

# Automatic Petroleum Refractometer

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 **Koehler**  
INSTRUMENT COMPANY, INC.



## Features & Benefits

- Conforms to ASTM D1218, D1747, D5006, and D5775 test methods
- Electronic heating and cooling twin Peltier system operates from **10 to 100°C**, eliminating the need for an external circulating water bath
- Automated and precise refractive index measurements
- Rugged sapphire prism
- Designed for samples from clear to highly colored, dark and opaque
- Measures to the fifth decimal place refractive index or hundredths place in percent solids
- Clear graphical LCD display with on-screen instructions and full menu operation
- Multipoint calibration routines maximize accuracy
- Countdown timer insures consistent sample equilibration times
- RS232C communication ports

## Automated Petroleum Refractometer



### Test Method

Refractive index is a fundamental physical property that is used in conjunction with other properties to characterize pure hydrocarbons and their mixtures. It is a useful property for concentration measurements, purity determinations and chemical identification.

### Automated Petroleum Refractometer

The Koehler Automatic Refractometer uses precision optics and superior image analysis to extend the repeatability and accuracy of refractive index measurements for petroleum products. Subjectivity is removed from tests results because no manual activities such as aligning shadowlines or reading analog scales are necessary. Opaque hydrocarbons present no problem for this unit which uses reflected light measurement technology as opposed to manual refractometers which are of the transmission type.

The refractometer incorporates numerous innovations designed to improve the accuracy of petroleum product testing. A linear scanned diode array shadowline sensor is sensitive enough to read even the most demanding samples. A 589 nm filter gives true Sodium D-Line refractive index readings. A built-in twin Peltier heating and cooling system gives the instrument the capability of reading up to 100°C without the need for an accessory circulating water bath. The large graphical LCD is easy to read and provides complete sample analysis documentation including the reading, temperature and scale name of the screen. Documentation is also output through an RS232C serial port for export to either a PC or a parallel port to a standard printer. The instrument has an on-board data card for record storage. Optional Refractometer Communication Software package provides real-time output directly into Microsoft® Excel.

Set-up, diagnostic and calibration routines are displayed with easy to follow step-by-step instructions. User-developed customer calibration curves may be programmed allowing automatic temperature correction, direct percent concentration, percent reaction completion, etc. This unit has been used successfully throughout the petrochemical industry.

### Ordering Information

**Catalog No.**  
**K27550** Automatic Petroleum Refractometer, 115/230V 50/60Hz

#### Accessories

**K27504** Calibration Fluid.  
Certificate of NIST traceability included.

**K27505** Refractometer Communication Software Package.  
Features real-time data export into Microsoft® Excel.

### Specifications

Conforms to the specifications of: ASTM D1218, D1747, D5006, D5775

#### Measurement Scales:

- Refractive Index (RI)
- BRIX (% sucrose)
- Temperature Corrected RI
- Temperature Corrected BRIX
- Ten User-Programmable Scales

Illumination: 589nm light emitting diode with interference filter  
(estimated life: 100,000 hrs)

#### Range:

- Dissolved Solids: 0 to 95% solids
- Refractive Index: 1.29000 to 1.70000nD  
(nD - Sodium D-Line Refractive Index)

#### Readability:

0.01% Solids 0.00001nD

#### Precision:

- Refractive Index Standard Oils  $\pm 0.00003$
- Typical clear aqueous samples, % Solids Temperature Compensated,  
as sucrose  $\pm 0.03\%$

#### Calibration Fluid:

refractive index standard oil, NIST traceable  
nominal value 1.495 RI, 67.61 BRIX

Sample Types: Transparent, translucent or opaque

Sample Temperature Control: Peltier twin heat/cool exchanger surrounding prism permits temperature control from 10 to 100°C eliminates the need for an external circulating water bath

Prism Assembly: Stainless steel, synthetic sapphire sealed with solvent resistant epoxy

#### Calibration:

- 1 point - Water only
- 2 point - Water and refractive index or Brix standard

**Dimensions** l x w x h, in. (cm)  
15.5 x 12 x 4.5 (39.5 x 30.5 x 11.5)  
Net Weight: 23 lbs (10.5kg)

### Shipping Information

Shipping Weight: 30 lbs (14kg)  
Dimensions: 5 Cu. ft.

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