SIMULSOL™ B 865

Alkyl PolyGlucoside
with Excellent foaming properties

Description

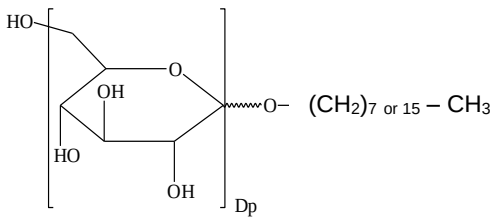
SIMULSOL™ B 865 is a non-ionic surfactant prepared from glucose and C8-C10 fatty alcohols. It is composed of minimum 75 % bio-based ingredient.
It is similar to SIMULSOL™ SL 8 except for the solid contents and color.

SIMULSOL™ B 865 is a high foaming and detergent alkyl polyglucoside.

SIMULSOL™ B 865 is widely compatible in concentrated electrolyte solutions, strong alkaline as well as acidic environments (pH>3).

The surface activity of SIMULSOL™ B 865 is not affected by temperature (no cloud point).

Chemical formula



- *Non ionic surfactant*
- *No cloud point*
- *Readily biodegradable*
- *Suitable for highly alkaline or electrolytic media*
- *Stable at all pH range*
- *Easy to combine with all types of surfactants even anionic & cationic*
- *Excellent solubilizing agent for perfumes, essential oils and surfactants*
- *CEFAS-OSPAR silver rated*
- *Suitable for Ecolabel formulations*

Identity card

Analytical data	Standard limits	Method
Appearance 25°C	Limpid	S 52-180
Color (Gardner)	brown	visual
HLB	13.8	
Solid content	62 to 66%	S 52 034
pH	4 to 7	NFT 73-206
Viscosity at 25°C	700 – 1100 cP	LV M3 V60
Free alcohol (C10 alcohol)	2% max	S 52 239
Freezing point	- 6°C	
Aerobic biodegradability	100% (28 days)	OCDE 301
Sea water biodegradability	61% (21 days)	OCDE 306
Shelf life	1095 days	
Labels/Lists	Suitable for Ecolabel DID listed CEFAS (gold rated) TSCA listed Dfe- US CleanGredients list	

In case SIMULSOL™ SL 8 is partly crystallized, heating at around 60°C will allow its revert to liquid form. Its freezing point is below -6°C.

Technical properties

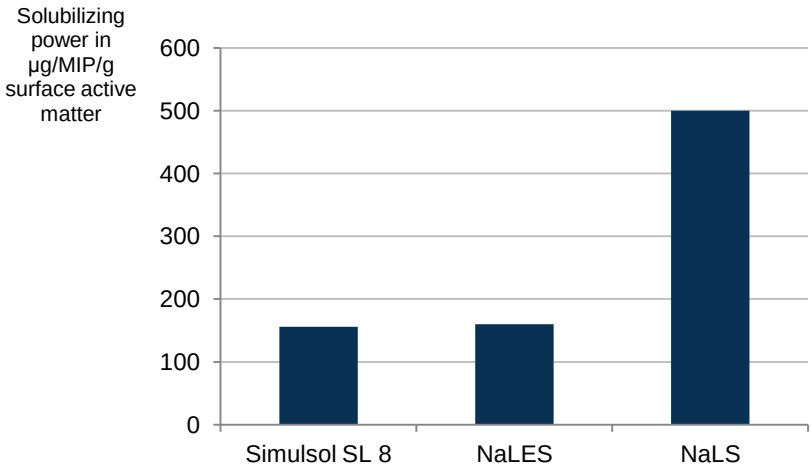
1- Hydrotropic effect

SIMULSOL™ B 865 exhibits hydrotropic properties but these properties are highly dependant on structure as well as concentration in the given application.

SIMULSOL B 865 with its intermediate alkyl chain length (octyl & decyl) is highly effective in elevating the cloud point of a solution containing non ionic surfactants. This is also true for system containing non-ionic surfactants as well as electrolytes; a small amount of SIMULSOL™ SL 8 is needed to clarify a cloudy solution compared to short or long-chain (Technical article Journal of Surfactants and detergents,Vol1,N°4,October 1998).

2- Solubilizing agent

SIMULSOL™ B 865 is a potent solubilizer.



