

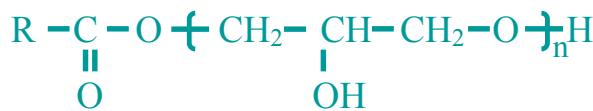
SUNSOFT

Taiyo's PGFEs (Polyglycerol Fatty acid Esters), SUNSOFT has very unique and exclusive structural properties mainly featured by low content of cyclic polyglycerols enabling enhanced hydrophilicity. Thus, it can offer a wide range of applications covering emulsification, solubilization, detergency and foaming.

Features:

- Enables design of molecules with wide range of HLB.
- Little variation in HLB along with temperature makes it superior in acid and salt resistance.
- Highly safe and recommended emulsifier for food, and environment friendly surfactants.
- Easily forms liquid crystal, and can be designed as a variety of formulations.

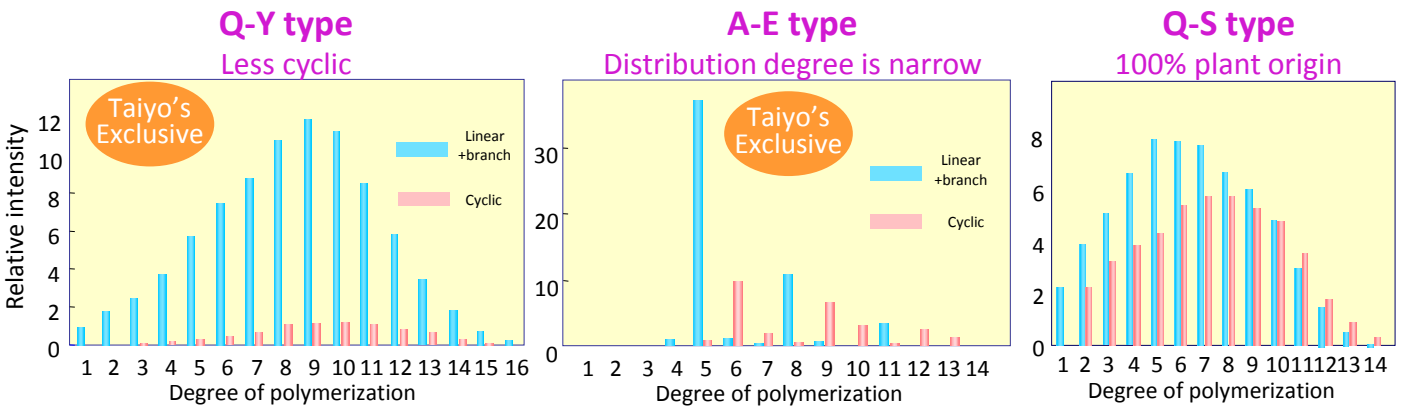
Structure:



R = Fatty acids chain length, n = 2, 3, 4...

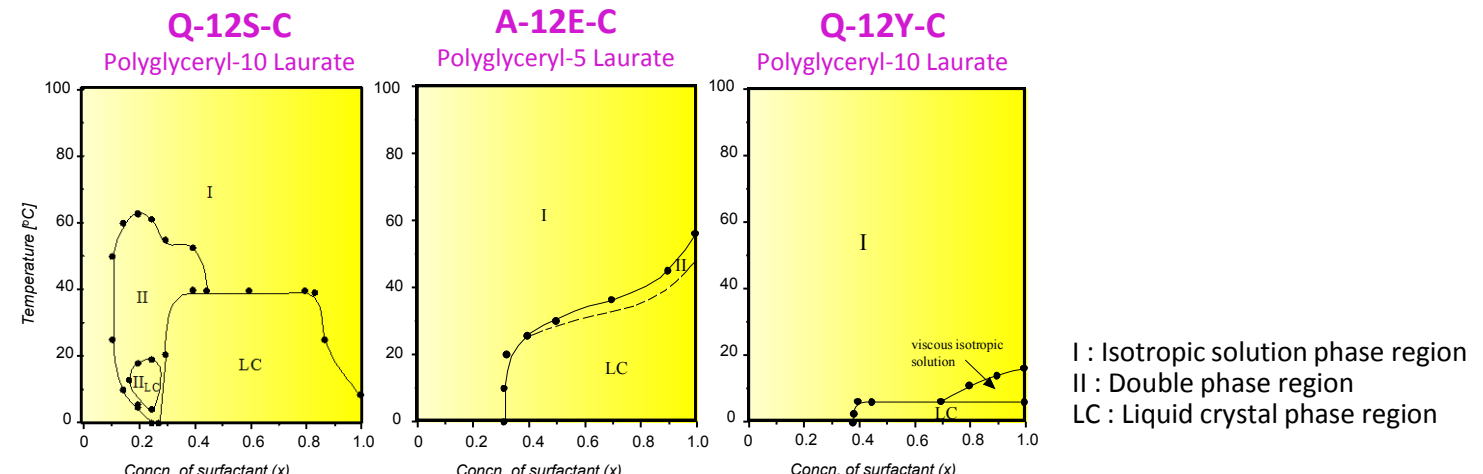
■ Distribution of degree of polymerization (3 types of polyglycerols)

With Taiyo's manufacturing know-how of PGFEs, the two exclusive PGFEs featured by high hydrophilicity can be acquired from the original polyglycerols.



■ Phase diagrams: Water/Polyglyceryl Laurate

Hydrophilicity of SUNSOFT can be well-controlled by differentiating polyglycerol structures of PGFEs, even when having the same types of fatty acids.



