



A Subsidiary of PETRONAS Chemicals Group

Silicone Emulsion for Technical Market

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What is an emulsion ?

- Mixture of two non-miscible substances stabilised by surface active ingredients
- Particles (droplets) are stabilized and formed by surfactants
- O/W emulsions replace solvent based products (environmental friendly)



Typical properties

- O/W or W/O emulsions:
 - O/W emulsions (e.g. Sempure 60) can be diluted with water
 - W/O emulsions cannot be diluted with water
- Viscosity:
 - Depends on active content, surfactant type/concentration, thickener
 - Sharp increase for o/w emulsions with >60% oil
 - Often pre-diluted with water before use

Surfactant types

Types:

- Non-ionic (e.g. Alcohol ethoxylates)
- Anionic (e.g. Sodium Laurylethersulphate)
- Cationic (e.g. Alkyl Ammoniumchloride)
- Amphoteric (both anionic & cationic)

- Critical for emulsions stability
- Optimization of surfactant HLB based on emulsified substance (silicone oil, mineral oil, water (w/o emulsion))

Surfactant choice

Non-ionic

- Grease remover
- Resistant to water hardness deactivation

Anionic

- Cleaning & foaming properties
- Textile dirt remover
- Sensitive to water hardness deactivation

Cationic

- Softener
- Sanitizer

Amphoteric

- Mild, non irritant
- Compatible with all other surfactant types
- Compatible with high concentrations of electrolytes, acids & alkalis
- High foaming properties

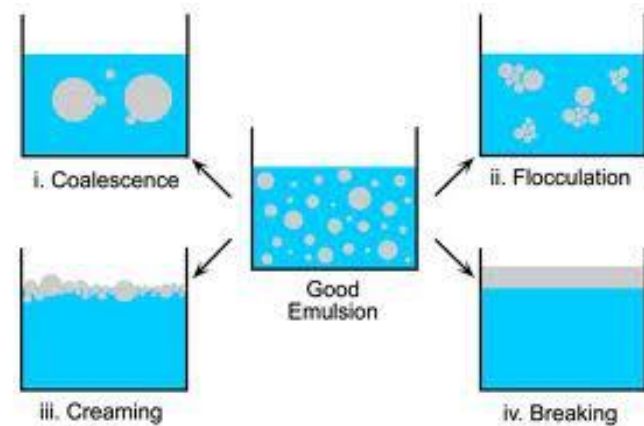
Shelf life

Instability = Coalescence, followed by

- Flocculation
- Creaming
- Breaking

Stability influenced by:

- Oil density
- Particle size
- Emulsion viscosity
- Emulsification methodology and chemistry



Markets & Product Selector

Application	Mould release			Polish		Lubrication	
Product	Plastic / rubber	Aluminum / foundry (paintable)	Food contact	Car (paint & vinyl conditioner)	Furniture, floor, shoe, leather...	Hoses, conveyor belts, etc...	Yarn, thread
Sempure 35	X			X	X	X	X
Sempure 60	X			X	X	X	X
Sempure 357			X				
Sempure 607			X				
Sempure 5332		X					
Sempure HV 6500				X	X	X	
Sempure 1997				X	X		
Sempure 3733				X			

Markets & Product Selector

Application	Water repellent			Web offset
Product	Mineral / glass wool, fire-proof materials	Glass ware (anti-slip)	Synthetic fibers, fur, textile finish	
Sempure 35		X	X	X
Sempure 60	X	X	X	X
Sempure 1814	X			
Sempure HJS	X			
Sempure SW 4	X			
Sempure 379	X			
Sempure HV 6500				X
Waxil AST				X

Base oil technology

- Medium viscosity silicone oil: Sempure 35, 60, 357, 607
- High viscosity silicone oil: Sempure HV 6500, 1997
- Amino silicone: Sempure 3733
- Alkyl aryl silicone: Sempure 5332
- H-siloxane: Sempure 379
- Silanol fluid: Sempure 1814
- Silicone wax: Waxil AST
- Specialties: Sempure HJS, SW4



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