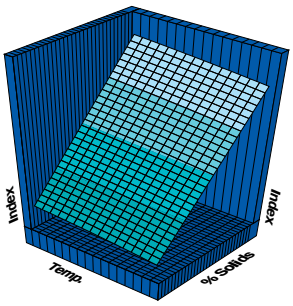
Leica Abbe Refractometers

Leica

Superior Design, Superior Accuracy

LEICA AUTO ABBE and ABBE MARK II Refractometers are bench-top instruments specifically designed to combine consistency and accuracy with high throughput. They can be used for a wide range of applications in a variety of industries including pharmaceutical, lubricant and industrial fluids manufacturing, chemical, solvent QA, plastics, petrochemical, marine biology and food and beverage.

These easy-to-use refractometers provide digital readouts at the touch of a button for fast, accurate, consistent results. Designed to automatically compensate for variations in sample temperature. Leica Auto Abbe and Abbe Mark II Refractometers increase productivity and reduce operator error. Measurements are automatically corrected to 20°C, or user selected temperatures on custom channels, eliminating the need for thermometers, water baths and correction charts. Actual prism temperature also can be displayed for convenient reference.



Leica refractometers provide temperature corrected readings based on the measured Refractive Index and temperature.

Both the Leica Auto Abbe and Abbe Mark II Plus Refractometers have electronic data output capabilities. They can be interfaced with computers or printers.

Leica Abbe Mark II Plus Refractometers

Features:

- Digital read-out of Refractive Index, % Solids and Temperature
- Electronic prism temperature measurement
- Custom channel programming and electronic data transfer
- Automatic temperature compensation

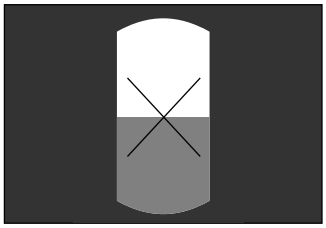
Leica Abbe Mark II Refractometers provide a digital data readout in 3 modes. Scales include % Solids, Temperature Compensated % Solids and Refractive Index.

A focusable eyepiece and dispersion correction prisms are standard features for easy, precise operation. An adjustable, built-in focused illumination system eliminates the need for transformers and extra illumination.

An operator simply places a small drop of sample on the measuring prism surface and adjusts the light source. While viewing through the focusable eyepiece, the operator rotates the adjustment control knob until a shadowline clearly appears. Using the "SELECTOR" knob located on the front panel, the operator selects the correct operating mode, pushes the "READ" button and records the digital value displayed in the readout panel. Prism temperature can be displayed by pressing the "TEMP" button on the readout panel.

The default % Solids scale uses International Commission for Uniform Methods of Sugar Analysis (ICUMSA) sucrose or "Brix" scale. The Leica Abbe Mark II Plus features an RS232 port which allows custom calibration of the % Solids and Temperature Compensated % Solids scales and sends temperature and Refractive Index or % Solids data to a printer or computer.

Add sample and close prism cover


Rotate adjustment control knob until shadowline appears and centers on the crosshair.

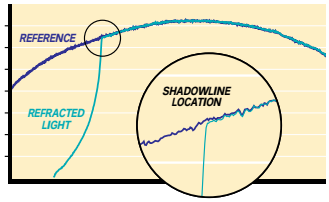
Push READ button

Leica Auto Abbe Refractometer

Features:

- Automatically senses and interprets shadowline
- Automatically corrects readings for sample temperature variations
- Precision to $\pm 0.0001 n_D$ or $\pm 0.1\%$ Normal Mode and $\pm 0.00002 n_D$ or $\pm 0.02\%$ Extended Display Mode
- 14 channel custom programming
- Sealed optics are protected from harsh environments

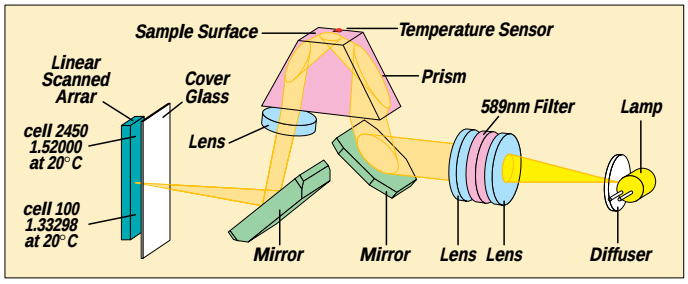
Leica Auto Abbe Refractometers will provide readings for Refractive Index, Temperature Compensated Refractive Index, % Solids and Temperature Compensated % Solids. The % Solids and Temperature Compensated % Solids scales in channel 1 are the International Commission for Uniform Methods of Sugar Analysis (ICUMSA) sucrose or "Brix"



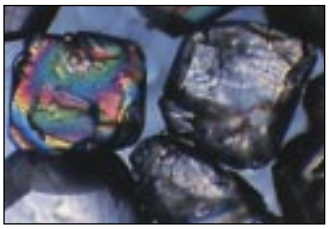
The Leica Auto Abbe "sees" and interprets the shadowline electronically. The above diagram is a graphical representation of the shadowline sensor output.

scales. Temperature is accurately measured by a thermistor at the prism surface where the sample is placed. Photosensing optics provide an extremely accurate and reproducible reading of the shadowline. The Leica Auto Abbe display can be read to 0.0001 (0.00001 in the extended display mode) or 0.1% Solids (0.01% in the extended display mode).
Final measurement value is calculated from an average of 56 individual scans of the shadowline sensor all performed in a fraction of a second.

