Fragrance influence on stability for fabric care applications

Introduction

Today most of Fabric Care products are liquid dispersions (laundry liquid detergent, liquid fabric softener, laundry gel, etc.) These products are constituted of many ingredients but are known to be kinetically stable. This means that the mixture remains stable through the whole shelf life without any instability signs like phase separation, cloudiness and flocculation etc. The fragrance and/or microcapsules play an important role in the product quality perception by the consumers. However, adding the fragrance into this already complex mixture can easily cause stability problems.

KEY **BENEFITS**

FAST

QUANTIFIED DESTABILIZATION

SENSITIVE

The Turbiscan™ technology is a complete tool that enables to detect variations in both-clear and opaque samples. The variations are due to the particle and micelle movements and so are representative to the kinetics of destabilization (flocculation, sedimentation, phase separation etc.). Turbiscan™ can detect these phenomena hours or even weeks before the visual control conclusions.

Reminder on the technique

Turbiscan™ instrument, based on Static Multiple Light Scattering, consists on 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 (photons scatter several times on different particles or drops).

This signal intensity (BS) is directly linked to different parameters, according to the Mie theory:

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

Method

In this application note, 2 different studies are shown:

- Fragrance stability in a heavy-duty liquid detergent
- Study of instability reason in liquid detergent formulation

Fragrance stability in a heavy-duty liquid detergent

The aim of this study is to limit the effect of the fragrance on the final stability. Three emulsions are studied:

- Stable un-perfumed liquid detergent (use as the target)
- Liquid detergent with original perfume
- Liquid detergent with optimized perfume

All formulations are analyzed using the Turbiscan technology at 45°C during a period of 7 hours, the following graph is obtained.

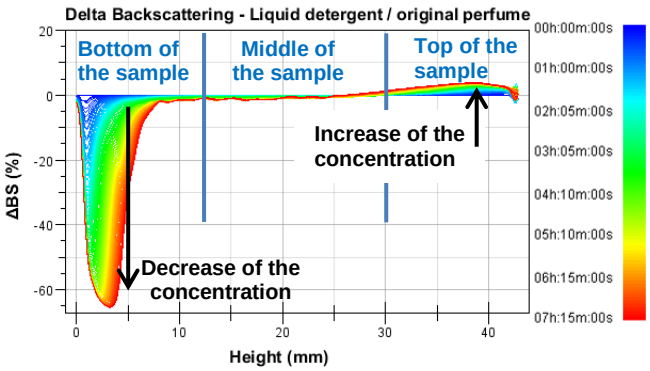

Figure 1: Backscattering variation for sample with original perfume