Technical Information

ABIL® ME 45 MB

High molecular weight silicone quat microemulsion for shampoo and conditioner applications

INTENDED USE

Conditioning agent

BENEFITS AT A GLANCE

- Very homogeneous distribution in conditioning formulations
- Outstanding hair conditioning properties
- Impressive heat protection properties
- Significantly improves color wash fastness of dyed hair
- Effective at low concentrations
- Very easy to process
- Easy to dilute with water
- Highly suitable for clear formulations
- Universal application in shampoos and conditioners
- Stable, PEG-free and preservative-free microemulsion

INCI (PCPC NAME)

Silicone Quaternium-22; Polyglyceryl-3 Caprate; Dipropylene Glycol; Cocamidopropyl Betaine

CHEMICAL AND PHYSICAL PROPERTIES (NOT PART OF SPECIFICATIONS)

Form	very low-viscous liquid
Type	cationic
Appearance	clear to opaque, colorless to yellowish liquid (at 25 °C)
Active silicone level	approx. 30%

PROPERTIES

ABIL® ME 45 MB includes a high molecular weight silicone quat, which in its neat form is difficult to formulate with due to its high viscosity and which makes the creation of clear and stable formulations difficult to achieve. By incorporating this highly efficient silicone quat via a microemulsion (i.e. ABIL® ME 45 MB) into a conditioning formulation, a highly homogeneous and fine distribution in the final formulation is achieved.
ABIL® ME 45 MB provides outstanding hair conditioning properties. It improves significantly the combability of wet and dry hair, and leads to excellent manageability. The significant improvement of wet comb after both shampoo, as well as conditioner application, has been found by a sensory assessment (see *Figure 1*) and quantifiable technical combing force measurements.

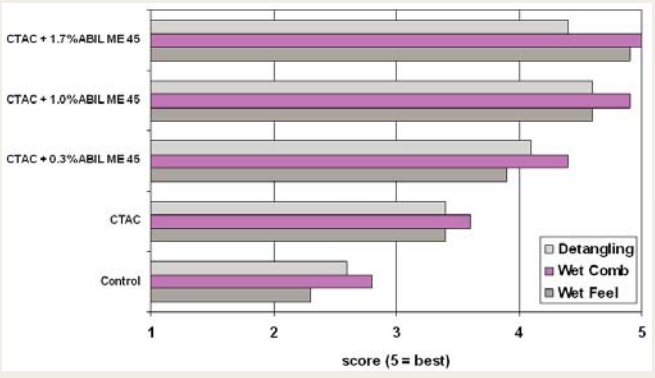

Fig. 1: Wet sensory assessment of conditioners

Test formulation: conditioning rinse
0.5% Ceteareth-25
5.0% Cetyl Alcohol
1.0% Cetrimonium Chloride (CTAC)
0.3 / 1.0 / 1.7% ABIL® ME 45 MB
ad 100.0% water; pH = 4

ABIL® ME 45 MB improves the wash fastness of dyed hair when used in shampoos / conditioners. *Figure 2* shows changes of color values compared to the control formulation after several washing cycles. Hair swatches were dyed with a commercial demi-permanent red coloration. By including 3.3% ABIL® ME 45 MB, the color fading was significantly reduced.
Figure 3 shows the visual difference between a freshly dyed hair swatch, and two hair swatches that have been through 20 wash cycles – one with a shampoo which includes ABIL® ME 45 MB and the other shampoo, which does not. The difference is clearly visible.

