MICROTRAC
a VERDER company



MULTI-SAMPLE STABILITY ANALYZER

TURBISCAN TOWER

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The TURBISCAN TOWER is a 6-sample macroscopic & colloidal stability analyzer and the flagship product of the TURBISCAN range. Based on the powerful SMLS technology it offers fast, precise, and quantitative stability measurement of formulations (emulsions, suspensions, foams). The TURBISCAN TOWER offers 6 independent measurement positions allowing simultaneous formulation comparison or providing flexibility when working on different projects. It allows for a fast and accurate assessment of the stability and aging of any formulation (highly concentrated and opaque to water-like systems). Any changes occurring in the dispersion, like sedimentation, flocculation, creaming, and coalescence will be detected and quantified right away. Not only does it save time thanks to the extreme sensibility of the SMLS technology, but it also enables accelerated stability tests by varying the temperature (widest temperature range 4 to 80°C) and follows ISO recommendations (ISO/TR 13097:2013, ISO/TR 18811:2018). The stability measurement is done with a non-invasive and non-destructive technique, preserving the integrity and originality of the samples. The results are saved into the software but are also displayed on the front screen with a simple reading of the stability thanks to a simple color code. The TURBISCAN TOWER helps to design, improve, and monitor the quality of formulation and dispersion cost-effectively and reliably. This helps to quickly make decisions based on facts.



* Image shows new product design – available starting April 2024

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THE WORLD LEADER IN STABILITY ANALYSIS

- Accelerated destabilization detection – up to 1,000 x faster than visual observation thanks to SMLS
- 6 independent measurement positions
- Real stability: sample stability analysis without the need for dilution or mechanical stress, in concentrations up to 95%
- Temperature range from 4°C to 80°C to accelerate measurement times and observe destabilization under real storage conditions
- Quantitative measurements of dispersion stability and shelf-life, migration velocity, particle size diameter, and other parameters
- One-click stability ranking with the TURBISCAN Stability Index
- Laboratory space is precious: minimized instrument footprint
- Front LCD screen with measurement status and stability results

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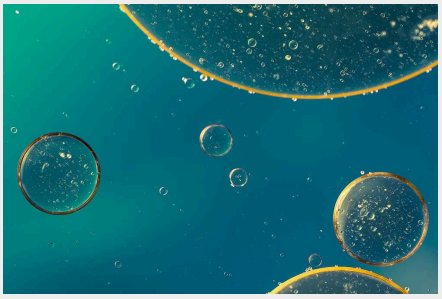
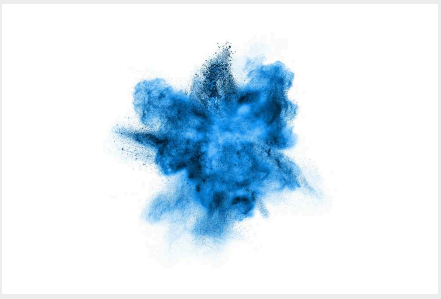
TYPICAL APPLICATIONS

Whenever you are working with suspensions, emulsions, colloids, or foam, the TURBISCAN is your ideal characterization companion. The TURBISCAN series is used in various industries such as pharmaceuticals, cosmetics, food and beverage, paints and coatings, oil and gas, batteries, agrochemicals, chemistry, and much more.



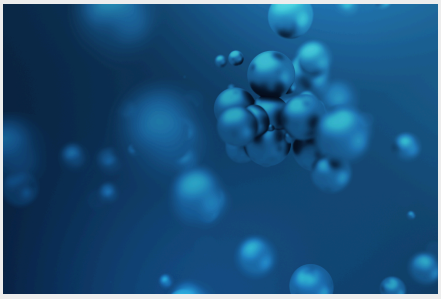
emulsions

- Cosmetic creams and lotions
- Dairy products and beverages, flavor emulsions
- Pharmaceutical parenteral and topical forms
- Metalworking fluids
- Agrochemical: fertilizers, pesticides, ...
- Petroleum emulsion



suspensions

- Paints, inks, and coatings
- Drug & vaccine suspension
- Make-up and sunscreen
- Chemical & polymer industry
- Ceramics and catalysts
- Battery slurries
- Electronic slurries



colloids & nanoparticles

- Drug delivery system: LNP, Liposomes, ...
- Research on nanoparticles and nanoparticle suspension
- Polymer and biopolymer dispersion

... and many more!

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APPLICATION EXAMPLES

FAST DETECTION OF SETTLING PARTICLES

SEDIMENTATION



The TURBISCAN technology offers a significantly faster (up to 1,000 times) and more reliable detection of sedimentation compared to visual observation. Furthermore, naked-eye observation makes it difficult to calculate the migration rate and is prone to error and misinterpretation. In contrast, the TURBISCAN technology provides a fast and non-destructive way to detect and quantify sedimentation and particle size over time and can detect even small changes in highly concentrated samples without any dilution or mechanical stress. This makes it ideal for analyzing complex suspensions and formulations, and getting a quicker, reliable, and more accurate answer on sedimentation monitoring.

