

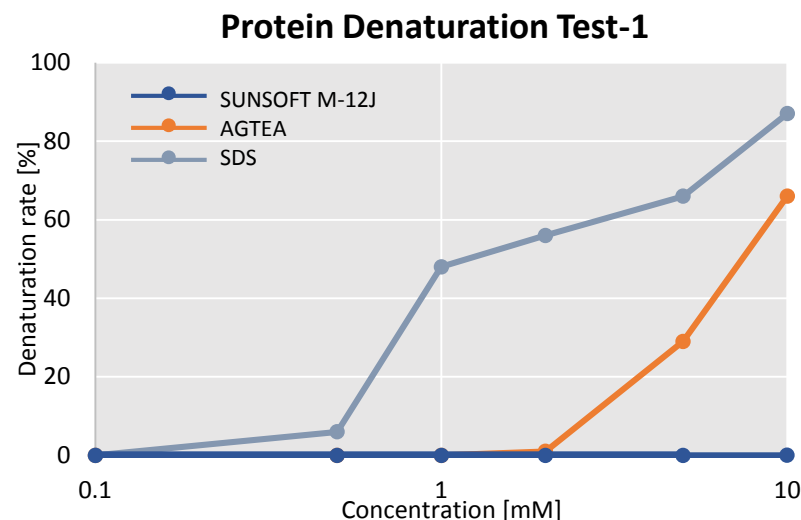
Mildness and Safety

■ Reduction on Protein Denaturation

Protein denature test with egg albumen indicated that SUNSOFT M-12J is a safer and more moderate material than AGTEA and SDS.

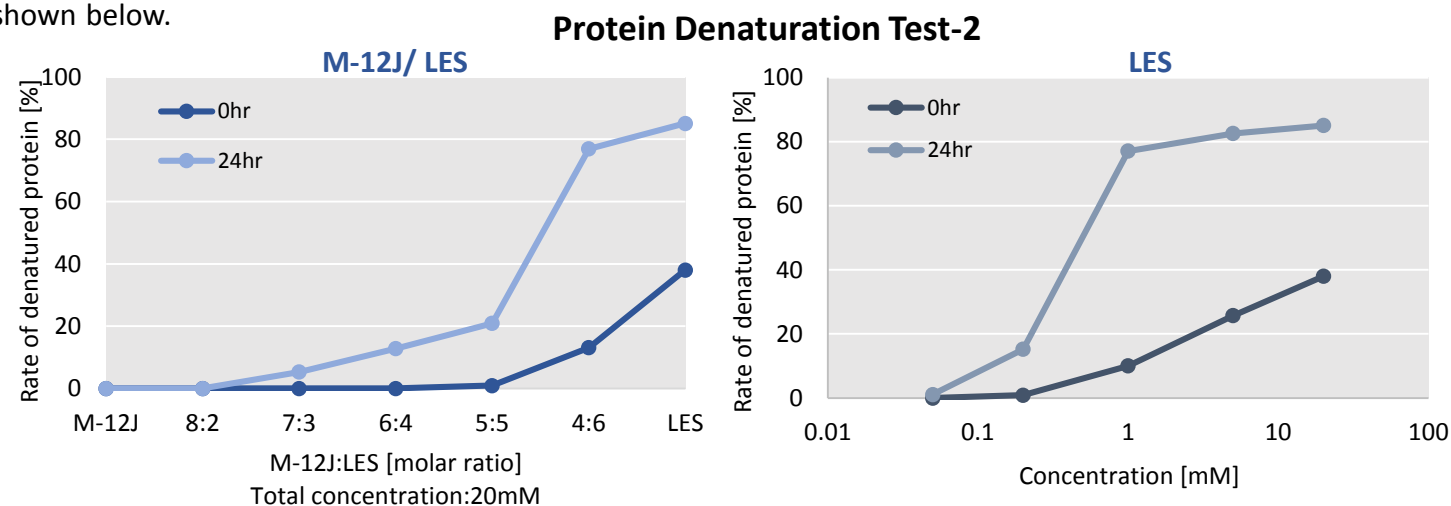
SUNSOFT M-12 J did not denature the albumen proteins even at 10mM.

This data suggests that SUNSOFT M-12 J has necessary and sufficient properties as a detergent while being very safe to skin.



■ Reduction on Protein Denaturation (when combined with LES)

By using SUNSOFT M-12J together with LES, the denaturation of proteins caused by LES is suppressed as shown below.

