



Formulation of direct emulsions

Done in collaboration with



Application

Cosmetics

Objective

Optimization of a mixture of surfactants to formulate a direct emulsion

Device

TURBISCAN® LAB

INTRODUCTION

Mixtures of surfactants are commonly used in the industry, as industrial surfactants are usually mixtures very difficult to purify. Moreover, a synergy between surfactants is very often observed, enabling to get an even better stability. Therefore, the formulator has to test a large range of surfactant mixtures. In order to make his choice quickly and in the best possible way, he needs an analytical tool to evaluate the stability of his formulations.

METHOD

We produced a control O/W emulsion using an oil (caprylic/capric triglyceride) and a high HLB surfactant (Tween 80, HLB=15). The sample is emulsified through agitation for 10 seconds using a vortex.

We observed that the emulsion is coarse and creams quickly. The Turbiscan LAB highlights a low average of backscattering intensity in the core of the emulsion (about 20 %) as well as migration of the drops to the top of the tube after a few minutes (Figure 1). This migration leads to the appearance of a subnatant phase that is nearly transparent (Figure1, top graph).

We study the influence of addition of a low HLB surfactant (Span 80, HLB=4.3). It is prepared in an oil solution of varying concentrations. The emulsions are prepared in the same way as the control part (Table 1), then analyzed with the Turbiscan LAB.

	0	1	2	3
Tween (%)	1	1	0.1	1
Span (%)	0	10	10	20

Table 1. Composition of the emulsions

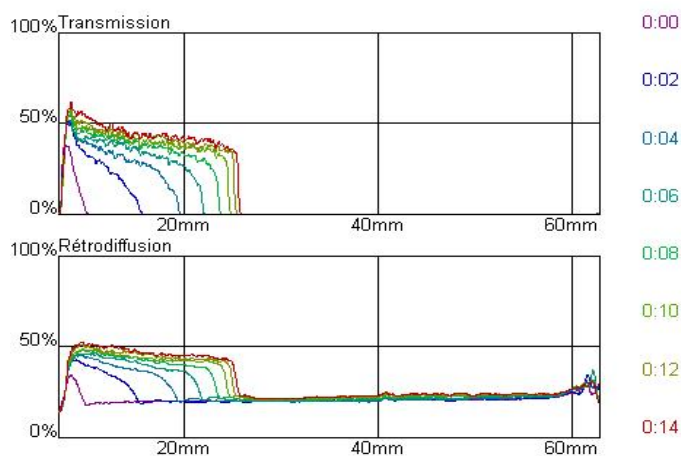


Figure 1. Transmission and backscattering profiles of the control emulsion