Technical Information

ABIL® T Quat 60

Hair conditioning agent for hair fiber protection

Intended use

Conditioning agent

Benefits at a glance

- cutting-edge silicone conditioning technology
- excellent substantivity to hair keratin
- protection against hair fiber breakage
- heat protecting properties
- improves colour wash-fastness of dyed hair
- superior skin-feel and foam properties
- less thinning effect in a surfactant formulation
- highly suitable for clear formulations
- universal application in shampoo and conditioner

INCI (PCPC Name)

Silicone Quaternium-22

Chemical and physical properties (not part of specifications)

Form	Liquid
Type	Catinic
Appearance	Clear (at 20 °C)
Active level silicone quat	Approx. 65%
PPG-3 Myristyl Ether	Approx. 35%

Properties

ABIL® T Quat 60 exhibits outstanding conditioning properties on hair. It improves significantly the combability of wet and dry hair and leads to excellent manageability.

It can be used universally in conditioning shampoos, hair rinses, balms, body washes and leave-in formulations. It is suitable for clear formulations. The product is proven to be highly substantive to hair keratin because of its unique triple cationic charge.

ABIL® T Quat 60 protects the hair against fiber breakage caused by repeated combing. The results of repeated grooming tests conducted by the Textile Research Institute in Princeton, NJ, USA, show considerable benefits obtained by shampoo and conditioner formulas including ABIL® T Quat 60. Figure 1 shows the number of broken fibers after 10 000 brushing strokes. ABIL® T Quat 60 shampoo reduces fiber breakage by 60%.

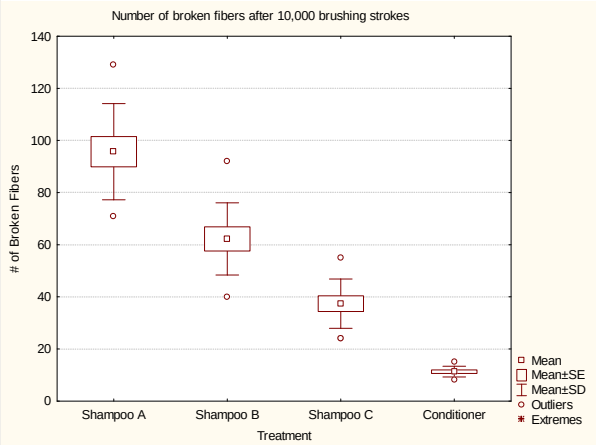

Fig. 1: Number of broken hair fibers after 10 000 brushing strokes

Shampoo A: Control; Shampoo B: incl. Silicone Quaternium 16; Shampoo C: incl. ABIL® T Quat 60; Conditoner: including ABIL® T Quat 60, Shampoo test formula: 9.0% SLES; 2.5% CAPB; 1.0% active Silicone Quat; 0.3% PQ-10; 1.0% Palmitamidopropyl-trimonium Chloride VARISOFT® PATC); 0.9% REWODERM® LI S 80; 0.2% NaCl; pH 5.5, Conditioner test formula: 0.5% Ceteareth-25; 5.0% Cetyl Alcohol; 1.0% active ABIL® T Quat 60; pH = 4.5

ABIL® T Quat 60 shows significant heat protection properties associated with the application of high temperature styling tools.

The heat protection effect of approx. 40% is proven for damaged bleached and undamaged brown hair. The hair fiber integrity is measured by means of differential scanning calorimetry.

The hair can be significantly protected from possible heat damage when using a high temperature hair straightener or blow dryer.

Figure 2 shows the influence of a heat treatment with a straightener on undamaged brown hair. Non thermal damaged tresses treated with CTAC are used as control. ABIL® T Quat 60 provides approx. 40% protection.