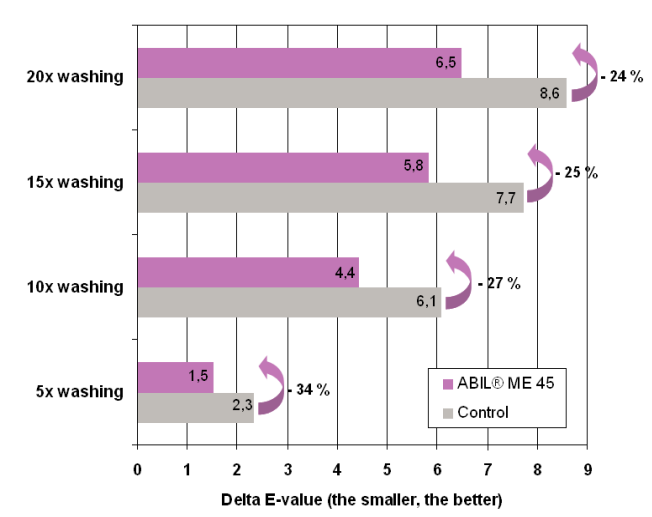

Fig. 2 Color wash fastness efficiency of ABIL® ME 45 MB

Test formulation: shampoo
9.0% Sodium Laureth Sulfate
3.0% Cocamidopropyl Betaine
0.2% Polyquaternium-10
0% resp. 3.3% ABIL® ME 45 MB
0.5% NaCl
2.5% ANTIL® 171
ad 100.0% water; pH = 5.5

Fig. 3: Color wash fastness efficiency of ABIL® ME 45 MB – differences in color after 20 washing cycles

A=directly after dyeing
B=after 20 times shampooing without ABIL® ME 45 MB
C=after 20 times shampooing incl. ABIL® ME 45 MB

ABIL® ME 45 MB is therefore especially suited for color-treated and/or damaged hair.
Additionally, ABIL® ME 45 MB provides significant heat protecting properties. This has been tested by applying heat in a standardized way to the hair using a professional flattening iron.
The heat protecting effect of nearly 80% is proven for virgin brown hair (*Figure 4*). The hair fiber integrity was measured by means of differential scanning calorimetry [1].

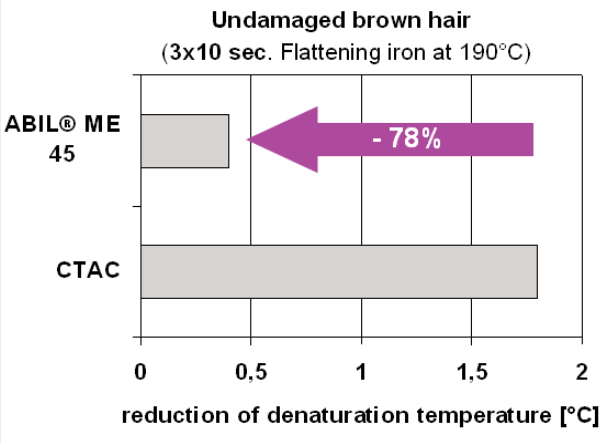

Fig. 4: Heat protecting properties of ABIL® ME 45 MB

Test formulation: conditioning rinse
0.5% Ceteareth-25
5.0% Cetyl Alcohol
1.0% CTAC
3.3% ABIL® ME 45 MB
ad 100.0% water; pH = 4

[1] *F.-J. Wortmann, C. Springob, G. Sendelbach, J. Cosmet. Sci. 53, 219-228 (2002).*

In skin cleansing preparations ABIL® ME 45 MB provides a superior skin feel that imparts a smooth and supple feel.

APPLICATION

ABIL® ME 45 MB can universally be used in conditioning shampoos, hair rinses, balms, body washes and leave-in formulations.
ABIL® ME 45 MB is highly suitable for clear formulations. Additionally, ABIL® ME 45 MB shows no discoloration (yellowing) in the formulations over time, which shows a clear benefit in comparison to Amodimethicones.

ABIL® ME 45 MB is highly compatible with anionic surfactants. By using ABIL® ME 45 MB in combination with cationic polymers, additional conditioning effects can be provided, while at the same time, supporting the efficacy of ABIL® ME 45 MB.

PREPARATION

Since ABIL® ME 45 MB is clearly soluble in water, it is very easy to incorporate into conditioning formulations.

- **Shampoo:**

  ABIL® ME 45 MB can be added at every production step, even a final addition is possible.

- **Conditioning Rinse:**

  ABIL® ME 45 MB is added to the water phase.

