Refracto – reliable refractive index wherever you need it

Refracto 30PX and Refracto 30GS are compact, easy-to-use refractometers for measurements in laboratory and production environments. Depending on the application, these instruments can be used in two ways: Either put it on a flat surface and place a drop of sample onto the measurement cell, or immerse the sensor directly into the fluid. As soon as you press the measurement key, the result is displayed in the desired units on the backlit LC-Display.
You no longer need to rely on error-prone readings of dark/bright transitions as with optical instruments. Refracto even measures dark samples correctly. Because the refractive index is temperature dependent, Refracto also automatically compensates the result.
The Refracto 30PX has a measuring cell made of optical glass, whereas the Refracto 30GS has a measuring cell made of sapphire. Sapphire has a higher refractive index and a better thermal conductivity than glass. For this reason the Refracto 30GS has an extended measuring range and registers the sample temperature more quickly.

Good-bye Abbé: Easy-to-perform refractive index measurements

A refractive index determination is the simplest way to quickly determine the quality of a substance. Using Refracto, the determination is faster and less prone to errors than traditional methods (e.g. Abbé-refractometer). Refracto can also store, print and transfer results to a PC.

Antifreeze:
Quick concentration determination

The measurement of the refractive index is the quickest and easiest method to check antifreeze concentration. Refracto will tell you within seconds whether the antifreeze contains the right amount of ethylene glycol, propylene glycol, ethanol or sodium chloride. It even allows you to directly read the freezing point of these fluids in °C or °F.

Soft drinks:
Simple sugar content determination

The precise measurement of the temperature during measurement and the automatic temperature compensation using built-in ICUMSA tables ensure highly reliable Brix% results.

PortableLab™ – Lab power in your hands! Refracto is delivered in a special case which contains everything you need for successful measurements: Pipettes for sample handling, cleaning towels, flasks for samples and cleaning solutions, operating instructions and a CD-ROM with data transmission software, a tutorial to get started and more.

PortableLab™

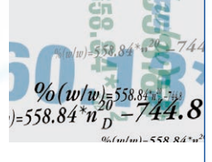
Food:
Reliable quality control

Wherever syrup concentrates, saline solutions or vinegar are produced: Refractometers are essential tools for quality control. The refractive index helps you make sure everything has gone right in the production process. With Refracto, you can perform your quality checks directly in the production facility.

Grapes and fruit:
Direct display

With Refracto, you can not only display sugar content in Brix%, but also choose direct conversion into °Oechsle, T.A. 1990, °KMW, °Baume, HFCS42 and HFCS55, which are shown directly after the measurement.

Customized applications:
Your own calculations



With Refracto, any concentration measurement can be performed without manual calculation. Just define the corresponding formula and the instrument gives you the final result.

Refracto: Desktop features in a handheld instrument

Ease-of-use

The clearly labelled keyboard makes operation easy and efficient.

Plain language interface

The backlit LC-Display of Refracto shows your results and settings in plain language. The simple and intuitive menu structure allows you to change the settings within seconds. You hardly need an instruction manual.

Temperature compensation

The refractive index of a sample depends on temperature. During measurement, Refracto determines the temperature and then corrects the refractive index to a standard temperature of 20 °C or any other temperature the user defines. To make quick measurements of different types of samples, you can easily switch between up to 10 user defined correction coefficients.

Measurement cell with temperature sensor

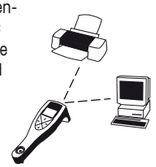
Refracto determines refractive index using the total reflection method. The glass prism of the measurement cell of the Refracto 30PX (right) is held by a stainless steel ring, whereas the prism of the Refracto 30GS (left) is made of sapphire, the ring of hard gold plated brass. Sapphire has a higher refractive index and a better thermal conductivity than glass. For this reason the Refracto 30GS has an extended measuring range and registers the sample temperature more quickly.

It is your choice: hand-held or bench-top

Refracto is a hand-held and a bench-top refractometer in one. You either place the instrument on a flat surface and add a drop of sample onto the measurement cell or immerse the cell directly into the sample.

Save and transfer your data whenever you want

Refracto stores up to 1100 results including sample identification, measurement unit, temperature compensation coefficient, date and time. You are free to transfer the data (together with an instrument identification) to a PC or printer any time using the infrared interface. The PC software to do this comes with Refracto.



