



Application

Dispersions
(Particles tend to migrate).

Objective

Analyze influence of viscosity on the sedimentation of titanium dioxide in a binary glycerol/water

Device

Turbiscan® AGS
Turbiscan® TOWER

Using the Turbiscan Stability Index to determine the Stability Diagram of a liquid dispersion

Introduction

Suspensions are unstable colloidal systems that undergo many destabilization phenomena (sedimentation, flocculation, creaming, etc.) that can be due to various causes (viscosity, particle size, attractive forces, etc.). Therefore, it may be complex for the formulator to determine the origin of these processes to be able to overcome them and to get a stable product.

One of the strategies to avoid these destabilization phenomena is to increase the viscosity of the formulation. The purpose of this paper is to determine the effect of increasing polymer concentration in a simple dispersion of TiO₂ in different mixtures of glycerol and water.

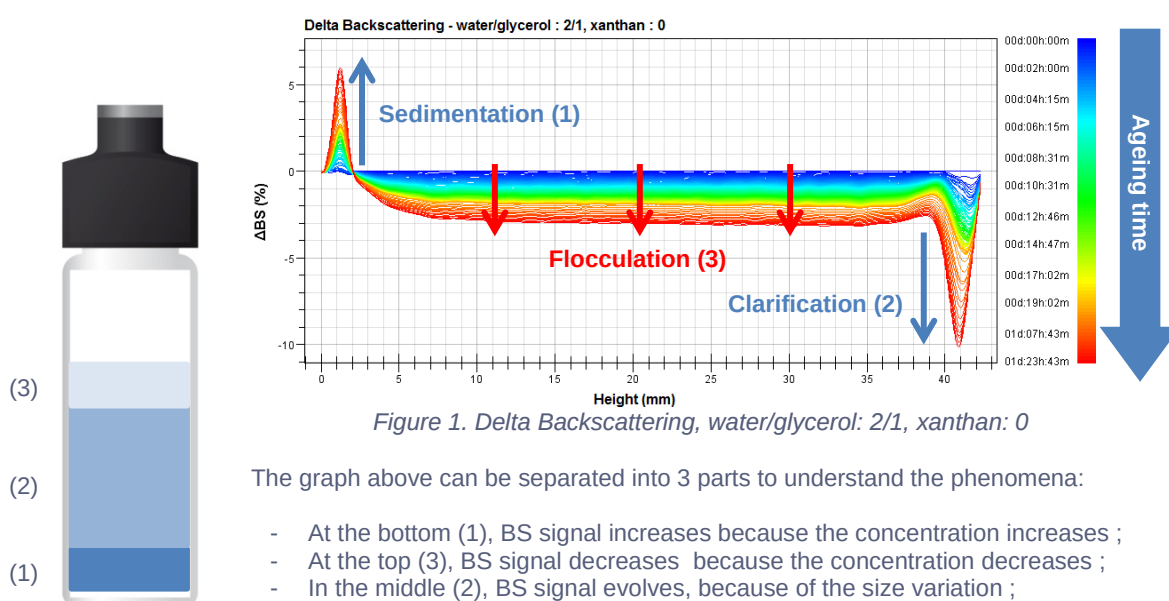
Measurement Protocol

16 samples were studied, adjusting the formulation with various ratios:

- Ratio glycerol / water: 0 / 0.33 / 0.66 / 1
- Xanthan concentration: 0 / 0.05 / 0.1 / 0.2
- 0.50% wt. TiO₂

Identification of phenomena

Thanks to the Turbiscan device, destabilization phenomena were identified in all formulations.



The graph above can be separated into 3 parts to understand the phenomena:

- At the bottom (1), BS signal increases because the concentration increases ;
- At the top (3), BS signal decreases because the concentration decreases ;
- In the middle (2), BS signal evolves, because of the size variation ;