ABIL® EM 97 S

Emulsifier for the formulation of water-in-silicone emulsions
Co-emulsifier for water-in-oil and oil-in-water emulsions

- Emulsifier for water-in-silicone emulsions with a pleasant silky skin feel
- Co-emulsifier for water-in-oil and oil-in-water emulsions imparting a velvety-silky skin feel
- Low levels of D5 (< 0.1%) and D4 (< 0.1%)
- Good release properties of AP-salts in W/Si-based AP/Deo formulations
- Suitable for the preparation of make-up formulations with pleasant application properties
- Low usage concentration of 1.0 – 4.0 %
- Liquid at room temperature

Personal Care

INCI name (CTFA name)

Bis-PEG/PPG-14/14 Dimethicone; Dimethicone

Chemical and physical properties (not part of specifications)

Form	liquid
Appearance	clear to slightly turbid

Properties

- ABIL® EM 97 S contains Bis-PEG/PPG-14/14 Dimethicone as emulsifying component and a Dimethicone (5 mPas) as solvent and emollient component.
- Structurally it consists of a linear dimethicone backbone that is modified in α- and ω-position with a polyether. Dimethicone chain length and polyether composition were optimized to provide a pleasant velvelty-silky skin feel and good emulsification properties.
- Due to its structure, it shows excellent compatibility to silicone oils and fluids but also to other typical non-silicone emollients, such as esters, ethers or carbonates.
- ABIL® EM 97 S is a nonionic, liquid emulsifier for water-in-silicone emulsions.
- Moreover, it can be used as co-emulsifier for water-in-oil and oil-in-water emulsions to obtain a velvety-silky skin feel in cosmetic formulations.
- The recommended usage concentration of ABIL® EM 97 S is 2.0 – 4.0 % when used as single emulsifier and 1.0 – 2.0 % when used as co-emulsifier.
- Typical application areas for the usage of ABIL® EM 97 S are make-up and antiperspirant formulations, but it is also widely used in skin care or sun care formulations because of the sensory benefits it provides.
- In make-up formulations ABIL® EM 97 S is often combined with emulsifiers that provide an extremely good emulsion stability such as ABIL® EM 90 or ABIL® WE 09.
- Antiperspirant formulations based on ABIL® EM 97 S provide fast release of the active from the W/O or W/Si emulsion.
- The fast release of AP-active from ABIL® EM 97 (former version of ABIL® EM 97 S containing D5 instead of Dimethicone) based emulsions is documented by a simple test procedure: 5 % of an antiperspirant W/Si emulsion is dispersed into 95 % of water and kept under agitation. The amount of antiperspirant-active released into the aqueous phase of the dispersion after 5 min., 1 h and 24 h agitation is shown in Fig. 1. The formulation based on ABIL® EM 90, shown for comparison, provides a much slower release of the AP-active in this test.
- In AP/Deo formulations based on a combination of ABIL® EM 97 S (provides better release properties) and ABIL® EM 90 (typically provides better stability) the optimum formulation properties can typically be adjusted by the ratio of the two emulsifiers.

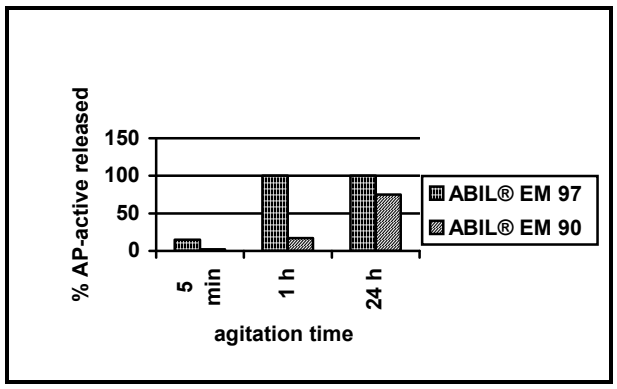

Fig.1: AP-active release from formulations based on ABIL® EM 97 or ABIL® EM 90

Preparation

- ABIL® EM 97 S is soluble in silicone oils and fluids such as Dimethicone or Cyclopentasiloxane. Moreover it is compatible with typical cosmetics oils such as esters (e.g. Isopropyl Myristate or Caprylic/Capric Triglyceride), ethers or carbonates.
- When preparing emulsions containing ABIL® EM 97 S, it is added to the oil phase.
- The manufacturing conditions for emulsions correspond to the principles of normal processes for W/O or W/Si emulsions.
- In case ABIL® EM 97 S is used as a co-emulsifier to improve the skin feel of O/W emulsions, it is also recommended to add it to the oil phase. As a silicone based emulsifier it might lead to a viscosity decrease in O/W emulsions containing liquid crystalline structures formed by the primary O/W emulsifier and consistency enhancers. In case the viscosity needs to be adjusted it is either recommended to increase the amount of polymeric thickeners (e.g. carbomers) or to optimize the amount of consistency enhancers.

Recommended usage concentration

2.0 – 4.0 % as primary emulsifier
1.0 – 2.0 % as co-emulsifier

Packaging

180 kg drum

Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

Guide Line Formulations

Light W/O Cream H 13/09-17	
Phase A	
ABIL® EM 97 S	3.0 %
Hydrogenated Castor Oil	0.8 %
Microcrystalline Wax (Paracera W 80, Paramelt B. V.)	1.2 %
TEGOSOFT® P (Isopropyl Palmitate)	4.3 %
Isohexadecane	4.3 %
Dimethicone (5 mPas)	10.4 %
Phase B	
Glycerin	3.0 %
Sodium Chloride	2.0 %
TEGO® Cosmo C 100 (Creatine)	0.5 %
Water	70.5 %
Parfum, Preservative	q.s.

Preparation:

1. Heat phase A to approx. 80°C.
2. Add phase B slowly while stirring.
3. Homogenise for a short time.
4. Cool with gentle stirring below 30°C and homogenise again.

O/W Silky Moisturizing Cream Gel H 13/09-1	
Phase A	
ABIL® Care XL 80 (Bis-PEG/PPG-20/5 PEG/PPG-20/5 Dimethicone; Methoxy PEG/PPG-25/4 Dimethicone; Caprylic/Capric Triglyceride)	3.00 %
ABIL® EM 97 S	1.00 %
Dimethicone (5 mPas)	9.00 %
ABIL® 350 (Dimethicone)	1.00 %
TEGOSOFT® CR (Cetyl Ricinoleate)	3.00 %
Xanthan Gum	0.20 %
TEGO® Carbomer 341 ER (Acrylates/C10-30 Alkyl Acrylate Crosspolymer)	0.40 %
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	4.00 %
Phase B	
Water	72.90 %
TEGO® Cosmo C 100 (Creatine)	0.50 %
Phase C	
Ethanol	5.00 %
Sodium Hydroxide (10 % in water)	q.s.
Preservative, Perfume	q.s.

Preparation:

2. Heat phase A to approx. 30°C.
3. Add phase A to phase B with stirring[1)].
4. Homogenise.
5. Add phase C and homogenise for a short time.

[1)] Important:
If phase A has to be charged into the vessel first, phase B must be added **without stirring**.

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