PortableLab™

Specifications Refracto 30PX / Refracto 30GS

Measurement method: Determination of the angle of total reflection of the D-line of sodium (589.3 nm) • **Refractive index:** Measurement range: 1.32 – 1.50 (PX), 1.32 – 1.65 (GS), Resolution: 0.0001, Accuracy: ± 0.0005 • **Brix%:** Measurement range 0 – 85 Brix%, Resolution: 0.1 Brix%, Accuracy ± 0.2 Brix% • **Temperature:** Measurement range: 10 – 40 °C, Resolution: 0.1 °C, Display: °C or °F, Ambient temperature: 5 – 35 °C • **Units of measurement:** nD, nD temperature compensated, Brix%, HFCS42, HFCS55, T.A. 1990, °KMW (Babo), °Baume, °Oechsle (D, CH), w/w%, v/v%, spec. gravity and freezing point (°C or °F) for ethanol and NaCl, w/w%, v/v% and freezing point (°C or °F) for ethylene glycol and propylene glycol, w/w% and v/v% for isopropanol, user defined unit • **Temperature compensation:** With user-defined temperature compensation coefficient (nD temperature compensated, user defined), or automatically (all other units). Up to 10 temperature correction coefficients can be stored in the instrument • **Calibration:** With pure water • **Data memory:** For up to 1100 results (result with unit, sample identification, temperature correction coefficient, date and time) • **Display:** Backlit LC-Display • **Interface:** Infrared for data transfer to PC and printer (IrDA or RS232C) • **Weight:** Approx. 250 g • **Batteries** 2 x LR3, 1.5 V, type AAA approx. 60 hours battery life (one measurement per minute) • **Materials:** Housing: PBT. Measurement cell (PX): Glass, stainless steel. Materials with sample contact (PX): Glass, stainless steel, PBT. Measurement cell (GS): Sapphire, hard gold plated brass. Materials with sample contact (GS): Sapphire, gold, PBT.

PortableLab™

Refracto 30GS www.mt.com/**refracto**
portable
high-end
refractometer

Refracto 30PX www.mt.com/**refracto**
portable
refractometer

Densito 30PX www.mt.com/**densito**
portable
density meter

Seven2Go www.mt.com/**Seven2Go**
Portable instruments
for pH, Ion,
Cond, and DO
measurements

Quality certificate. Development, production and testing according to ISO 9001. Environmental management system according to ISO 14001.

Worldwide service. Our extensive service network is among the best in the world and ensures maximum availability and service life of your product.

European conformity. The CE conformity mark provides you with the assurance that our products comply with the most recent EU directives.

On the Internet. You will quickly find lots of essential information about our products, our services, and our company at

www.mt.com

METTLER TOLEDO
gone global...

the contact addresses of METTLER TOLEDO representatives globaly can be found under the Internet address **www.mt.com/contacts**

otherwise:
Mettler-Toledo GmbH
PO Box VI-400, CH-8606 Greifensee
Phone +41-44-944 22 11, Fax +41-44-944 31 70

Mettler-Toledo GmbH, Analytical
CH-8603 Schwerzenbach, Switzerland
Phone +41 44 806 77 11
Fax +41 44 806 73 50
Internet: www.mt.com

Refracto 30PX / 30GS

Refractometer

PortableLab™

METTLER TOLEDO

GDRP Guideline

GDRP™

- Limit risks
- Minimize errors
- Improve quality
- Reduce costs
- Protect your investment

Reliable Results

for Density and Refractive Index

METTLER TOLEDO

GDRP™
What is it Exactly?

GDRP™ – Good Density and Refractometry Practice™ is a 5-step guideline to improve your Lab process. It covers the entire lifecycle of your instrument and helps to improve quality while reducing risks and costs.

Dependable density and refractive index measurement index starts long before daily routines in the laboratory. A requirements-based selection of the system, as well as professional installation and training form the basis for dependable and risk-free measurement. GDRP reduces the risks associated with density and refractive index analysis and facilitates:

- Compliance with regulations
- Preservation of the accuracy and precision of results
- Increased productivity and reduced costs
- Professional qualification and training

Why are Density and Refractometry in the same program?

Both methods are often used for the same application. Either Density or Refractometry can give the same information, e.g. Brix%, other concentration% or passed/failed result. The selection of the best suitable instrument is an important step to minimize costs and improve quality.

In addition:
- One technique can complement the other
- Both techniques can be combined in one workflow, often to determine the "fingerprint" of a sample

Dependable analytics

Correct equipment used in a suitable environment by well-trained people is the prerequisite to reliable and reproducible results.

