

Simultaneous measurement of density and refractive index



Two instruments in one housing

The DR Combined Meters are compact, powerful and unique systems for the simultaneous determination of density and refractive index.

They combine the advantages of our digital DE Density Meters and RE Refractometers while requiring a minimum of bench space.



**DR Combined Meter
with SC30 Sample Delivery and Cleaning Unit**



**DR Combined Meter
with SC1 Sample Delivery and Cleaning Unit**

METTLER TOLEDO

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DR40 & DR45 Combined Meters

- Accuracy of Density: $5 \times 10^{-5} \text{ g/cm}^3$
- Accuracy of Refractive Index nD: 1×10^{-4} (DR40) / 5×10^{-5} (DR45)
- Two built-in thermostats
- Concentration measurements based on density and refractive index
- Automatic detection of measurement errors
- Fully automatic viscosity correction

Reliable quality control of liquid samples

Digital instruments allow the measurement of the density and the refractive index of liquid samples quickly, with a high accuracy and a minimal amount of sample. For this reason these two parameters enjoy an increasing popularity in the quality control of liquids of any type, such as flavours, fragrances, petrochemical products, beer, etc. The refractive index and the density are also an efficient way to directly determine the concentration of two component mixtures. The DR Combined Meters allow tables and formulas to be entered to calculate two results based on the density and/or the refractive index.

Strong teams

The DR Combined Meters are designed to be used with our SC1 or SC30 Sample Delivery and Cleaning Units. These automation units turn the DR Combined Meters into fully automated measuring systems for the measurement of individual samples (SC1) or series of samples (SC30). The SC1 and SC30 Sample Delivery and Cleaning Units not only reduce the work involved in the determination of density and refractive index, they also help prevent measurement errors, save cleaning solutions and increase safety in the workplace.

No water bath required

The built-in Peltier thermostats of the density and the refractive index measuring cells guarantee the correct sample temperature for highly accurate results. No need for an external water bath! This saves valuable bench space, time and money.

Advanced communication skills

Three built-in serial interfaces smooth the path of data input and output and ensure GLP compliant documentation: The measuring results may be printed out and transferred to a computer, and with a barcode reader the input of the user name and the sample ID is a matter of 2 seconds – no keystroke required!

"Expert" and "Routine" modes

Two operator levels prevent unintended or unauthorized modifications of measuring methods and instrument settings and ensure reliable results. The "Expert" mode (password protected) gives free access to all the setup and method parameters, such as the time intervals for compulsory checks and adjustments of the instrument. In the "Routine" mode only the few keys required for routine measurements are active. If a compulsory check or adjustment is due, the instrument prompts the user with the steps which need to be performed.

Density	Measuring range	0.00000 to 3.00000 g/cm ³
	Limit of error	$5 \times 10^{-5} \text{ g/cm}^3$
	Fully automatic viscosity correction	yes
Refractive index	Measuring range	1.3200 to 1.7000 (DR40) 1.32000 to 1.58000 (DR45)
	Limit of error	1×10^{-4} (DR40) 5×10^{-5} (DR45)
Temperature	Control	Peltier, independent for both measuring cells
	Temperature range	15.00 to 50.00 °C
	Difference between meas. cells	15 °C max.
	Typical measuring time	50 s
Built in applications	Based on refractive index	Brix, HFCS42, HFCS55
	Based on density	Brix, Ethanol, API (temp. compensation)
	User defined calculations	yes
	User methods	9 + 1 (for adjustment)
	Interfaces	for printer, barcode, PC and automation unit
	Memory Card	to store methods, results, etc.
	Automation unit	SC1 or SC30 (required)



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Marketing Analytical Chemistry

Mettler-Toledo GmbH, Analytical
CH-8603 Schwerzenbach, Switzerland
Phone +41-1-806 77 11
Fax +41-1-806 73 50