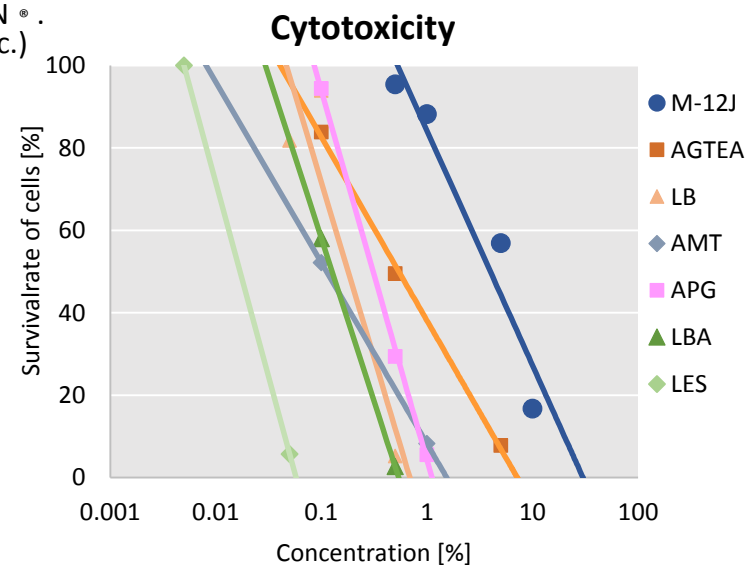


■ Cytotoxicity

The safety of SUNSOFT M-12J was proven by TESTSKIN[®]. (Skin reconstruction model, Toyobo /Organogenesis, Inc.)

Surfactants	EC ₅₀ :%
M-12J	4.00
AGTEA	0.54
LB	0.19
AMT	0.18
APG	0.13
LBA	0.11
LES	0.02

The EC₅₀ (effective concentration that inhibits MTT conversion by 50% compared with the untreated control concentration) of SUNSOFT M-12J is remarkably higher than other surfactants as shown on the right.



Low Irritant Detergent SUNSOFT M-12J

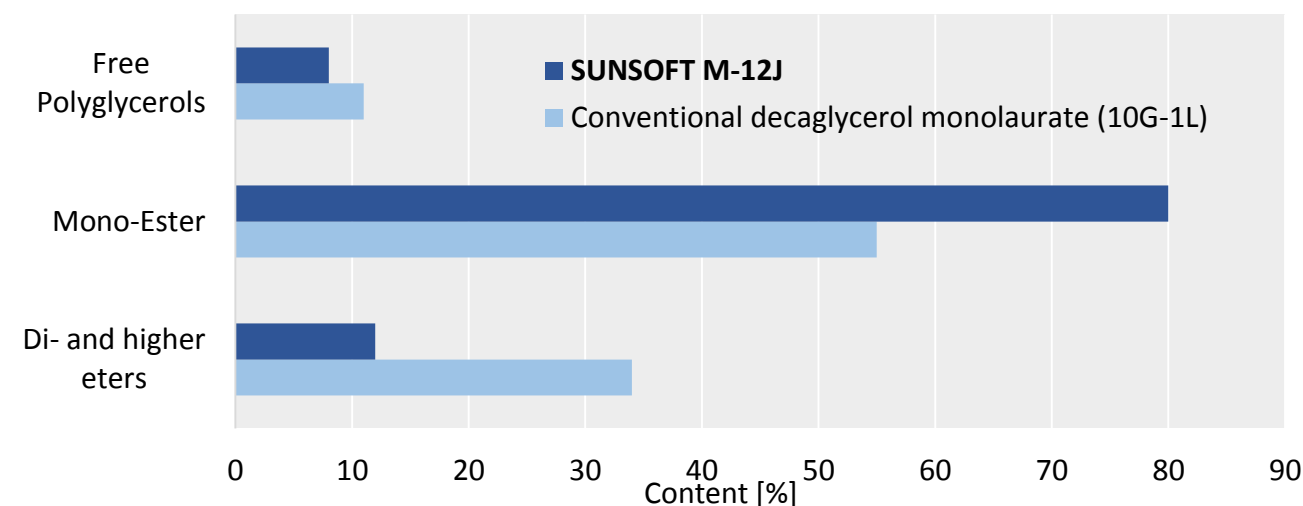
INCI: Polyglyceryl-10 Laurate

Unlike conventional surfactants that contain polyglycerol fatty acid esters, SUNSOFT M-12J's main ingredient is a monoester.