Method: The solubilizing power has been determined using a method developed by SEPPIC (SEPPIC procedure Nbr 57 CO007). This procedure consists in measuring the solubilizing power of surfactants with respect to isopropyl myristate that has beenpreviously linked with a lipophilic coloring agent.

NaLES: Sodium lauryl ether sulfate
NaLS: Sodium lauryl sulfate

Unlike other non ionic surfactants, SIMULSOL™ B 865 does not reduce the foam but, conversely, promotes its formation.

SIMULSOL™ B 865 is a highly effective solubilizing agent for essential oils and fragrances.

Its solubilizing properties have been assessed on various substances in comparison with PEG-40 hydrogenated castor oil, a conventional solubilizing agent. Tests have been carried out on:

- 16 essential oils
- 6 synthetic aromatic products with an ester or alcohol structure
- 3 fragrances with different notes

The results presented in the table below indicate the maximum quantity (in g) of solubilized substance in 10 g of solubilizer (q.s. 100 g water) after 3 months storage at room temperature and after 1 month at 6°C.

		Simulsol **B 865** (3 months at room temperature)	PEG-40 hydrogenated castor oil (3 months at room temperature)	Simulsol **B 865** (1 month at 6°C)	PEG-40 hydrogenated castor oil (1 month at 6°C)
Essential oils	Anise	0.5	2	0	2
	Bergamot	1.5	1.5	1.5	1
	Lemon	0	1.5	0.5	1.5
	Clove	0.5	3	0.5	0.5
	Coriander	0.5	1.5	0.5	1.5
	Eucalyptus	2.5	3	2.5	2.5
	Juniper	0	1	0	1
	Geranium	0	1	0	1
	Lavender	1	2	1	2
	Peppermint	0.5	2	0	2
	Orange Blossom	0.5	1.5	0	0.5
	Pine	2	3	1.5	1.5
	Rosemary	2	1	2	1
	Sage	3	1.5	2	1.5
	Red thyme	0.5	1.5	0	1
	White thyme	0	1	0	1
Synthetic aromatic products	Benzyl acetate	0.5	1.5	1	1.5
	Linalyl acetate	1	2	1	2
	Terpenyl acetate	1.5	2	1.5	1.5
	Vetyveryl acetate	1.5	1	1	1.5
	Eugenol	0.5	3	0	3
	Hydroxy-citronellal	5.5	5	5	5
Fragrances	Fragrance “Chypre”	3	1.5	3	1.5
	Fragrance “Cologne”	2.5	1.5	2.5	1.5
	Fragrance “Floral”	2.5	2	2	2

NB: The tests are considered stable if the product remains limpid for 3 months at room temperature.
The results obtained after 1 month at 50°C are similar.
However, at 6°C, the product crystallizes in certain cases.

Using the same amount of active substance, SIMULSOL™ B 865 is comparable to ethoxylated hydrogenated castor oils, except with certain essential oils which are rich in alcohols (geranium, thyme, etc.).
In this context, the use of SIMULSOL™ B 865 would appear to be of particular interest.

In addition, SIMULSOL™ B 865 can also solubilize cationic surfactants (such as quaternium-82) to make clear formulas based on anionics. SIMULSOL™ B 865 can therefore be used in the formulation of many different products containing cationic agents.

3- Foaming power

SIMULSOL™ B 865 can be used in mild cleansing products.
It is moderately wetting and its cleansing action is comparable to that of NaLES, making it a mild cleansing agent.

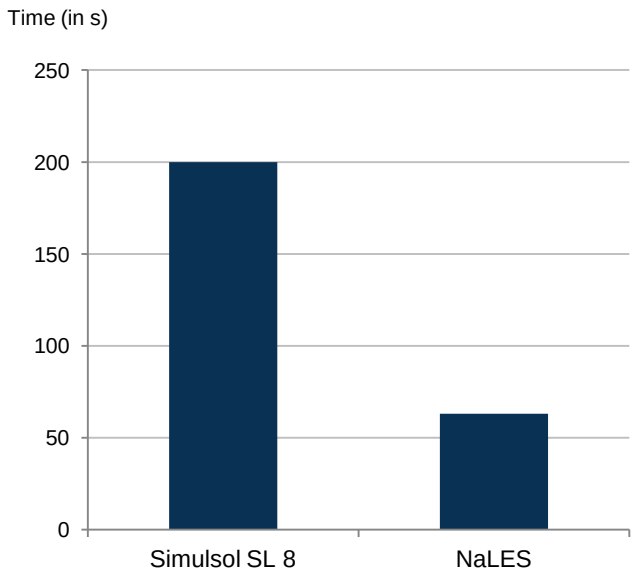
	Foam volume and stability of a solution containing 1% dry extract SIMULSOL™ B 865		
	Distilled water	Hard water	Hard water + soil
Foam volume (in mL)	550 mL	550 mL	320 mL
Stability after 5 min (in %)	90%	88%	82%