FAST DETECTION OF DROPLET MIGRATION

CREAMING OF EMULSIONS



When it comes to measuring droplet migration and creaming behavior in emulsion systems, the TURBISCAN technology has several advantages for formulators. On one hand, it provides a fast measurement (up to 1,000 times faster than visual observation) of native samples and a non-destructive way to detect and measure droplet migration. On the other hand, the migration rate can easily be determined and helps the formulator to compare

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formulas, making it ideal for analyzing complex emulsions with a wide range of droplet sizes and concentrations. Additionally, the TURBISCAN technology provides insights into the mechanisms driving droplet migration, which can be used to improve formulation and processing conditions. Overall, the use of TURBISCAN technology in emulsion analysis leads to faster, more accurate, and more reliable results compared to traditional methods.

SAVE TIME TO MEASURE PHYSICAL STABILITY

FORMULATION: STABILITY MEASUREMENT AND SHELF-LIFE ESTIMATION



The TURBISCAN has been extensively used to measure the physical stability of formulations and colloidal systems. This technology helps the formulator to save time and precisely rank and quantify the samples' stability in different trials or batches. It applies to native samples, even on very highly concentrated formulations. Not only saving time, the TURBISCAN also provides destabilization speed and metrics as well as robust analytics to make shelf-life predictions. The TURBISCAN technology follows ISO/TR 13097:2013's recommendations and is ideal when it comes to quickly and accurately measuring stability. Stop the guesswork and make decisions based on facts!

WHAT CAN BE MEASURED CAN ALSO BE IMPROVED

STABILITY MAPPING: EMULSIONS AND SUSPENSIONS

Measuring the stability of emulsions and formulations is traditionally done by visual observations. In addition to being long and tedious,

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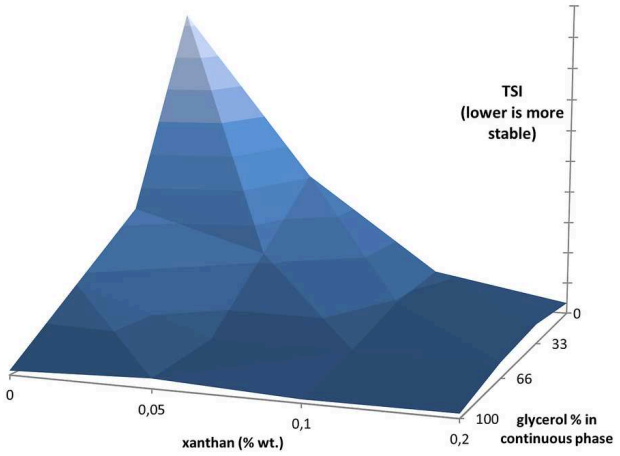
the visual inspection of emulsion destabilization usually ends up with a pass / fail answer. This is suboptimal for fine-tuning the ideal concentration of surfactants or stabilizers to be added to reach the desired shelf-life. The TURBISCAN is a great help in this regard; not only does it save a huge amount of time to detect the destabilization, but it also provides a value based on the instability and ranks different formulas as a function of their shelf-life. It hence produces objective and repeatable data to make a better, greener, and safer product.



Example image of Superabsorbent Polymers (SAP)

STABLE PRODUCTS FOR SAFER AND MORE EFFICIENT PHARMACEUTICAL SUSPENSIONS

VACCINE AND PARENTERAL DISPERSIONS

Stability and shelf-life testing are essential for pharmaceutical products and drugs. Destabilization or instabilities in vaccines, parenteral dispersions, or pharmaceutical products can have a major impact on product efficacy, and in some cases, on patient safety. While many techniques are available, the TURBISCAN offers in-situ, non-dilution, and non-destructive measurements to detect destabilization and save time therein. It provides a clear, precise, and objective stability measurement, essential to making fast and right decisions in R&D or quality control. The TURBISCAN has been intensively used to study the stability and redispersion capability of vaccines, as well as of parenteral and injectable dispersions and providing scientists with a deep insight into the dispersion state and its evolution.



