmittance
Light Source	light emitting diode @ 560 nm
Light Detector	silicon photocell
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Battery Type	(1) 1.5V AAA
Auto-off	after ten minutes of non-use
Dimensions	86.0 x 61.0 x 37.5 mm (3.4 x 2.4 x 1.5")
Weight	64 g (2.3 oz)
Ordering Information	**HI759** Checker®HC is supplied with sample cuvettes with caps (3), glycerol standard cuvette, plastic beakers (3), battery, instructions and quick reference guide.
Accessories	**HI759-11** glycerol reference cuvettes (2 pcs) **HI731359** 25 round glass cuvettes with plastic inserts

HI96759

Maple Syrup Portable Photometer

- Conforms to USDA specifications
- Calibrates 100% transmittance with glycerol reference standard
- GLP data

The HI96759 is a handheld maple syrup transmittance analyzer that has a tungsten lamp with a narrow band interference filter to isolate the 560 nm wavelength. This photometer uses 10 mm disposable sample cuvettes and is calibrated to 100% transmittance with a glycerol standard. All samples are compared to the glycerol standard and readings are displayed as % transmittance. With its advanced optical system, the highly precise meter eliminates subjectivity to provide readings that are accurate and repeatable.

Specifications	HI96759	
Range	0.0 to 100.0% transmittance	
Resolution	0.1% transmittance	
Accuracy @ 25°C (77°F)	±3%	
Light Source / Detector	tungsten lamp / silicon photocell with narrow band interference filter 560 nm	
Battery Type	9V battery	
Auto-off	after ten minutes of non-use in measurement mode; after one hour of non-use in calibration mode; with last reading reminder	
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing	
Dimensions / Weight	193 x 104 x 69 mm (7.6 x 4.1 x 2.7") / 360 g (12.7 oz.)	
Ordering Information	**HI96759** are supplied with square sample cuvettes (6), light shield cap, 5 mL syringes (2), 30 mL bottle of glycerol, cuvette wiping cloth, 9V battery, instrument quality certificate, instruction manual and rigid carrying case.	
Accessories	**HI93703-57**	glycerol, (4) 30 mL
	HI93703-56	consists of 82 matched square cuvettes, glycerol standard(30 mL) and 5 mL syringes (2) (75 tests average)

HI96801

Digital Refractometer

for Sugar Analysis

- Automatic temperature compensation
- IP65 water protection
- One-point calibration with distilled or deionized water

Raw sap has a sugar content of 2 to 3% Brix, whereas maple syrup must have a minimum sugar content of 66% Brix. To increase the sugar content, water from the maple sap is evaporated to produce a more concentrated product. The HI96801 Digital Refractometer for Sugar Analysis converts the refractive index of a syrup sample to % Brix based on tables found in the ICUMSA Methods Book (International Commission for Uniform Methods of Sugar Analysis). Measurements are performed with a sample size as small as 100 microliters and the results are displayed within 1.5 seconds, making analysis of sap and syrup quick and easy for maple producers.

Specifications		HI96801
Sugar Content	Range	0 to 85% Brix
	Resolution	0.1 % Brix
	Accuracy (@25°C/77°F)	±0.2% Brix
Temperature	Range	0.0 to 80.0°C (32.0 to 176.0°F)
	Resolution	0.1°C (0.1°F)
	Accuracy (@25°C/77°F)	±0.3°C (±0.5°F)
Additional Specifications	Temp. Compensation	automatic between 10 and 40°C (50 to 104°F)
	Measurement Time	approximately 1.5 seconds
	Min. Sample Volume	100 µL (to cover prism totally)
	Light Source	yellow LED
	Sample Cell	stainless steel ring and flint glass prism
	Auto-off	after three minutes of non-use
	Enclosure Rating	IP65
	Battery Type / Life	9V / approximately 5000 readings
	Dimensions / Weight	192 x 102 x 67 mm (7.6 x 4.01 x 2.6") / 420 g (14.8 oz.)
Ordering Information	**HI96801** is supplied with battery and instruction manual.	

HI98501 Checktemp®

Digital Thermometer

with Stainless Steel Penetration Probe

- IP65 water protection
- Use as a tool for control in HACCP analysis
- AISI 316 stainless steel penetration probe

The temperature at which sap becomes syrup depends on the location at which it's produced. In general, sap becomes syrup when it is heated to 7°F above the boiling point of water. At higher altitudes, the boiling point drops, affecting the temperature at which sap becomes syrup. The HI98501 Checktemp® is a highly accurate digital thermometer with a stainless steel probe that provides a clear readout in both Celsius and Fahrenheit. The automatic CAL Check™ function upon startup verifies that the Checktemp® is still accurate to its specifications.

Specifications		HI98501
Range	°C	-50.0 to 150.0°C
	°F	-58.0 to 302°F
Resolution	°C	0.1°C (-50.0 to 150.0°C)
	°F	0.1°F (-58.0 to 199.9°F); 1°F (above 200°F)
Accuracy	°C	±0.2°C (-30 to 120°C); ±0.3°C (outside: -50.0 to -30.0°C and 120.0 to 150.0°C)
	°F	±0.5°F (-22 to 199.9°F); ±1°F (outside: -58.0 to -22.0°F and 200 to 302°F)
Probe	fixed, stainless steel probe; 106 x ø 3.6 mm (penetration)	
Battery Type / Life	CR2032 Li-ion / approximately 2000 hours of continuous use	
Auto Off	8 min (default), 60 min or OFF	
Environment	-30 to 50°C (-22 to 122°F); IP65	
Dimensions / Weight	50 x 185 x 21 mm (2 x 7.3 x 0.9") / 50 g (1.8 oz.)	
Ordering Information	**HI98501** (Checktemp®) is supplied with penetration probe, protective cap, battery and instructions.	

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