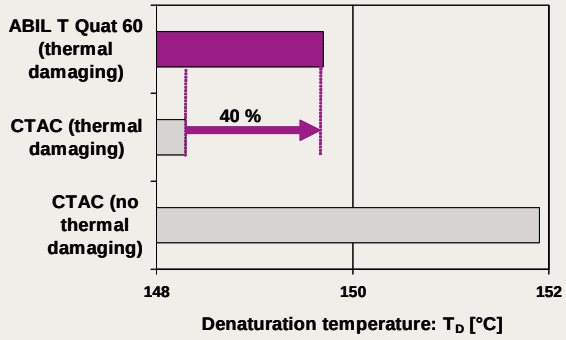

Fig. 2: Heat Protection on undamaged brown hair/ Conditioner Rinse with 1.5% use level ABIL® T Quat 60

While hair fiber protection is a key claim for conditioning formulations, a colour protection for dyed hair is most attractive as it is a consumer perceiveable property. A shampoo system containing ABIL® T Quat 60 provides an improved colour wash fastness for dyed hair. The colour protection was proven by using a conditioning shampoo containing ABIL® T Quat 60 at 0.8% use level.

In a surfactant formulation ABIL® T Quat 60 significantly reduces the thinning effect commonly associated with the use of the silicone derivatives. Compared to linear silicone quat technology the amount of thickener in a formulation can be reduced significantly and a cost saving effect can be achieved.

Figure 3 shows an example of a shampoo formulation containing 9% SLES, 3% CAPB and 0.7% NaCl. At the active matter content of 0.5 % silicone, with ABIL® T Quat 60 28% less hydrophilic thickener (ANTIL® 171, PEG-18 Glyceryl Oleate/Cocoate) is needed to get the desired viscosity.

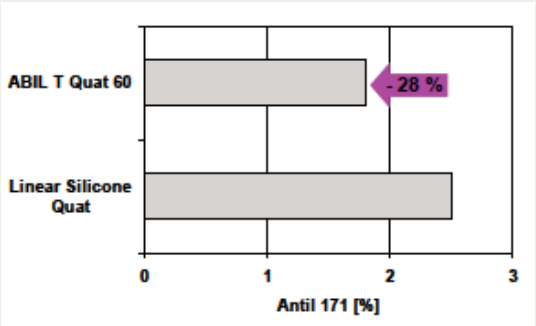

Fig. 3: Required thickener concentration for a viscosity of 4 000 mPas

In skin cleansing preparations ABIL® T Quat 60 provides a superior skin feel that imparts a smooth and supple feel. Furthermore, the foam properties are improved. A more rich and dense foam with better stability can be achieved.

Application

ABIL® T Quat 60 can be universally used in rinse-off products. ABIL® T Quat 60 is suitable for clear formulations. ABIL® T Quat 60, which is a high molecular weight cationic silicone, is excellent compatible with anionic surfactants. The use in combination with cationic polymers helps to provide additional conditioning effects and supports the efficacy of ABIL® T Quat 60. In cationic hair conditioning formulations like hair balms or masks, ABIL® T Quat 60 provides outstanding conditioning properties and impressive heat protection alone or in combination with other cationic conditioning agents.

Preparation

Shampoo

ABIL® T Quat 60 is mixed with anionic surfactants, water insoluble components and solubilizers.

The mixture is diluted with water. Then secondary surfactants (e. g. TEGO® Betain), water soluble ingredients, and thickeners are added.

Packaging

Conditioner Rinse

In a 2-phase production ABIL® T Quat 60 is molten together with fatty alcohol, emulsifiers and other water insoluble components. The hot water phase is added and homogenized properly. The emulsion is then cooled down with gentle stirring.

Recommended usage concentration

ABIL® T Quat 60

- 0.5 – 2.0% in shampoos and skin cleansing preparations
- 0.5 – 4.0% in hair rinses
- 0.3 – 1.5% in leave-in formulations

Storage

At temperatures below 18 °C ABIL® T Quat 60 starts to become turbid. When the product is brought back to room temperature it is again a clear, yellow liquid.

A possible turbidity of ABIL® T Quat 60 at lower temperatures has no impact on the conditioning properties of the product.

Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport of chemicals
- protective measures for storage and handling
- measures in case of accidents and fire
- toxicological and ecotoxicological effects

is given in our safety data sheets.

Guideline formulations

If you are interested in guideline formulations please visit our homepage https://personal-care.evonik.com.

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