GDRP™

Good Density and Refractometry Practice

5 Steps
to Excellence

For all 5 major steps of Good Density and Refractometry Practice™ METTLER TOLEDO offers comprehensive support, so that you invest in suitable equipment and services. Minimizing your risk will improve your performance.

Step 1 – Evaluation

Selecting the right analytical system not only involves knowing your current needs, but must also take into account future requirements. Secure the first few steps on the right path by using our professional consulting services and documentation of your requirements.

Step 2 – Selection

Once the actual and future needs have been clearly identified, the best suitable analytical system can be selected. This includes not only the measuring instrument, but also automation and software if required.

Step 3 – Installation

Correct installation is crucial to guarantee the best working conditions as well as longevity for the selected system. Trouble-free operation starts with the selection of the location, the best suitable tube connections, as well as correct connection to other measuring cells, automation units and/or computer.

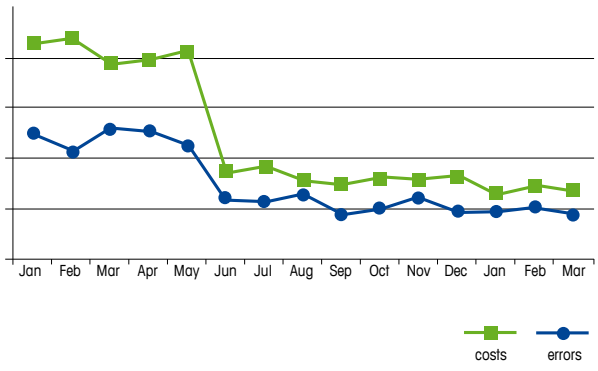
Step 4 – Qualification

After installation, the system has to be qualified for the operations it needs to fulfill. Professional commissioning and qualification of the analytical instrument is required. These activities need to be documented in a way that's easy to understand and traceable. Professional training is included, which gives you the confidence and skills to operate the instrument correctly.

Step 5 – Routine Operation

Well-trained users and regularly-maintained instruments reduce the likelihood of day-to-day measurement errors, preventing potentially expensive follow-up costs. Our expertise and experience is available in the form of comprehensive literature, trained sales consultants, seminars and specifically-tailored services for regular care and maintenance. This helps minimize the most common risks with minimal effort.

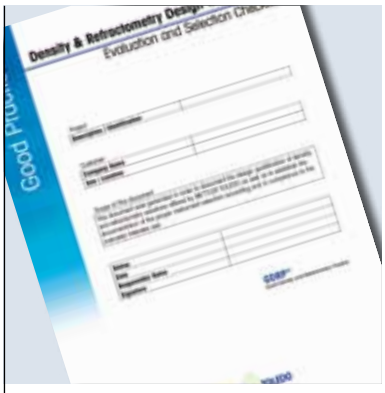
Improved performance



5 steps to excellence decrease error rate and costs (GDRP introduced in May)