RECOMMENDED USAGE CONCENTRATION

- in shampoos and body washes: 1.0 – 7.0%
- in hair rinses:1.0 – 10.0%
- in leave-in formulations: 0.6 – 3.0%

STORAGE

At temperatures below ~0 °C ABIL® ME 45 MB starts to freeze and becomes turbid. When the product is brought back to room temperature, it is again a clear to slightly opaque liquid.
A possible slight flocculation after prolonged storage at low temperatures is reversible when heated to room temperature again under minimal mixing.
The possible turbidity of ABIL® ME 45 MB at lower temperatures has no impact on the performance properties of the product.

HAZARDOUS GOODS CLASSIFICATION

Information concerning:

- classification and labeling 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 sheet

GUIDELINE FORMULATIONS

Clear conditioning shampoo for coarse and damaged hair with heat- and color protecting properties
UW 173

Sodium Laureth Sulfate, 28%	32.00%
VARISOFT® PATC (Palmitamidopropyltrimonium Chloride)	1.50%
REWODERM® LI S 80 (PEG-200 Hydrogenated Glyceryl Palmate; PEG-7 Glyceryl Cocoate)	2.00%
ABIL® ME 45 MB	3.30%
Perfume	0.25%
Water	51.25%
TEGO® Cosmo C 100 (Creatine)	1.00%
Hydroxypropyl Guar Hydroxypropyltrimonium Chloride (Jaguar C-162, Solvay Novecare)	0.20%
TEGO® Betain F 50 (Cocamidopropyl Betaine)	8.00%
NaCl	0.50%
Preservative	q.s.

Preparation:
Phase A: Dissolve the Jaguar C-162 and TEGO® Cosmo C 100 in water and let it swell. Blend the other ingredients in the given order in SLES. Then add the water phase and the Betaine.
Adjust final viscosity with NaCl.

Viscosity (Brookfield, 25 °C): 3300 mPas.

Clear hair and body shampoo, PEG-free
UW 230/4

Sodium Lauryl Sulfate, 35%	17.10%
Water	72.40%
Polyquaternium-10 (Polymer UCare JR 400, Dow Chemical)	0.20%
TEGO® Betain F 50 (Cocamidopropyl Betaine)	6.60%
ABIL® ME 45 MB	1.70%
ANTIL® SPA 80 (Isostearamide MIPA; Glyceryl Laurate)	1.50%
Citric acid, 30%	0.50%
NaCl	q.s.
Preservative, Perfume	q.s.

Preparation:
Blend the ingredients in the given order at ~40 °C.
Adjust the pH-value to approx. 5.5.
Adjust final viscosity with NaCl.

Viscosity (Brookfield, 25 °C): 3000 mPas.

Hair & body shampoo, sulfate-free UW 231/8

Lauryl Glucoside (Plantacare 1200 UP, BASF)	8.80%
REWOTERIC® AM C (Palmitamidopropyltrimonium Chloride)	11.30%
ANTIL® SPA 80 (Isostearamide MIPA; Glyceryl Laurate)	1.30%
Water	56.20%
Polyquaternium-10 (Polymer UCare JR 400, Dow Chemical)	0.20%
ABIL® ME 45 MB	1.70%
TEGO® Betain F 50 (Cocamidopropyl Betaine)	15.00%
Citric Acid, 30%	2.50%
TEGO® Pearl N 300 (Glycol Distearate; Laureth-4; Cocamidopropyl Betaine)	3.00%
Preservative, Parfum	q.s.

Preparation:
Blend the ingredients in the given order.
Adjust the pH-value to approx. 5.5.

Viscosity (Brookfield, 25 °C): 3000 mPas.

Conditioner with heat- and color protecting properties UW 177

Water	89.30%
Glycerin	2.00%
VARISOFT® BT 85 Pellets (Behentrimonium Chloride)	2.00%
ABIL® ME 45 MB	1.70%
TEGO® Alkanol 16 (Cetyl Alcohol)	5.00%
Preservative, Perfume	q.s.

Preparation:
Add all ingredients in water and heat to 75 °C with adequate mixing. Homogenize at 75 °C and cool down while stirring.
Add perfume and preservative at temperature below 45 °C.

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