

# REFRACTIVE INDEX OF PETROLEUM PRODUCTS

## 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.

## Automatic Petroleum Refractometer

- Conforms to ASTM D1218, D1747 and D5006 test specifications
- Electronic heating and cooling Peltier system eliminates the need for a circulating water bath
- Automated and precise refractive index measurements
- Rugged sapphire prism
- Designed for samples ranging from clear to highly colored, dark and opaque
- Clear graphical LCD display with on-screen instructions and full menu operation
- Multipoint calibration routines maximize accuracy
- RS232C and centronics communication ports

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 dual temperature control system and flat, easy clean sample area make the instrument ideal for viscous or sticky samples.

Model K27550 conforms to ASTM D1218 and D1747 (maximum temperature 100°C) and measures to the fifth decimal place refractive index or one hundredth place in percent solids. The K27550 also has a built in data storage system with secure electronic signature recording.

The refractometer incorporates numerous innovations designed to improve the accuracy of petroleum product testing. A 589 nanometer filter gives true Sodium D-Line refractive index readings. The large touch screen is easy to read and provides complete sample analysis documentation including the reading, temperature and scale name of the screen.

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 and direct percent concentration, percent reaction completion, etc. This unit has been used successfully throughout the petrochemical industry.



**K27550 Automatic Refractometer**

## Specifications

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:

- Standard Mode: 0.1% Solids 0.0001nD
- Extended Mode: 0.01% Solids 0.00001nD

Precision:

- Standard Mode:  $\pm 0.02\%$  Solids  $\pm 0.00002$ nD
- Extended Display Mode: Refractive Index Standard Oils  $\pm 0.00002$
- Typical clear aqueous samples, % Solids Temperature Compensated, as sucrose  $\pm 0.02\%$

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

Sample Types: Transparent, translucent or opaque

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

Electrical Requirements: **CE**

110-240V 50/60Hz

**Dimensions** l x w x h, in.(cm)

15½ x 10 x 4½ (39½ x 25½ x 11½)

Net Weight: 23 lbs (10½kg)

## Shipping Information

Shipping Weight: 30 lbs (14kg)

Dimensions: 5 Cu. ft.

## Ordering Information

### Catalog No.

**K27550** Automatic Petroleum Refractometer for D1218 and D1747  
110-240V 50/60Hz

### Accessories

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

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