

# MAKIGREEN LCS+

NEXT GENERATION OF PEG/PGG FREE SOLUBILIZER

**GREEN  
CHEMISTRY**

**LOW  
ODOR**

**100% PLANT  
ORIGIN**

**VOC  
FREE**

**CLEAR  
WATER  
BASED  
PRODUCTS**

**COLD  
PROCESSABLE**

**LIGHT  
STABLE**

Nowadays the cosmetic industry requires natural and sustainable ingredients, This is the driving concept of our MAKIGREEN series. Our last development MAKIGREEN LCS+ is an optimized combination of surfactant of vegetable origin to ensure the maximum efficiency to solubilize many different kind of oils (including perfumes) in water. MAKIGREEN LCS+ presents optimized performance properties, up to the point to approach those of the traditional products based on polyoxyethylene and polyoxypropylene derivatives whose skin irritancy is questionable.

## Composition

INCI Name
Caprylyl/capryl glucoside
Polyglyceryl-10 isostearate
Sodium dilauramidoglutamide lysine

## Chemical and physical properties

Appearance	Liquid
Color	Colorless to pale yellow
Odor	Low odor
pH	~7,0
Active matters	~70%
HLB	15

Its unique composition has been designed to enable water to be used as a substitute for alcohol in many cosmetic and perfumery products.

## Green chemistry

- Environmentally friendly manufacturing process : no heating, no solvent involved
- 100% based on renewable feedstock
- Biodegradable ingredients
- Cold processable

## Water binding properties

- Liquid cubic emulsion is formed and brings the following properties: water retention, control of water release, good skin feel
- The water in the emulsion will gradually evaporate and the relative content of the oils and the emulsifiers will gradually increase, which will lead to the breakdown of the emulsion particles, and turn the liquid cubic structure into lamellar liquid cubic structure

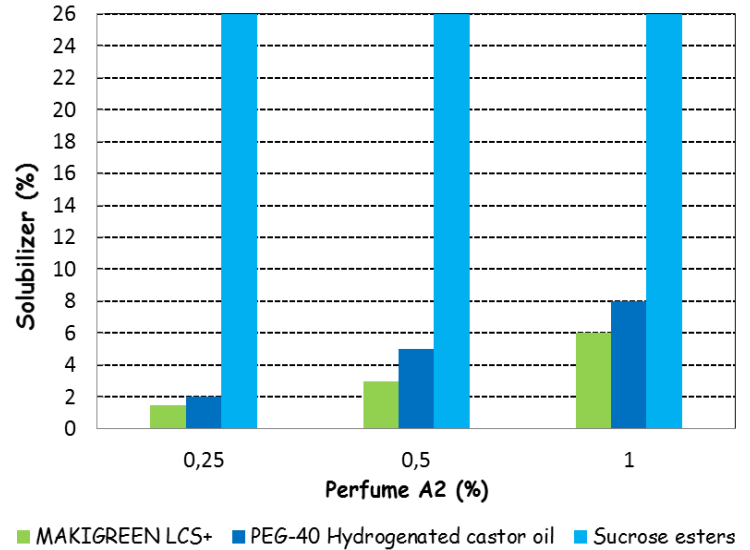
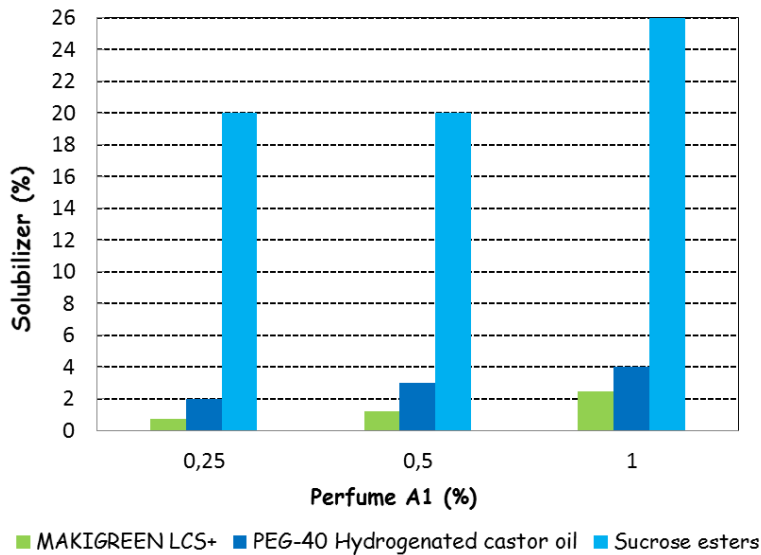
## Features and benefits

- Crystal clear solutions
- Less emusifier required
- No discoloration
- No impact on the perfume
- Smooth feeling on the skin, no sticky feel