- Nonionic surfactant having superior detergent and foaming ability
- High monoester content compared with conventional polyglycerol fatty acids esters
- Low irritant detergent, mild on eyes and skin
- Will not lead to dryness or tightness on skin and leaves no slimy residue
- Gives an ideal hydrated after-feel on the skin
- Stable under a broad pH range
- Conforms to the Japanese cosmetic ingredients codex and Japanese food additives standards

Comparison of Composition

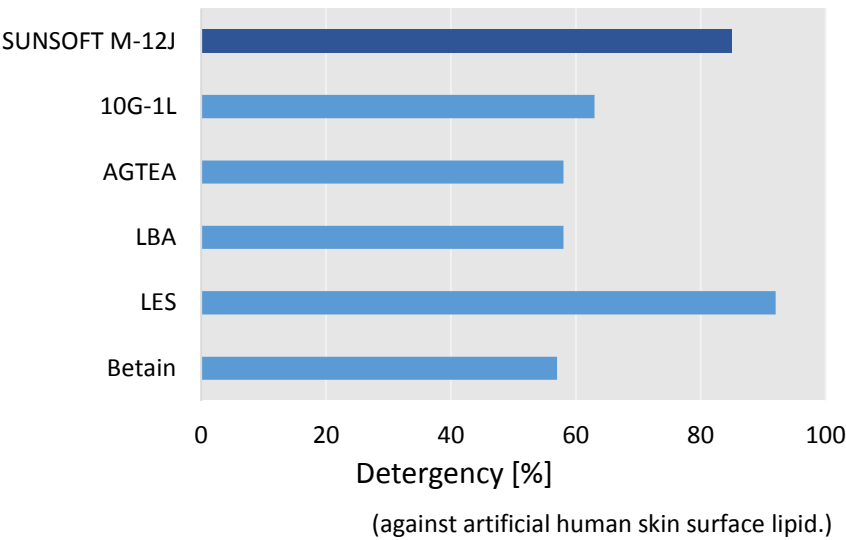


High Detergency

SUNSOFT M-12J exhibits high detergency equal to anionic surfactants such as LES.

The detergency ability of various surfactants against artificial human skin lipids were compared with 0.04% solutions.

Thanks to its high ability to reduce surface tension, SUNSOFT M-12J exhibited very good detergency as well as LES.

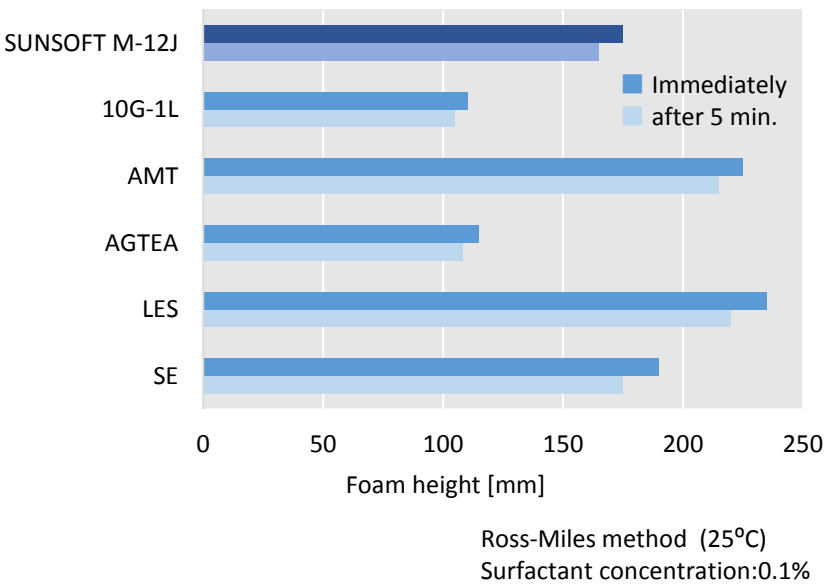


High Foaming Ability

Although a nonionic surfactant, SUNSOFT M-12J shows superior foaming ability. The foaming abilities of various surfactants were compared using the RossMiles method.

SUNSOFT M-12J exhibited better foaming ability compared with conventional polyglycerol ester and AGTEA.

SUNSOFT M-12J produces a creamy and rich foam, making skin feel soft and hydrated.



Antimicrobial Activity

Products containing SUNSOFT M-12J may have bacteriostatic effects on *Propionibacterium acnes* (cause of acne) and *Malassezia furfur* (cause of dandruff) as it has a considerable antimicrobial activity.

MIC (minimum inhibitory concentration) of M-12J on microorganisms was investigated. Due to SUNSOFT M-12J's antimicrobial activity, as shown in the right table, it is possible to reduce the concentration of preservatives.

