

Turbiscan Stability Scale

- The stability criteria and correlation to visual observation -

THE NEXT STEP FOR STABILITY COMPARISON:

The Turbiscan® Stability Index has been introduced for a fast, robust and objective quantifying of sample evolution over time in one single click. Ever since, the TSI is becoming more and more THE criteria used to compare sample stability evolution, extensively used in research and development, quality control and academic researches.



Questions that remain when using the TSI are: *How significant is the TSI value? Which value allows to consider the sample stable? How much different are the samples in terms of global physical stability? ...*

From our deep experience with stability and particle size characterization (25+ years), and the knowledge of the static multiple light scattering (S-MLS) technology we can correlate the **TSI value** with a **visual observation** for better analysis of the TSI values and stepping towards the stability prediction.

WHAT IS THE TSI?

The Turbiscan® Stability Index is a dimensionless number that is a result of summing all occurring destabilization phenomena in the sample that can be measured by noticeable change of the backscattering or transmission signal intensity along the sample height (for more information about the calculation see the note TS_STAB_60). These signal variations are directly linked to any destabilization in the sample, thus the higher the TSI value, the lower the stability.

ORIGINS OF THE TSI SCALE?

While TSI provides fast, quick and robust number for sample comparison, questions remain about the intensity of the destabilization and correlation with visual observation.

During our 25 years of experience in characterizing liquid dispersions and colloidal systems, at Formulation we have gathered a significant amount of test results of stability measurements done with Turbiscan® that could be correlated with visual observation methods.

Our database contains thousands of sample examples of various types that our customers work with: from low to high concentrations, from nm to µm particle sizes, emulsions to particle suspensions... and covers most of the application fields: cosmetics, paint and coatings, food and beverages, including dairy products, pharmaceutical injectable formulations, oil and lubricant emulsions...

From this large database, a TSI scale has been set to correlate TSI number with destabilization intensity and correlated to visual observation

UNDERSTANDING THE TSI SCALE:

While the TSI is a dimensionless number, it is a function of time. However, the time of calculation is not to be disregarded when ranking samples. TSI values should be compared at the same aging time.

Once the TSI value, corresponding to a given state of destabilization, is calculated, the series of samples can be ranked and compared. The values are associated with a color that allows for a direct analysis and sample validation.

