# Stability analysis with Turbiscan® (general cases)

## CREAMING

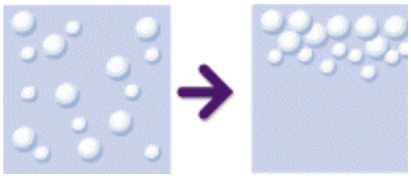
### Application
All domains

### Objective
Analyse Turbiscan data in most cases

### Device
TURBISCAN® LAB and TURBISCAN® Classic

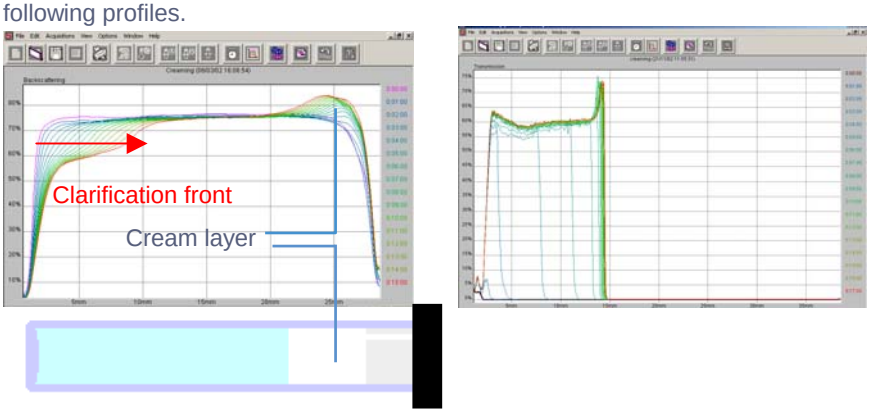
1. Definition

Creaming is a common instability phenomenon for emulsions or suspensions, when the dispersed phase has a lower density than the continuous phase. It can be coupled with a coalescence or a flocculation and will finally lead to a phase separation.



2. How do you Detect it with the Turbiscan®?

Creaming can be easily detected using a Turbiscan® as it induces a variation of the concentration between the top and the bottom of the cell. Therefore, we get the following profiles.




We can observe very easily on the left graph that the backscattering flux decreases at the bottom of the sample due to a decrease of the concentration of the particles in this part (clarification) and it increases at the top of the sample due to an increase of the concentration of the dispersed phase (creaming). Creaming can lead to a phase separation, with a clear phase at the bottom shown by a peak in transmission (right graph).

3. What can you calculate?

When you have a creaming phenomenon, the interesting parameters to compute are:

- The **variation of backscattering** (delta BS) at the top and the bottom of the cell to compare quickly various formulations.
- The **phase thickness** (delta H) of the cream layer and/or the clear phase, in order to be able to follow its formation.
- The **migration velocity** of the clarification front, in order to follow the kinetics of the creaming phenomenon.