Variety of Organisms	MIC [%]
<i>Aspergillus niger</i>	0.2
<i>Saccharomyces cerevisiae</i>	>0.5
<i>Bacillus subtilis</i>	0.1
<i>Staphylococcus aureus</i>	0.1
<i>Lactbacillus vulgaricus</i>	0.1
<i>Pseudomonas aeruginosa</i>	0.1
<i>Escherichia coli</i>	>0.5
<i>Malassezia furfur</i>	0.3
<i>Propionibacterium acnes</i>	0.04

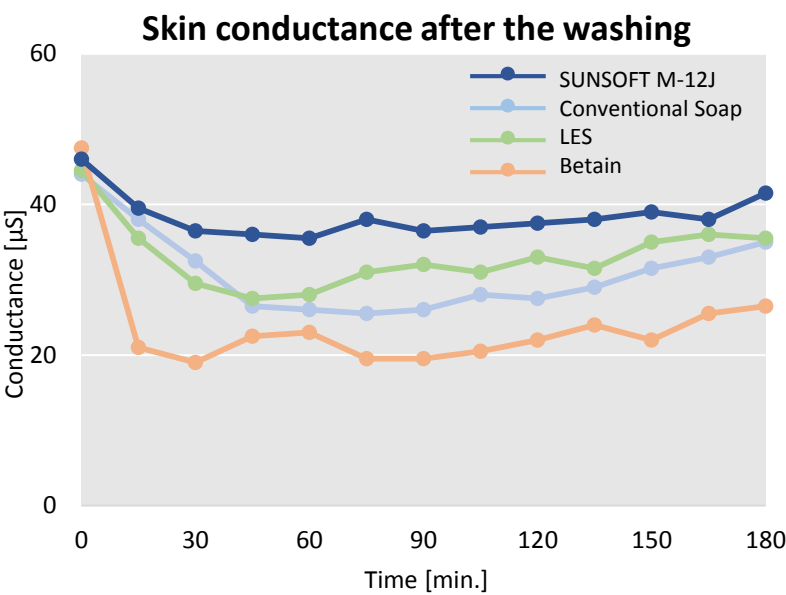
Moisture Retention

Maintains skin's ideal moisture balance

SUNSOFT M-12J does not remove moisture from skin after rinsing. The transitions of skin conductance after the washing process were compared among SUNSOFT M-12J, Betain, LES and conventional soap.

The moisture in the skin washed by SUNSOFT M-12J exhibited little to no reduction unlike that of conventional soap, LES and Betain.

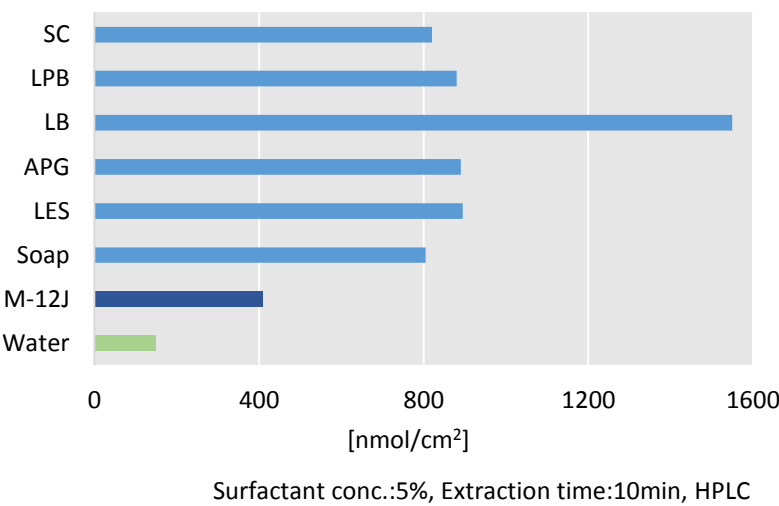
SUNSOFT M-12J gives a proper hydrated feeling after washing, does not lead to dry or tight skin and leaves no slimy residue.



Maintains amino acids

Unlike other detergents, SUNSOFT M-12J does not wash essential amino acids from the skin, which are important and beneficial to maintain proper skin moisture.

Amount of washed amino acid from skin



Mildness and Safety

Safety study

SUNSOFT M-12J shows outstanding mildness, a very important factor for skin detergents.

Item	Method	Date of animal test	Result
Primary Skin Irritation	Human Patch (5% Solution)	-	Irritation Index =0.01
Eye Irritation	Rabbit (5% Solution)	23 Dec. 1996-2 Jan. 1997	Minimal Irritant

10G-1L: Polyglyceryl-10 laurate
AGTEA: TEA-Lauroyl Glutamate
LBA: Sodium Lauroyl Methylaminopropionate
LES: Sodium Laureth Sulfate
Betain: Lauryl Betaine
AMT: Sodium Methyl Cocoyl Taurate

SE: Sucrose Laurate
SC: Sodium Cocoamphopropionate
LPB: Lauramidopropyl Betaine
APG: Lauryl Glucoside
SDS: Sodium Lauryl Sulfate