



3 STEPS CHARACTERIZATION OF DISPERSION

DISPERSIBILITY | SHELF-LIFE | REDISPERSION

What is formulating?

Formulating is the science of mixing different components to achieve desired properties or specifications. The ingredients are often not compatible, and they must be mixed following a specific strict procedure to obtain a uniform and durable structure. This task is even more challenging when formulating with natural ingredients. The constant need to create new formulations or reformulate existing formulations requires thorough monitoring of formulation properties.

What is the science of formulating?

Formulation composition can be summarized as follows:

- **Liquid continuous phase**, water is the most commonly used solvent but not limited to.
- **Dispersed phase**: liquid, solid, or air. The particularity of this phase is that it is non-compatible with the continuous phase. The particle/droplet size can vary from a few nm up to visible particles and the concentration ranges from ppm up to 95%. This phase is the one that provides the desired end-user properties to the formulation (moisturizer, coating properties, drugs, nutrition...).
- **Stabilizers** are one of the key components of the formulation. They are essential to control the dispersion, achieve the desired

particle size, and maintain a “stable” formulation. Nowadays, the number of possibilities is very large and depends on the application. Surfactants have been and remain the most commonly used stabilizers. They either come from chemical synthesis or natural, renewable resources. Recent studies push towards using new polymers and biopolymers, proteins, and even other particles as stabilizers.

- **Additives**: are added to adjust side properties, nevertheless essential for the user appreciation (viscosity, scent, color, texture...). This additive can have an affinity with either the continuous phase, the dispersed phase, or the interface.