



EFFECT OF INGREDIENT QUALITY ON COSMETIC FORMULATION

INTRODUCTION

The nature and the quality of a constituent in a formulation may have an impact on its final stability. Consequently, the stability of the dispersion (suspensions, emulsions, foams, ...) have to be control for all supplier to validate the stability. When dealing with natural products, the quality of the raw material from one supplier to another one may change significantly the properties of the final formulation. In this note, the effect of two identical natural oil coming from two different suppliers was studied using the Turbiscan™ technology.

PRINCIPLE

Measurement with Turbiscan®

Turbiscan™ instrument, based on Static Multiple Light Scattering, consists in sending a light source (880 nm) on a sample and acquiring backscattered and transmitted signal. Combining both detectors (BS & T) enables to reach wider concentration range. The backward reflected light comes from multiple scattering as the photons scatter several times on different particles (or drop).

This signal intensity is directly linked to the diameter (d), according to the Mie theory:

$$d = f(BS, \varphi, n_p, n_f)$$

[More information](#)

METHOD

In order to monitor the impact of the quality of one raw material (jojoba oil), two different cosmetic emulsions were prepared with Jojoba oil coming from 2 different suppliers:

- Sport Lotion
 - Jojoba Oil supplier 1
 - Jojoba Oil Supplier 2
- Sensitive Lotion
 - Jojoba Oil supplier 1
 - Jojoba Oil Supplier 2

Samples are analyzed during 1 day at 43°C

RESULTS

By scanning the 3 samples according to the method described in the previous paragraph, the following results are obtained:

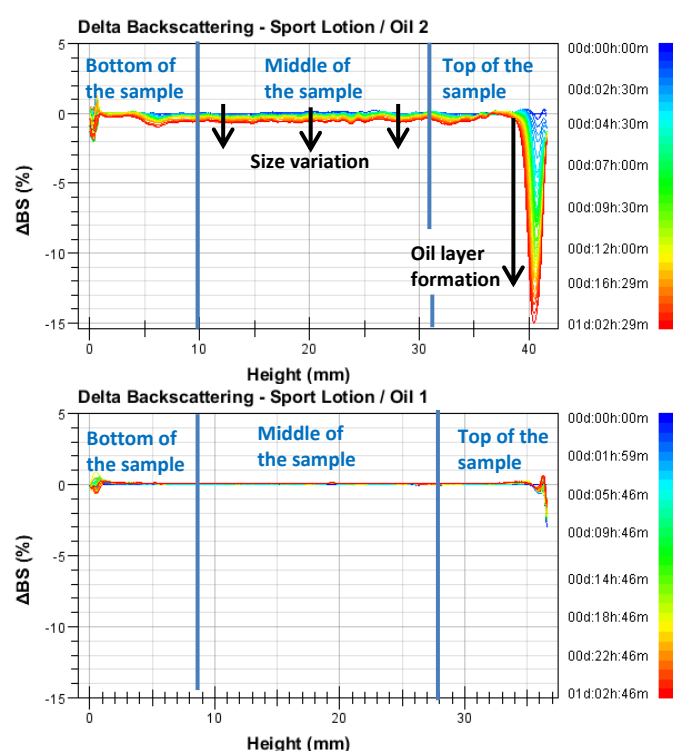


Figure 1: backscattering variation versus sample height for "Sport Lotion" from supplier 2 (top) & supplier 1 (bottom)

From the graphs in Figure 1, we can observe the effect of the oil quality on the emulsion stability. For the same emulsion, with supplier 1, no or minor destabilization is observed whereas we can observe the following destabilization with supplier 2:

- At the top of the sample, due to the creaming of the oil, a clear oil layer is forming at the top of the sample and so a decrease of the light intensity is observed.
- Moreover, a global decrease of the light intensity is observed at the middle of the sample meaning an increase of the droplets size.