Green Surfactants and Cold Process Emulsion Technology

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Abstract

There is significant drive towards application of green chemistry in the personal care industry. This ranges from the use of environmentally friendly raw materials, naturally sourced or naturally derived ingredients to the application of energy efficient processing techniques. There are a multitude of reasons to pursue green chemistry; however, ultimately they all lead to the single goal of being responsible to our environment.

Introduction

The first question we really need to address is: "Just what is Green Chemistry?" Is it biodegradable? Is it sourced from nature? Is the function to reduce the carbon footprint of manufacture? Or even is the product green in colour? A direct quote from a worldwide manufacturer's marketing brochure cites the following [(1)]:

- There is no certification that qualifies a chemical ingredient as 'Green'.
- 'Green' claims fall into three main categories, Organic, Natural & Ecological.
- There is a wide range of certifications available to claim 'Green' credentials for your end product.

The brochure defines various categories of green:

- Organic - avoids the use of genetically modified ingredients or those grown using non-organic pesticides.
- Natural - avoids the use of synthetic ingredients.
- Ecological - avoids the use of ingredients that are not biodegradable or that are toxic to the environment.

Whilst these statements are all perfectly valid, they do not adequately cover the full spectrum of what potentially can be construed as green chemistry. Expansion of these statements could include sustainability, improved energy efficiency of manufacture, approval by a regulatory body and improved efficiency of raw materials.

The critical word that can be applied to each of these green ideas is responsible, such as responsible sourcing, responsible manufacture, environmentally responsible, etc.

With such an undefined area in which to work and formulate, ultimately the boundaries or framework will be defined by the claims as to why the product is considered to be green. Asking oneself the question "What green credentials do we want our product to claim?" can result in a multitude of answers:

- What the product does
- Who the product is targeted at (both demographic and geographic)
- How the product performs
- Where the product is used (eg face, sensitive skin, hands etc)
- Sustainable Ingredients (eg RSPO)
- Responsible manufacture (reduced carbon footprint)
- Responsible advertising (eg recycled packaging)
- Environmentally friendly (bio-degradability)
- Certification from regulatory body (e.g. Cosmos, NOP etc.).

The options available to claim green status for your product are wide ranging and the choices made will narrow the scope for which ingredients or technology can be employed in the product development.

Green Surfactants

The very name surfactant actually defines the mode of action of such materials; they are surface active agents that reduce the interfacial surface tension between two phases. They can be used in a number of roles including:

- Emulsifiers
- Wetting Agents
- Antifoams
- Cleaning Agents
- Dispersing Agents
- Suspending Agents
- Solublisers.