REF:TT/ NOVEMBER 2010/ WK 1

SURFACTANT AND ITS SIMPLE CLASSIFICATIONS

SURFACTANTS

The word ***Surfactant*** is coined from the expression "surface active agent".
As the phrase implies, a surfactant molecule possesses surface activity, a property associated with the chemical structure of the molecule. The characteristic feature of a surfactant molecule is its two ends attached by a covalent bond.
The two ends have diametrically opposed polarities. The non-polar end is lyophilic (strongly attracted to organic molecules) while the strongly polar end is lyophobic (having little attraction for organic molecules) yet strongly hydrophilic (water loving). Duality of polarity causes the molecule to align itself with respect to the polar nature of the surfaces it contacts

CLASSIFICATION OF SURFACTANTS

Surfactants are classified according to use, to ionic charge and to chemical structure.

A. By Use

Wetting Agents The ability of a liquid to spread on a smooth solid surface is dependent on the polar nature of the solid and the surface tension of the liquid. A non-polar solid surface such as paraffin wax or Teflon will cause
a drop of pure water to bead-up and not spread. Water containing surfactants on the other hand will easily spread on paraffin surfaces and have lower contact angles on Teflon. Surfactants used this way are called wetting agents.

Detergents are surfactants that help remove soils from solid surfaces. Over and above reducing water's surface tension, detergents must adsorb onto the soil's surface to aid in spontaneous release. Detergents must also keeps the soil suspended to prevent redeposition.

Emulsifying Agents are surfactants that convert water-insoluble oils into stable, aqueous suspensions. The lyophilic part of the surfactant molecule is absorbed by the oil droplet and the lyophobic head is oriented outward, surrounding the droplet with a hydrophilic sheath. Ionic surfactants add another dimension to the stability of emulsions, they set up a charge-charge repulsion field which adds to keeping the droplets separated.

Dispersing Agents function in a manner similar to emulsifying agents. The difference is that solid particulate matter, rather than insoluble oils, is dispersed. The nature of the lyophilic part of the surfactant molecule must be such that it adsorbs onto the particle's surface. Surfactant molecules must be matched with their intended use.

B. By Ionic Charge

Anionic: Those that develop a negative charge on the water solubilizing end.

Cationic: Those that develop a positive charge on the water solubilizing end.

Non-Ionic: Those that develop no ionic charge on the water solubilizing end.

Amphoteric: Those that have both a positive and negative charged group on the molecule.

"Have a happy week ahead"

A knowledge sharing initiative of Resil Chemicals.
For queries, please write to arc@resil.com.
Also, visit www. resil.com

Discover with RESIL