



SMART SOLUTIONS FOR DISPERSIONS CHARACTERIZATION

Formulation
Smart scientific analysis

STABILITY & SIZE

Proudly Represented By:

 **Particulate
Systems**
a division of micromeritics



A microscopic image of a dispersion, showing numerous spherical particles of varying sizes. The particles are dark and have a bright, reflective center, giving them a 3D appearance. They are distributed across a lighter, textured background. The image is tilted diagonally from the top-left to the bottom-right.

STABILITY & SIZE

MASTER YOUR DISPERSION'S STABILITY

STATIC MULTIPLE LIGHT SCATTERING

OPTICAL MEASUREMENT OF PARTICLE CONCENTRATION AND SIZE



TURBISCAN IS THE REFERENCE FOR STABILITY ANALYSIS

Turbiscan is used world-wide to detect at an early stage all kinds of destabilization such as coalescence, flocculation, creaming, sedimentation, etc... Various products such as emulsions, suspensions or foams can be studied from low to high concentrations without any sample preparation or dilution.

Stability kinetics and index are measured for an efficient sample analysis and comparison.

S-MLS SOLUTIONS

The Turbiscan uses Static Multiple Light Scattering in both Transmission (T) and Backscattering (BS) mode, in order to analyze low and high concentration dispersions.

T & BS signals depend on particle size (d) and concentration (ϕ):

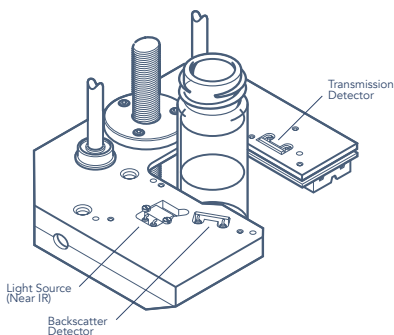
$$BS \ \& \ T = f(d/\phi)$$

- Size range: 10 nm to 1 mm ;
- Concentration range: 0.0001 to 95% v/v ;

SCAN CONFIGURATION

The Turbiscan acquires T & BS every 20 microns along the sample height, thanks to a patented scanning reading head.

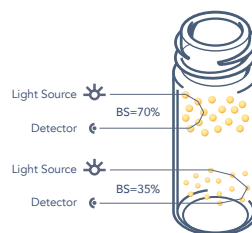
Scans are repeated during sample aging time to detect any variation of the signal due to a destabilization, such as particle migration and/or particle size variation.



DATA REPORTING

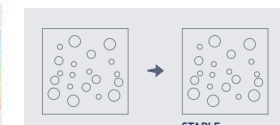
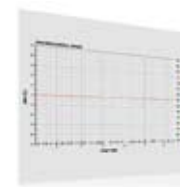
The software provides multi-level data treatment for both experts and non-experts.

- The Turbiscan Stability Index (TSI) is a one-click feature providing a key value that describes the global stability of the sample. It is a quick and easy way to characterize the sample, and enables the user to compare & rank various formulations.
- Kinetics computation based on the raw signal allows detailed identification and quantification of the phenomena taking place in the samples, depending on size and concentration variations.
- The user can compute the evolution of the mean particle diameter or concentration during the aging of the product in any part of the sample. This enables the user to control the dispersibility of particles, and monitor aggregation, in native dispersions, as recommended by ISO TR 13097



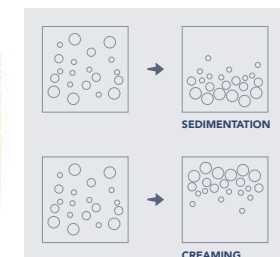
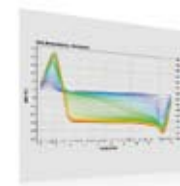
STABILITY

No variation of BS and T



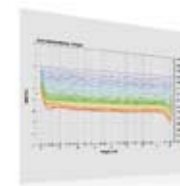
PARTICLE MIGRATION

Local peaks of variation of BS or T



PARTICLE SIZE VARIATION

Global variation of BS or T on the whole height





TURBISCAN CLASSIC 2

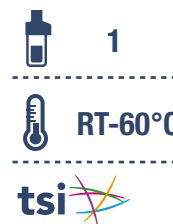
STABILITY & SIZE

Basics of the technology for short-term stability, and QC Labs

Turbiscan™ Classic helps to optimize pre-formulation work by giving a quick insight into the instability phenomena. This updated version of the first Turbiscan is still a success after 20 years.