HOMOGENOUS SLURRIES FOR HIGHER BATTERY PERFORMANCE

IMPROVING BATTERY

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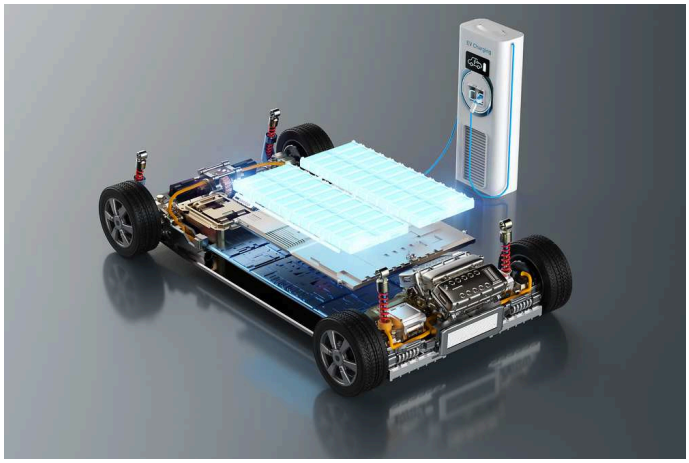
EFFICIENCY



There is an exponential demand for energy storage and batteries, either to cover our need for mobility and communication or to match environmental challenges. Lithium-ion batteries are the most widely used technology, and one of the key steps in developing and manufacturing them is the slurry formulation (used on the electrodes), ensuring the final battery quality. This slurry is usually highly concentrated and dark (due to a high concentration of carbon black) and using conventional light scattering techniques for evaluation is challenging or requires an important amount of dilution. The TURBISCAN has been successfully used to monitor the stability of these slurries and helps the formulator to optimize the formulation, test the production, and identify new raw materials.

To find the best solution for your particle characterization needs, visit our application database

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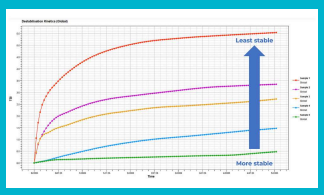
ROBUST SOFTWARE, ROBUST RESULTS

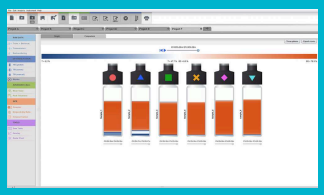
TOWERSOFT FOR THE TURBISCAN TOWER

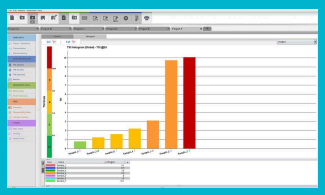


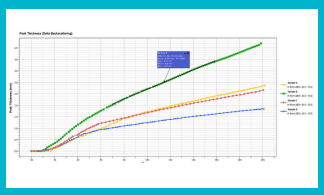
Data acquisition, interpretation, and export are done with TURBISOFT, the dedicated and intuitive software for the TURBISCAN range. TURBISOFT has been developed for and is continuously optimized towards more intuitive and straightforward data analysis, hence saving time and helping users to get the results they need in a few clicks.

- Intuitive and straightforward navigation
- Fast and robust stability comparison thanks to the TSI algorithm
- Advanced calculation for deep data analysis: migration rate, mean particle size evolution, phase separation, and more
- Stay up to date: free license – free software updates
- Need to use multiple computers? This multi-user software has you covered
- Data export as easy as copy-paste
- Video recording of sample destabilization for up to 6 samples
- Fully guided calibration check-up procedure
- Multi-language support: English, Spanish, French, Chinese, Japanese, German, and more









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ACCESSORIES AND OPTIONS

Several options are available to sample and test the stability of your products. From standard, disposable 20 ml vials glass vials to small volumes (down to 2 ml) and to match your specific needs (syringe type, very high viscosity sample ...). We got this covered!



Standard Vials (20 ml)

Cylindric glass vials have a recommended volume of approximately 20 ml. They are disposable to avoid chemical or bacterial contamination and decrease labor costs for washing and drying. The vials are closed thanks to a cap and a disposable PTFE seal to prevent evaporation in case of elevated temperature. These vials are meant to reproduce your visual stability test.

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Small Volume (4 ml)

Small sample volume? No problem. Small-volume vials and the specific adapter are available. The measurement can be done with as few as 2 ml. Another good news: the sample can be fully recovered, and TURBISCAN measurement is non-contact / non-destructive.

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On-Demand Adaptors (for Syringes, Pressurized Vials)

You have special needs, and we understand this! Our development team loves challenges: on-demand adapters can be offered (pre-filled syringes, pressurized vials, ...). Perfect to study the stability in specific conditions (pressure) or for Quality Control.

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Open-Bottom cells - For Viscous and Fragile Samples

There are samples that are either difficult to transfer or too fragile to be poured – the coring vials set helps to bypass this problem. The open base (which is manually closed with a stopper) allows a sticky sample or foam to be easily removed with the coring vials.

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Calibration Standards

Each TURBISCAN comes with a set of standards to check instrument calibration. The TURBISCAN software, TURBISOFT, guides you step by step and once the procedure is finished, the software gives an "OK" signal. The test and results are saved, and the instrument checking procedure can be tracked.

