Application Overview

Food & Beverage Stability

Stabilizing beverage emulsions is a challenging task, since these emulsions are usually highly concentrated, quality of their raw materials may vary, emulsions have to resist to high level of dilution, viscosity should not be too high, etc. Emulsion destabilization can include size variation which will affect the taste and the long term stability ('ring' formation), as well as particle migration (sugar, pulp, proteins). These phenomena may lead the consumer to consider the product as poor quality. Therefore understanding and enhance the stability of such products is very important to ensure the best customer perception and the conservation of taste over the time.

APPLICATIONS

- **Dairy product:** Quantify and detect characteristic destabilization of milk-based products: droplet size variation, creaming of fat globules, sedimentation of calcium or chocolate particles.
- **Flavor emulsion:** Kinetics of coalescence and flocculation without diluting the sample.
- **Soft drink:** Detection of ring formation, color change, pulp/sugar/proteins sedimentation.
- **Dessert:** Detect destabilization phenomena of cream, dessert foam, ice cream.
- **Raw material:** Monitor sharply the efficiency of stabilizers, thickeners, etc.

STRENGTHS

- Shorten analysis time: up to **200 times faster** than visual test
- **Detect** and **quantify** any destabilisation (sedimentation, flocculation, creaming, agglomeration, size variation)
- **Turbiscan Stability Index:** to compare quickly different samples
- **No dilution** & **non intrusive** analysis : **Real shelf life**
- **Temperature** range from 4°C to 80°C
- An **objective** method with graphical and **numerical** data
- Quick **screening** of new formulation

KEY NUMBERS

1200+ publications
200+ patents
50+ countries representation

LITERATURE

Application note (over 150):

- Effect of Fat Content on the Creaming of Milk ***Click here***
- Use of the Turbiscan for Measuring Foam Stability Properties of Food Ingredients ***Click here***
- Formulation of Chocolate Milk ***Click here***

Publications (over 1000):

- Particle size and stability of UHT bovine, cereal and grain milks, 2002 (A. Durand, G.V. Franks, R.W. Hosken) ***Click here***
- Impact of Weighting Agent and Sucrose on gravitational Separation of beverage Emulsions, 2000 (R. Chanamai, J. McClements) ***Click here***
- Factors Affecting Initial Retention of Microencapsulated Sunflower Seed Oil/Milk Fat Fraction Blend, 2007 (M. Cerdeira, G.G. Palazolo, R.J. Candal, M.L. Herrera ***Click here***

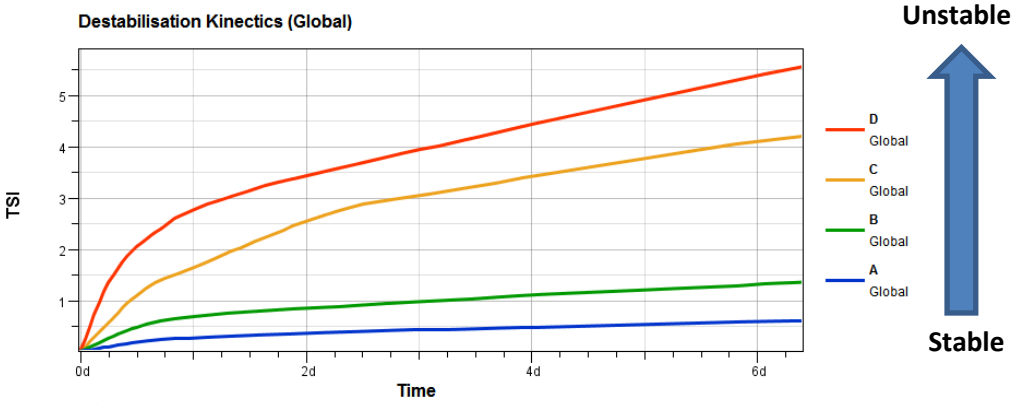
Note: For more applications notes & publications, www.formulaction.com

Food & beverage Stability

ONE CLICK STABILITY NUMBER

Stability analysis of 4 different flavor emulsions

The Turbiscan Stability Index is a one-click feature providing a key number depending on the global stability of the sample. It is a quick and easy way to characterize the sample stability. The TSI takes into account any destabilization. The higher is the TSI, the lower is the stability.



	TSI (**1 day**)	Visual observation
D	2.8	15 days
C	1.6	25 days
B	0.7	42 days
A	0.3	61 days

Conclusion:

The TSI is an easy tool to compare and rank all samples by order of stability. In this example only **1 day** is needed to rank 4 samples, versus almost 2 month with visual observation for the most stable sample. Sample A shows the lowest variation and is the adequate formulation for a given flavor.

SPECIFICATIONS

	TURBISCAN CLASSIC	TURBISCAN LAB	TURBISCAN TOWER	TURBISCAN AGS
Emission (Light Source)	850nm	880nm	880nm	880nm
Detection	MLS	MLS	MLS	MLS
Cell Volume	7ml	4 or 20ml	20ml	20ml
Quantitative monitoring of dispersion stability	•	•	•	•
Turbiscan Stability Index (TSI) computation	•	•	•	•
Migration velocity & hydrodynamic diameter	•	•	•	•
Disposable glass cells	•	•	•	•
Automatic reporting	•	•	•	•
Automatic samples recognition (bar-code)		•	•	•
Temperature control		T,E (RT+5°C to 60°C	4 to 80°C	RT+5°C to 60°C
Mean diameter and volume fraction		E	•	•
Multi-samples			6	54
Storage at 3 different temperatures				•