- Identification and quantification of instability
- Quick and reliable
- Portable and robust

STABILITY & SIZE



TURBISCAN LAB

STABILITY & SIZE

The reference stability analyzer

Accelerate and document aging tests for a fast and deep understanding of destabilization mechanisms (creaming, sedimentation, flocculation, coalescence). Turbiscan™ LAB can be used in both R&D labs for formulation development and QC labs to control the stability of raw materials and final products.

- Identification and quantification of instability
- Long-term stability analysis
- From RT to 60°C



Turbiscan Stability Index

Based directly on the raw data, this unique number takes all destabilization into account, providing you with a powerful tool to rank & compare all your formulas in just one-click.

Determining shelf-life of your products has never been easier!



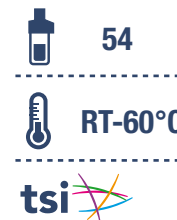
TURBISCAN TOWER

STABILITY & SIZE

The new reference, 6 times better

The brand new flagship of the Turbiscan range to fully characterize the stability of concentrated dispersions (emulsions, suspensions, foams). Discover its new patented mechanical design, for an even better performance.

- Up to 6 samples at a time
- From 4°C to 80°C
- Higher vertical resolution: acquisitions every 20 microns.



TURBISCAN AGS

STABILITY & SIZE

High throughput stability analyzer

High throughput screening is more and more useful to shorten the formulations time-to-market. Turbiscan™ AGS integrates the Turbiscan™ LAB, autosampler, a storage station and a smart software for automatic sample handling and treatment. This concept enables an automated management of aging tests from sample storage at different temperatures to shelf-life determination.

- Up to 54 samples
- 3 storage racks from RT to 60°C
- Traceability, reproducibility, objectivity



PHARMACEUTICALS



- Vaccines: Kinetic of particles aggregation and sedimentation (proteins, metal oxides...).
- Skin lotions and creams: Detection of coalescence and creaming up to 200 times faster than visual test.
- Ophthalmic suspensions: Study of the re-dispersion of active ingredient after storage.
- Inhalers (pMDI): Study of particles aggregation & sedimentation in pressurized measurement cells.

ELECTRONICS



- Slurries (CMP...): easily check the homogeneity & stability of slurries before next steps of the process.
- Electronic components (MLCC...): quality of the dispersion state during the production of Multi-Layer Ceramic Capacitors.
- Display (LCD, LED, e-Paper, QD...): influence of additives on dispersion stability.
- Energy (Solar cells, Fuel cells, Secondary battery, DSSC...): quality and homogeneity of the inks coated onto solar cells.
- Printed electronics (Conductive inks, RFID, Flexible displays...): check the size variation of nano particles in electronic inks.

BENEFITS

NON-CONTACT MEASUREMENT: TRUE STABILITY

Measurement is done without any mechanical or external stress, and without any dilution. This allows the true aging of the product to be monitored.

OPTICAL AND THERMAL ACCELERATION

Thanks to the high optical resolution and the possibility of high storage temperatures, stability tests have never been faster (up to 200x faster than visual observation).

IDENTIFICATION AND QUANTIFICATION

Easily identify and quantify the destabilization phenomena in the samples, in order to rank and compare all your formulas.

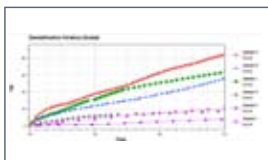
CONCENTRATED MEDIA

Access to real stability information for concentrated or diluted dispersions (0 to 95%v/v) over a wide range of particle size (from 10 nm to 1mm).

TURBISOFT

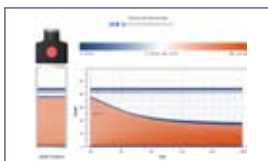
Your dispersions stability at a glance !

