

## **Emulsifiers**

Emulsifiers are a group of organic compounds that encompasses two dissimilar structural groups like water soluble and a water insoluble moiety in the same molecule. The surface activity of a compound is determined by their composition.

Many soft drinks contain oil-based flavors and colors. As oil and water do not mix, emulsions are used to deliver oil to enable uniform and stable beverages.

An emulsion is a uniform dispersion of oil droplets in a water-based medium, stabilized by emulsifiers. Emulsifiers reduce interfacial tension to facilitate emulsification and stabilize emulsions during storage, transport, and throughout a product's shelf-life.

Emulsions require the presence of emulsifiers, which have the ability to adsorb and remain at the oil/water interface, thus forming a stable layer surrounding the oil droplet surface and preventing the breakdown of emulsions structure once it is formed

Beverage emulsions are usually stabilized by amphiphilic polysaccharides, such as gum arabic or hydrophobically modified starch.

There are a number of food-grade emulsifiers that fulfill these requirements, but they differ considerably in their effectiveness at forming and stabilizing beverage emulsions

Gum arabic is an effective emulsifier because of its high water solubility, low solution viscosity, good surface activity, and ability to form a protective film around emulsion droplets.

The oil phase usually consists of vegetable oil and a weighting agent, while the aqueous phase consists of water, sugar, emulsifier, acids, and preservatives.

This unique class of emulsions must have a high degree of stability in both the concentrated and the diluted form.

Gum arabic is the most commonly used biopolymer emulsifier in flavor beverage emulsions. It is derived from the natural bark exudate of Acacia.

The hydrophobic polypeptide chain is believed to anchor the molecules to the droplet surface, while the hydrophilic arabinogalactan blocks extend into the solution, providing stability against droplet aggregation through steric and electrostatic repulsion.

Beverage emulsions may have a variety of different compositions and experience a variety of environmental conditions during their storage, transport, and consumption.

Caramel, added to cola primarily for its flavour and colour, can also act as an emulsifier.