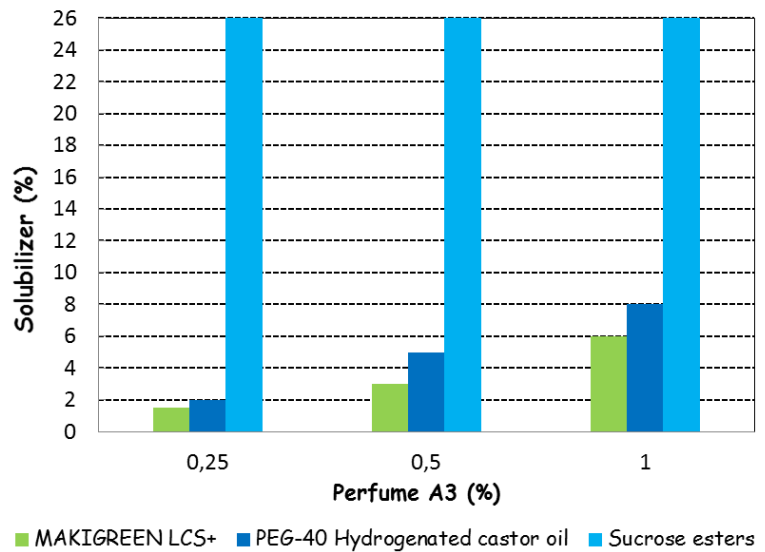
## Use guideline

- Easy to handle : low viscosity, no heating
- Mix MAKIGREEN LCS+ with the ingredient to solubilize until a clear mixture is obtained. Add slowly the water phase under high shear
- MAKIGREEN LCS+ is compatible with commonly used cosmetic ingredients
- MAKIGREEN LCS+ is stable over the pH range of 3 to 12. For pH<3, the concentration may be slightly increased.
- Up to 30% of ethanol can be added. Ethanol should be added at the end of the solubilization process

# Solubilization of perfumes

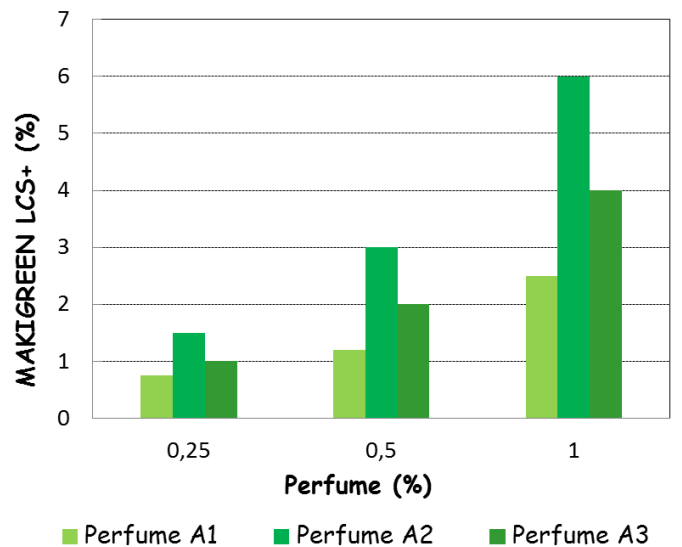


The efficiency of MAKIGREEN LCS+ is better than the market standard PEG-40 hydrogenated castor oil. At low perfume concentration ( $\leq 1\%$ ) the efficiency of MAKIGREEN LCS+ can match the best performing solubilizers based on synthetic surfactants (PEG-PGG derivatives)



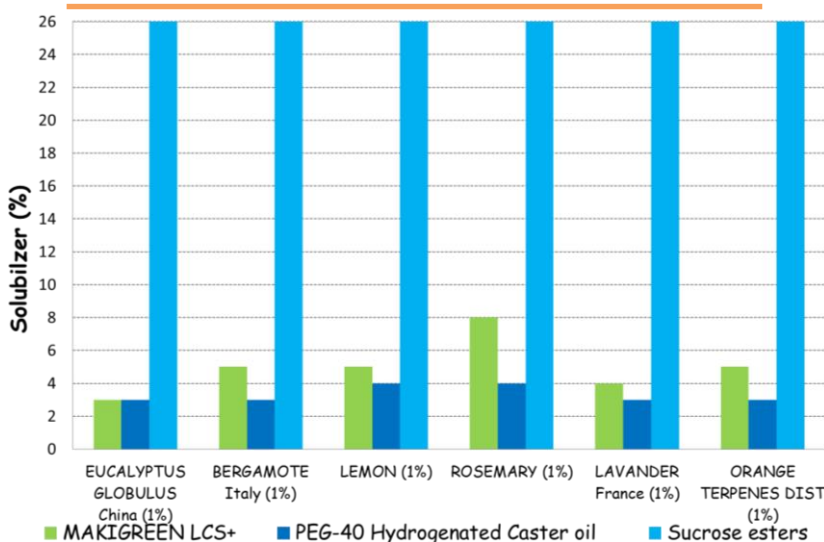
## Perfume's characteristics

Perfume reference	Type of odor	%natural oils	%musk (synthetic)	%DPG or solvent
A1	woody	70	1	0
A2	musky	2	70	2
A3	Cologne	5	33	23