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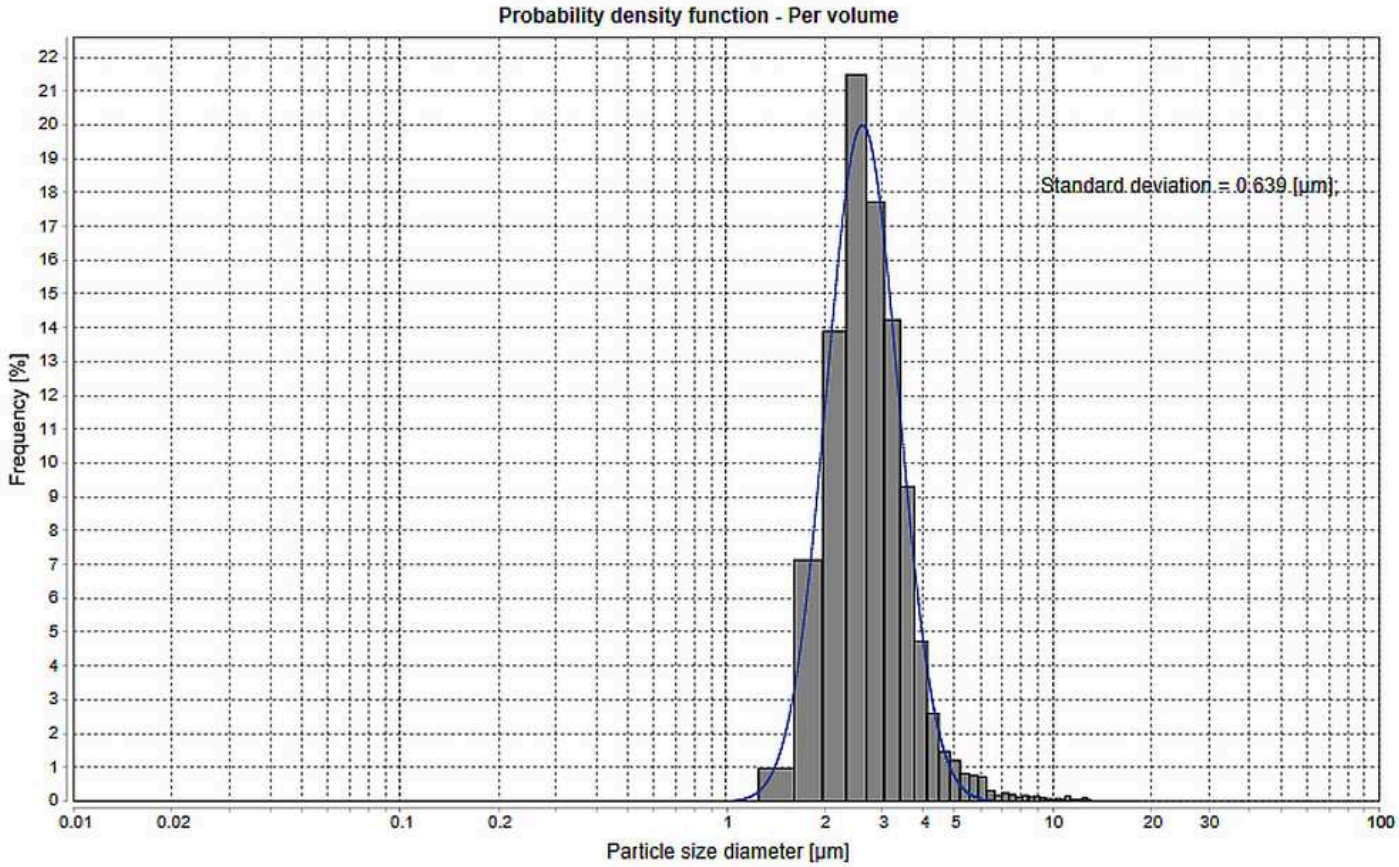

Particle Size Distribution

The TURBISIZE software can measure the distribution of particle size (ISO13317) and the distribution of migration speed for any data obtained with a TURBISCAN, without any need to dilute, prepare, or modify the sample.

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TURBISCAN TOWER

TECHNICAL DATA

Automatic sample recognition (bar-code)	Yes
CE Certified	Yes
Dimensions	38 x 45 x 90 cm
Standards	ISO/TR 13097:2013, ISO/TR 18811:2018, ISO/TS 22107:2021, ISO/TS 21357:2022
Measured size range	10 nm - 1 mm
Wavelength	880 nm
Measuring Principle	Static Multiple Light Scattering (SMLS)
Particle size distribution	Yes (additional software required)
Number of Samples	1 - 6
Reproducibility / Repeatability on latex standards	+/- 0.05% / 0.05%
Sample concentration	0.0001 - 95% v/v
Sample volume	2 - 20 mL
Scan step resolution	20 µm
Software	TurbiSoft Tower
Temperature range	4 - 80°C
Weight	51 kg

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