Documented Processes
Professional and Fast

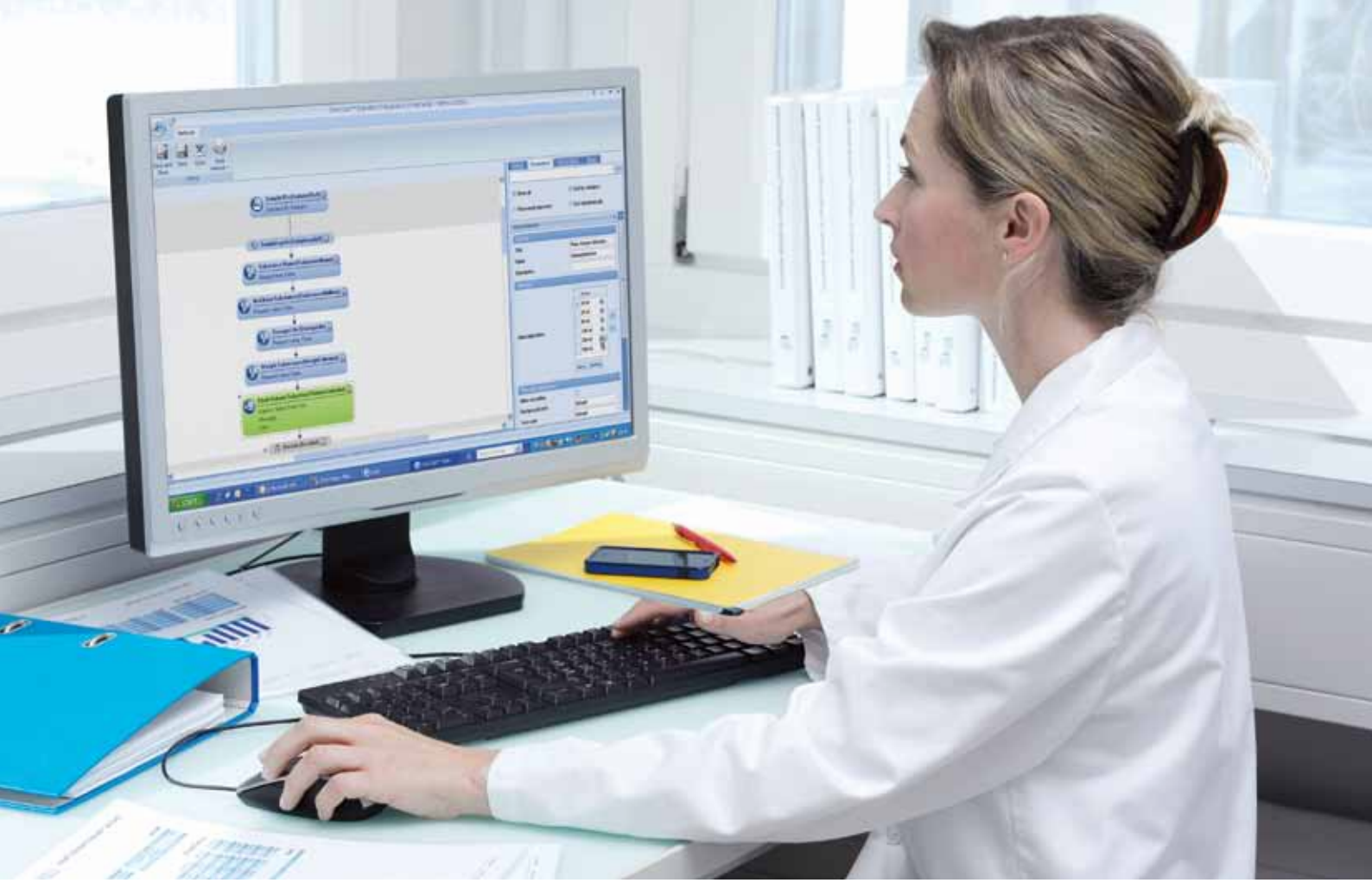
Professional commissioning, training, qualification and seamless documentation guarantee compliance with your process requirements from the very first step.



DQ –
Design Qualification
This tool helps you to define your current and future requirements together with our consultant, in order to select the best suitable system for your application and secure your investment for the future.

IPac –
Initial Qualification Package
IPac is the quick and easy solution for instrument qualification. It includes the Installation Qualification and Operational Qualification processes (IQ/OQ), which are performed professionally and documented accordingly.

EQPac –
Equipment Qualification Package
EQPac is a comprehensive qualification solution, meeting the strictest regulatory demands and requirements. Detailed documentation with a professionally-executed qualification procedure, ensures conformity and establishes complete traceability from the very start.



EduPac –
Education Package
Under the watchful eye of our specialist, this training package helps you familiarize yourself with the instrument, and learn efficient operation through practical exercises.

- Configuration and setup
- Plug & Play concept
- Manual operations
- Structure of methods and analyses

LabX® software validation
METTLER TOLEDO supports you, providing validation of the LabX® software.

Validation service
On-site support for validation.

Re-validation service
Information package including all forms required for re-validation following LabX® upgrade or update.

Validation manual I
Contains all information required for qualification of METTLER TOLEDO as a software manufacturer.

Validation manual II
Contains all regulations and forms required to perform LabX® validation.

The Right Tool
for Every Step

Step	Tool
1 Evaluation	Design Qualification
2 Selection	Design Qualification
3 Installation	IPac (Initial Qualification Package)
4 Qualification	EQPac (Equipment Qualification Package) LabX validation manual I LabX validation manual II
5 Routine Operation	EduPac (Education Package)

Get an Idea of Your Risk

Perform your own risk check with our web-based tool:

www.mt.com/GDRP-riskcheck

www.mt.com/GDRP
For more information

Mettler-Toledo AG, Analytical
CH-8603 Schwerzenbach, Switzerland
Tel. +41 44 806 77 11
Fax +41 44 806 72 40