The foaming capacity of SIMULSOL™ B 865 has been assessed using the Ross-Miles test (ISO 696-1975). SIMULSOL SL 8 produces a satisfactory foam volume, even in the presence of soil.
The foam developed by SIMULSOL™ B 865 is **fine** and **stable**.

However, its foam texture is not comparable to that obtained with anionics. That is why it is recommended that SIMULSOL™ B 865 be combined with 2 to 5% conventional anionic surfactant in order to improve the texture of the foam developed. It could also be combined with SIMULSOL™ SL 26 in order to improve foam stability.

4- Wetting power

SIMULSOL™ B 865 is not a potent wetting agent.

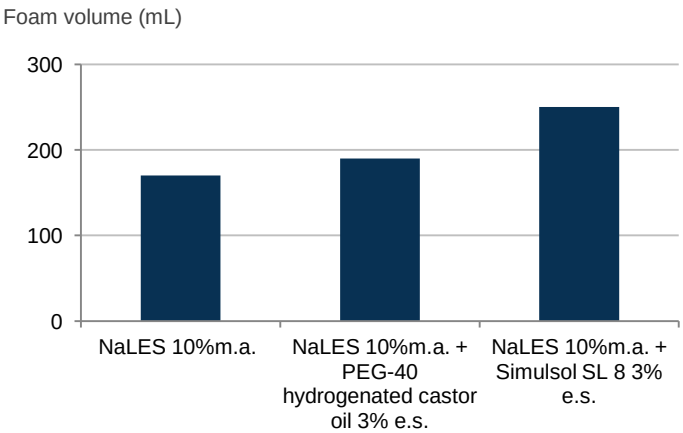


The wetting power has been measured using an in-house method (SEPPIC method 57CO002) adapted from procedure NFT 73-420 (amended ISO 8022 – 1990).
SIMULSOL™ B 865 was tested in comparison with NaLES. The tests were conducted at 25°C for concentrations of 0.1% active matter.

5- Foam enhancing properties

Formulas that contain SIMULSOL™ B 865 as a solubilizing agent develop higher foam volumes. In fact SIMULSOL™ B 865 boosts volume.

The foaming power of a surfactant solution was measured and compared to the foaming power of the same formula that contains 3% dry extract of solubilizing agent. Influence of SIMULSOL™ B 865 on foam volume was compared to influence of an hydrogenated ethoxylated castor oil.



The foam volume developed by the formula containing SIMULSOL™ B 865 is higher. SIMULSOL™ B 865 boots foam volume more than classical solubilizing agents (such as hydrogenated ethoxylated castor oils).

6- Resistance to Electrolytes

SIMULSOL™ B 865 is widely compatible in concentrated electrolyte solution, strong alkaline medium and acid ones (pH>3).

Applications

- Crop protection products
- Household, Institutional & Industrial detergents:
  - Food processing
  - Metal cleaner
  - Oil degreaser
  - Hand and dishwashing liquids
  - Alkaline chlorinated detergent
  - Fine fabric cleaners
- Oil field: SIMULSOL™ SL 8 doesn't emulsify oil (drilling or stimulation operation).
  - Gas well production detergents
  - Enhanced Oil Recovery (EOR)
- Hydraulic fluids
- Wood treatment
- Light duty liquids
- Flotation
- Fire fighting foam
- Car care

Instruction for use

SIMULSOL™ B 865 is supplied in liquid form and it is easy to handle.

SIMULSOL™ B 865 is stable over a wide pH range.

As a Non-ionic surfactant,, SIMULSOL™ B 865 is compatible with anionic, cationic, non-ionic and amphoteric surfactants.

SEPPIC S.A.

22 Terrasse Bellini
Paris la Défense
92806 Puteaux cedex
France
Tel. +33 (0)1 42 91 40 00
info.seppic@airliquide.com