Increasing hydrophilicity of surfactant



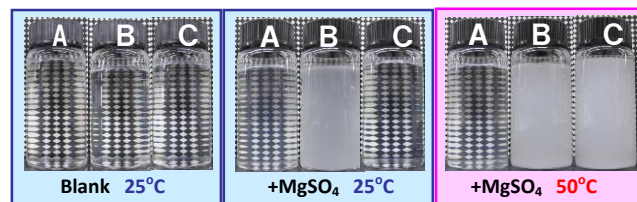
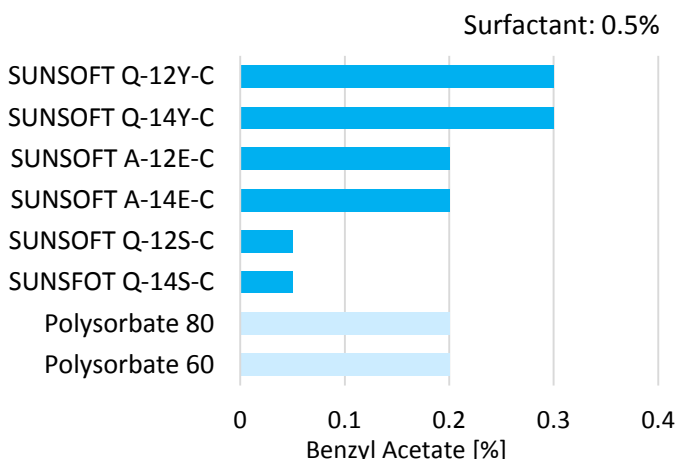
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Solubilization:

SUNSOFT has similar or greater solubilizing capability against various oils, compared to general ones. Heat-stable transparent dispersion under high salt concentration can be achieved as well.

Solubilization for Benzyl Acetate

Salt and heat-resistance of solubilized solutions



A: SUNSOFT Q-12Y-C, B: Polysorbate 80, C: PEG-40 Hydrogenated Castor Oil

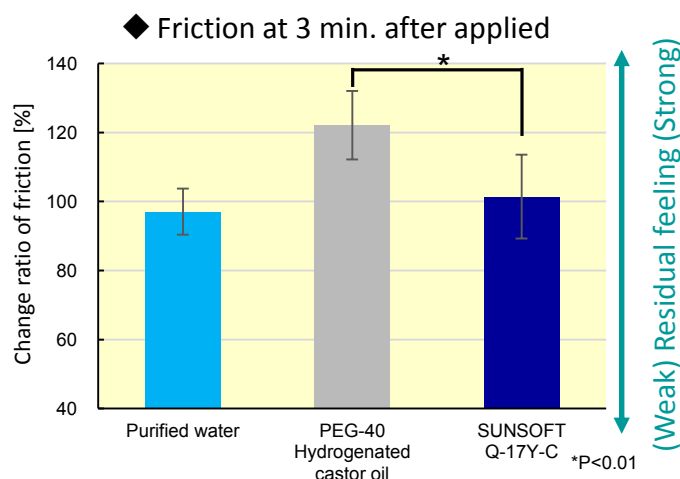
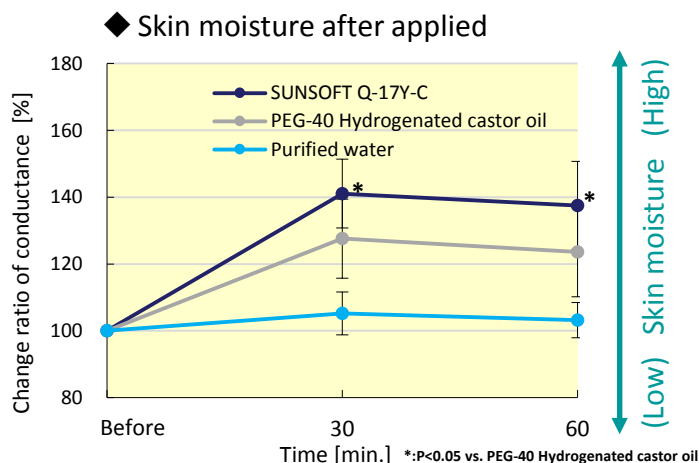
Blank: Surfactants 0.5%, Benzyl Acetate 0.15%
 +MgSO₄: Surfactants 0.5%, Benzyl Acetate 0.15%, MgSO₄ 6.0%

Excellent solubilization stability can be achieved by SUNSOFT under high salt concentration, and at high temperatures.

Well-balanced sensorial perception:

Any formulation with Polyglycerol Fatty acid Esters guarantees a well-absorbing sensory experience with less greasy residue, only leaving skin feel soft and hydrated.

Leave on <PGFE vs. PEG-surfactant>



Instrument: SKIKON-200EX
 Sample: Surfactants 3% aqueous solution or purified water
 Protocol: 1. Damage skin, 2. Measure base line
 3. Apply sample (2 μl/cm²) 4. Measure conductance
 Graph: Change ratio of conductance when initial value is taken as 100%

Instrument: Frictiometer FR700
 Sample: Surfactants 3% aqueous solution or purified water
 Protocol: 1. Measure initial data, 2. Apply sample (2μl/cm²)
 3. Measure friction at 3 min. after applied
 Graph: Change ratio of friction when initial value is taken as 100%

Superior Hydration

Refreshing After-feel



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