MICROTRAC
a VERDER company

HIGH-THROUGHPUT STABILITY ANALYZER

TURBISCAN AGS

Stability is one of the key parameters for the development and quality control of dispersed systems, such as emulsions, suspensions, or foams.

Assessing the stability of such systems requires reliable and sensitive methods that can detect and quantify the physical phenomena involved, such as creaming, sedimentation, flocculation, or coalescence. The TURBISCAN AGS is a high-throughput stability analyzer to shorten formulations' time-to-market and for quality control.

The TURBISCAN AGS combines:

- TURBISCAN & SMLS technology for fast, quantitative, and reliable stability and shelf-life measurement
- Automated sample handling system working 24/7

TURBISCAN AGS is the ideal companion when dealing with large batches of samples, it operates 24/7 and without any human intervention, saving time on stability measurement and giving you the time to focus on what matters.

* 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
- Real stability: sample stability analysis without the need for dilution or mechanical stress, in concentrations up to 95%
- Fully automated robot station, working 24/7 without any user intervention
- 3 thermo-controlled storage racks (from RT to 60°C) to simulate storage conditions and accelerate even more stability evaluations
- 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
- Analyze up to 54 samples

HIGH-THROUGHPUT STABILITY ANALYZER TURBISCAN AGS

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!

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

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,

Example image of Superabsorbent Polymers (SAP)

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.

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 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

SECURE YOUR DATA COLLECTION

TURBISOFT AGS SOFTWARE FOR TURBISCAN AGS

When dealing with high-throughput analysis, software is essential to generate and treat all the data generated. The TURBISCAN AGS comes with 2 software packs: TURBISOFT AGS to secure your data collection as well as the sample handling, and TURBISOFT to interpret the data, compare the sample stability and generate reports. This offers the flexibility and freedom to acquire data and interpret the analysis on different computers and in different locations, all at the same time. TURBISOFT AGS has been designed for data acquisition, is user-friendly and only requires information to automatically start and run the analysis. TURBISOFT interprets and exports the results and has an intuitive and user-friendly interface to get the desired result with just 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

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ACCESSORIES AND OPTIONS

The TURBISCAN AGS comes with all you need to perform dispersibility and stability studies:

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.

Robot Handling and Gripper

Robotic movement and sample grabbing have been fine-tuned for smooth and robust sample handling from the temperature chambers to the measurement units. The cycling time for a sample is less than a minute.

Storage Racks

Between measurements, the samples are stored in temperature-controlled racks. The TURBISCAN AGS comes with 3 separate and independent sample racks and each be set from RT+5°C up to 60°C (optional: 90°C)

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.

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.

TURBISCAN AGS

TECHNICAL DATA

Acquisition scan step	40 µm
Automatic sample recognition (bar-code)	Yes
CE Certified	Yes
Dimensions	145 x 75 x 85 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	54
Reproducibility / Repeatability on latex standards	+/- 0.05% / 0.05%
Sample concentration	0.0001 - 95% v/v
Sample volume	20 mL
Software	TurbiSoft AGS
Temperature range	RT - 60°C (3 racks) - 90°C on demand
Weight	50 kg

www.microtrac.com/turbiscan-ags