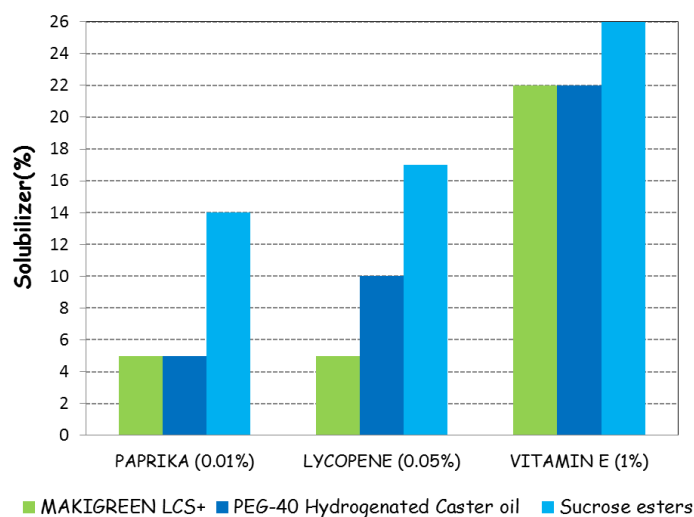


The efficiency of MAKIGREEN LCS+ depends on the characteristics of the fragrances. Each fragrance interacts differently depending on its chemical composition (essential oils, synthetics, solvents...). Fragrances with high contents of synthetics require higher MAKIGREEN LCS+ dosage to be solubilized. Adding co-solvents will not allow to reduce the dosage.

## Solubilization of essential oils

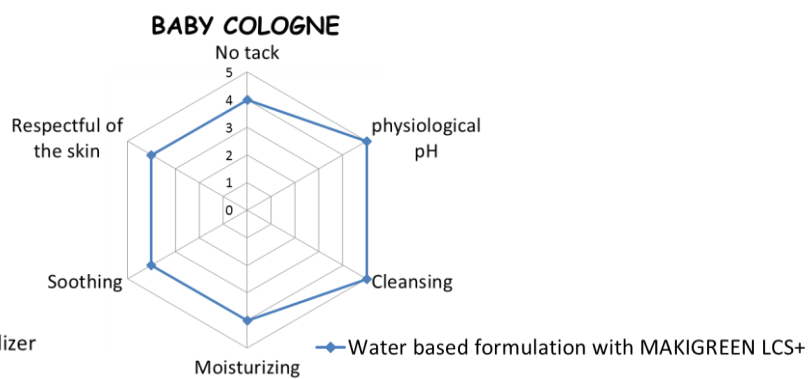
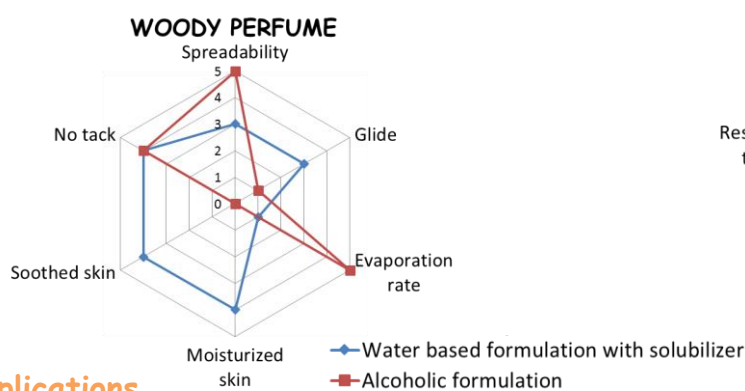


## Solubilization of oil natural dyes/actives



The efficacy of MAKIGREEN LCS+ is comparable to the market standard PEG-40 hydrogenated castor oil. MAKIGREEN LCS+ solubilizes most essential oils used in aromatherapy preparations.

## Sensorial profile



## Applications

- Skin care: DO E400 Purifying micellar lotion
- Toiletries: DP E405 Baby cologne

- Oral care : DO E414 Mouthwash with essential oils

## Regulation

**Product safety:** A mixture of APG, polyglycerol ester of fatty acid and gemini surfactant (MAKIGREEN SOLVE) produced non irritation to the eyes (at 0,15%) and to the skin (at 25%), was non mutagenic and non phototoxic. This mixture was non skin sensitizing.

**Material Safety Data Sheets** are available for all DAITO KASEI products.

**REACH:** The ingredients, unless they are exempted, are registered or will be registered on May 2018.

The ingredients are listed on major chemical inventories such CTFA, CosIng, KCID, IECIC2003 and/or IECIC2015.

## For additional information

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