For superior capability for all your application needs, Leica Auto Abbe Refractometers are the versatile choice.



The light path of the Leica Auto Abbe features precision Leica optics, true 589nm sample illumination, an electronic shadowline sensor and no moving parts, ensuring high precision and long-term reliability.



Cover Photo: Sugar crystals magnified 65X with polarized light, through a Leica microscope.

Simple Operation, Durable Construction

Leica Auto Abbe and Abbe Mark II are designed for ease-of-use and durability even in harsh environments. Simple push button and selector knobs control mode selection. Built-in energy efficiency assures the long life of these instruments with proper care and maintenance. Flat measuring prism surfaces permit easy sample cleanup.

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For more information, please contact your local Leica representative.

Due to a policy of continuous development, we reserve the right to change specifications without notice.

Specifications

LEICA AUTO ABBE Refractometer

Model Numbers		Model 10500B Leica Auto Abbe: 110-115V, 50/60Hz Model 10501B Leica Auto Abbe: 220-240V, 50/60Hz
Illumination		10 Watt Tungsten Halogen with 589nm bandpass filter
Display		Direct Reading LCD
Range		Dissolved Solids: 0 to 85% Solids (as sucrose) Refractive Index: 1.33000 to 1.51416 n_D
Readability	Standard Mode	0.1% Solids 0.0001 n_D
	Extended Display Mode	0.01% Solids 0.00001 n_D
Precision*	Standard Mode	±0.1% Solids ±0.0001 n_D
	Extended Read Mode	Refractive Index Standard Oils within day ±0.00002[1] Typical clear samples, % Solids Temperature Compensated, as sucrose within day ±0.02%[1]
Factory Calibration		Factory calibrated with distilled, deionized water, n_D = 1.33298 at 20°C, and Refractive Index standard oil, n_D = 1.52416 nominal ±0.00005 at 25°C. Traceable to National Institutes of Standards and Technology.
Temperature Compensation Range		10°-40°C
Temperature Compensation Accuracy		±0.1°C
Sample Types		Transparent, Translucent or Opaque
Dimensions		10"W x 12"L x 7"H (254mm x 305mm x 178mm)
Net Weight		16 lbs. (7.3kg)
Sample Temperature Control		Heat (cool) exchanger surrounding prism permits temperature control by an external water bath circulator from 10°C to 40°C.
Calibration Liquid		1/4 oz. refractive index standard oil, nominal value 1.50392 ±0.00005 Cat. #K4132
Prism Assembly		Stainless Steel, Glass sealed with solvent-resistant epoxy.
Electrical Approvals		UL listed; CSA certified; VDE listed; CE
Data Output		25 pin parallel port, 9 pin RS232

[1] Based on a 20 day study of refractive index standard oils and typical samples read twice each per day. Instrument set points were recalibrated with water daily. No span adjustments were made.

LEICA ABBE MARK II Refractometer / LEICA ABBE MARK II PLUS Refractometer

Model Numbers	Model 10494 Leica Abbe Mark II Plus: 110-120V, 50/60Hz RS232 port Model 10495 Leica Abbe Mark II Plus: 220-240V, 50/60Hz RS232 port
Display	Direct Reading LED
Range	Dissolved Solids: 0 to 95% Solids (as Sucrose) Refractive Index: 1.3200 to 1.7000 n_D
Readability	0.1% Solids 0.0001 n_D
Precision*	±0.1% Solids ±0.0001 n_D
Factory Calibration	Factory calibrated with distilled, deionized water, n_D = 1.33298 at 20°C, and a glass reference standard, n_D = 1.5470. Calibration standards verified with the National Institutes of Standards and Technology, reference material #1822
Sample Temperature Control and Range	Heat (cool) exchanger surrounding prism permits temperature control by an external water bath circulator from 10°C to 80°C (Caution: high humidity may limit low range.)
Temperature Compensation Range	15°-50°C
Temperature Compensation Accuracy	±0.1°C
Sample Types	Transparent or Translucent Liquids and Solids
Dimensions	6"W x 10.5"L x 14"H (152mm x 262mm x 356mm)
Net Weight	16 lbs. (7.3 kg)
Prism Assembly	Stainless Steel, Glass sealed with solvent resistant epoxy
Electrical Approvals	UL listed; CSA certified; VDE listed; CE

* The precision and accuracy of Refractive Index measurements is dependent on operator skill, the laboratory environment, temperature control, the accuracy of calibration standards, chemical stability of the sample, viscosity of the sample and concentration of the sample. A product demonstration is suggested to validate the true precision and accuracy of these instruments in your laboratory.

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