ISO
TR 13097
COMPLIANT



TURBISCAN STABILITY INDEX

From nascent destabilisations to complete phase separations, just 1-click to rank and compare all your samples!



DESTABILISATION MOVIES

Be sure to understand what happens by replaying the destabilization movie with a very visual animation.



RADAR CHARTS

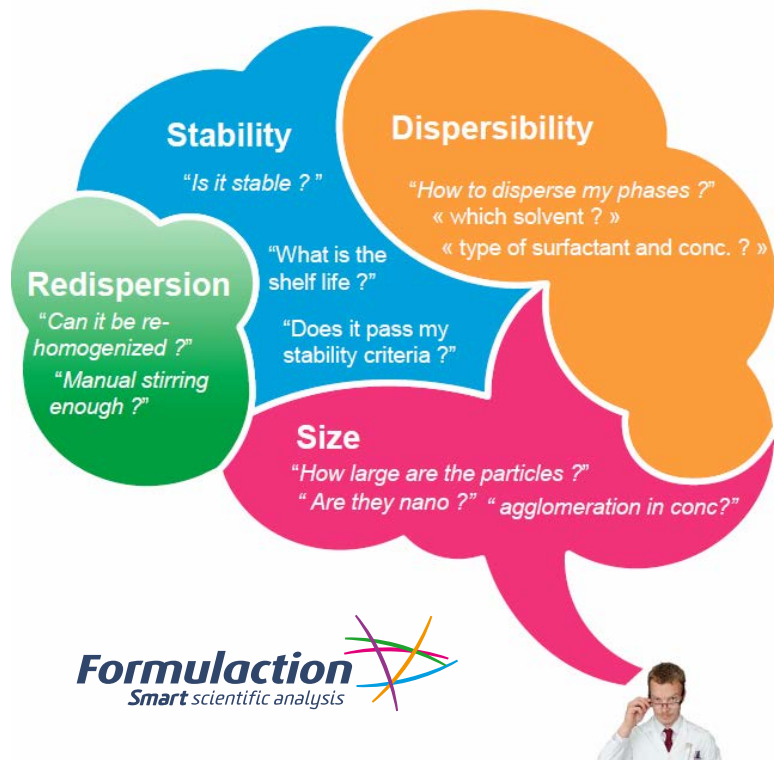
Easily monitor several parameters on the same graph, and always be sure that you choose the best sample, according to YOUR criteria!

size

SIZE AND DISPERSIBILITY

Characterize the dispersibility of your particles in a native dispersion, by measuring their mean diameter (detect flocks or aggregates).

	TURBISCAN CLASSIC2	TURBISCAN LAB	TURBISCAN TOWER	TURBISCAN AGS
	STABILITY & SIZE	STABILITY & SIZE	STABILITY & SIZE	STABILITY & SIZE
Emission (Light Source)	850nm	880nm	880nm	880nm
Detection	MLS	MLS	MLS	MLS
Cell Volume	7ml	4 or 20ml	4 or 20ml	20ml
Quantitative monitoring of dispersion stability	•	•	•	•
Migration velocity & hydrodynamic diameter	•	•	•	•
ISO TR 13097 Compliant	•	•	•	•
ASTM D-7061 Compliant	Oil Series	•	•	•
Disposable glass cells	•	•	•	•
Turbiscan Stability Index (TSI) computation	•	•	•	•
Automatic reporting	•	•	•	•
Automatic samples recognition (bar-code)	•	•	•	•
Temperature control	•	RT+5°C to 60°C	4 to 80°C	RT+5°C to 60°C
Mean diameter and volume fraction	•	•	•	•
Multi-samples	•	•	6	54
Storage at 3 different temperatures	•	•	•	•
Dimensions (cm)	27.5x13x23.5	38x42x32	35x45x90	145x75x85
Weight (kg)	5	13	45	50
Recommended PC configuration	Intel Dual Core @ 2.5Ghz or AMD X2 processor / 4Gb RAM, USB / Microsoft Windows XP or newer, 32/64 bits			



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