

Detergency Properties of Surfactants

A · R · D

Done in collaboration with



Application

Surfactant

Objective

Effect of water hardness on stability of emulsions

Device

TURBISCAN® Classic

INTRODUCTION

The detergency mechanism is based on the physico-chemical properties of the surfactant, the fat to eliminate and the surface to clean. The spread of the soil on the surface is reduced by the wetting of both the surface and fat by the surfactant (modification of the contact angles water/fat/surface). Hydrodynamic forces thereafter siphon off the fat soil in the cleaning water and fraction it. This is the emulsification step. The oil droplets is eventually solubilized in the water and eliminated.

ARD produces natural surfactants (alkyl polyglucosides) that are used for formulating home care products. Their apolar part is coming from agro resources. This study is dealing with the potential of natural surfactants to emulsify fat and is done by measuring the interfacial tension between water and oil and the stability of the emulsions formed using the Turbiscan Classic.

METHOD

The experiment consists in measuring the stability of an emulsion prepared with sunflower oil and a detergent surfactant. As the emulsions are very unstable, the emulsification is carried out directly in the Turbiscan Classic cells that have been previously modified (see below). The analysis is done immediately.

The composition of the emulsion is given :

- 6% oil
- 3% surfactant
- Qsp 100% demineralised water

The emulsification is carried out at ambient by stirring the tube in a vortex for 30 sec.

RESULTS

The measurements are done by following the evolution of the backscattering for two hours (Figure 1). Then, one draws the graph of the evolution of the thickness of the peak at the bottom of the tube (reference at t=0) as a function of time (Figure 2).

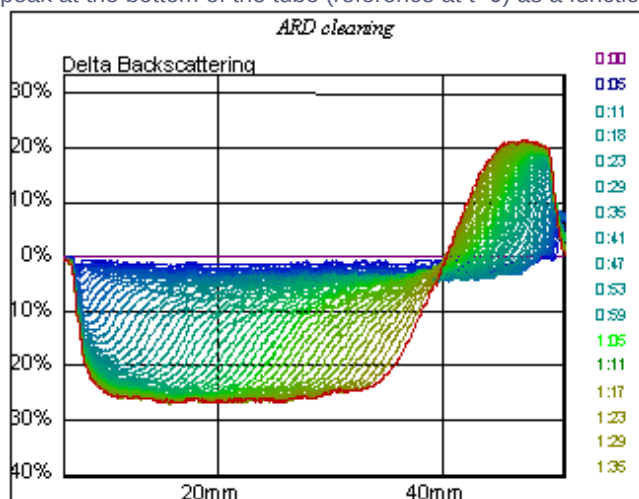
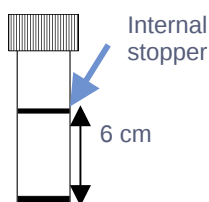


Figure 1 : Evolution of backscattering.