

ABIL[®] T Quat 60

Premium conditioning agent with additional hair fiber protection properties

- cutting-edge silicone conditioning technology
- excellent substantivity to hair keratin
- protection against hair fiber breakage
- heat protecting properties
- improves color 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

Personal Care

INCI name (CTFA name)

Silicone Quaternium-22

Chemical and physical properties (not part of specifications)	ABIL® T Quat 60
Form	liquid
Type	cationic
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 10000 brushing strokes. ABIL® T Quat 60 shampoo reduces Fiber breakage by 60 %

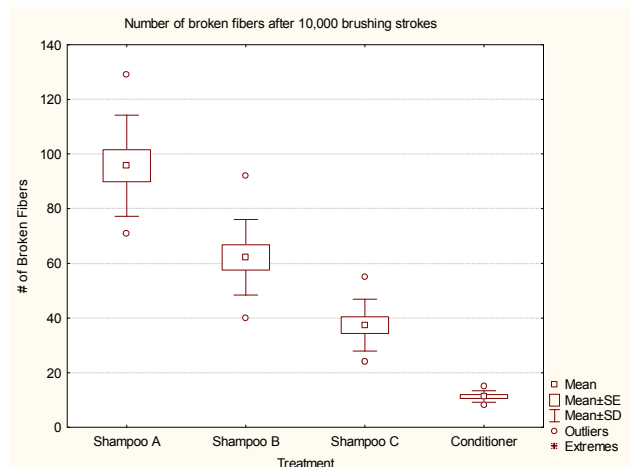


Fig. 1: Shampoo A: Control; Shampoo B: incl. Silicone Quaternium 16; Shampoo C: incl. ABIL T Quat 60; Conditioner: including ABIL T Quat 60
Shampoo test formula: 9.0 % SLES; 2.5 % CAPB; 1.0 % active Silicone Quat; 0.3 % PQ-10;

1.0 % Palmitamidopropyltrimonium 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.

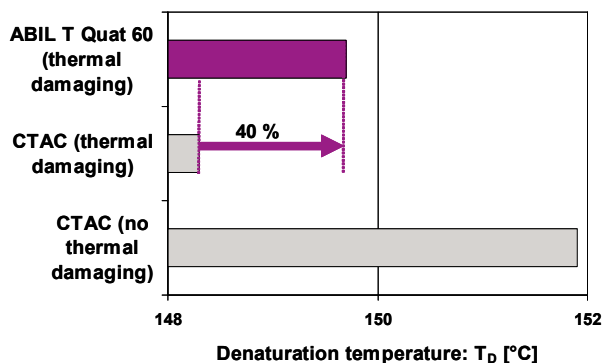


Fig. 2: Heat Protection on undamaged brown hair / Conditioner Rinse with 1.5 % use level ABIL® T Quat 60

While hair fiber protection is a key claim for conditioning formulations, a color protection for dyed hair is most attractive as it is a consumer perceivable property. A shampoo system containing ABIL® T Quat 60 provides an improved color wash-fastness for dyed hair. The color 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.

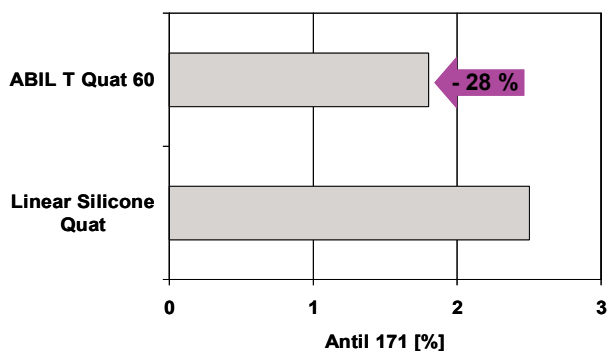


Fig. 3: Required thickener concentration for a viscosity of 4000 mPas

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, 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.

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

Packaging

200 kg drum

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 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.

Guide Line Formulations

Conditioning Shampoo for Coarse and Damaged Hair with Color Protecting Properties WP 46/3 b	
Phase A	
Polyquaternium-10 (Polymer JR 400, Amerchol)	0.30 %
Water	56.85 %
Phase B	
Sodium Laureth Sulfate, 28 %	32.00 %
VARISOFT® PATC (Palmitamidopropyltrimonium Chloride)	1.50 %
ANTIL® 200 (PEG-200 Hydrogenated Glyceryl Palmate; PEG-7 Glyceryl Cocoate)	0.90 %
ABIL® T Quat 60 (Silicone Quaternium-22)	1.50 %
Perfume	0.25 %
Phase C	
TEGO® Betain F 50 (Cocamidopropyl Betaine)	6.50 %
Phase Z	
NaCl	0.20 %
Preservative	q.s.
Preparation: Phase A: Dissolve the Polyquaternium in water and let it swell. Phase B: Dissolve the ingredients in the given order in SLES. Then add Phase A and C (Betain) to Phase B. Adjust final viscosity with NaCl.	

Clear Leave-In Conditioning Foam with Heat Protection WP 47/2	
ABIL® T Quat 60 (Silicone Quaternium-22)	0.5 %
TAGAT® CH 40 (PEG-40 Hydrogenated Castor Oil)	0.5 %
Perfume	0.3 %
TEGO® Betain 810 (Capryl/Capramidopropyl Betaine)	2.0 %
Water	94.0 %
TEGO® Cosmo C 100 (Creatine)	0.5 %
TEGOCEL® HPM 50 (Hydroxypropyl Methylcellulose)	0.3 %
VARISOFT® 300 (Cetrimonium Chloride)	1.3 %
LACTIL® (Sodium Lactate; Sodium PCA; Glycine; Fructose; Urea; Niacinamide; Inositol; Sodium Benzoate; Lactic Acid)	0.5 %
Citric Acid, 30 %	0.1 %
Preservative	q.s.
Preparation: Dissolve TEGO® Cosmo C 100 and TEGOCEL® HPM 50 in water and let it swell. Mix ingredients in the given order. Adjust pH to 4.5 with Citric Acid.	

Deep Conditioning Hair Mask for damaged Hair with Heat Protecting Properties WP 45/3	
Phase A	
TEGINACID® C (Ceteareth-25)	0.5 %
TEGO® Alkanol 16 (Cetyl Alcohol)	3.0 %
TEGO® Amid S 18 (Stearamidopropyl Dimethylamine)	1.0 %
TEGOSOFT® DEC (Diethylhexyl Carbonate)	1.0 %
ABIL® T Quat 60 (Silicone Quaternium-22)	1.5 %
Phase B	
Water	90.2 %
TEGO® Cosmo C 100 (Creatine)	0.5 %
Propylene Glycol	2.0 %
Citric Acid Monohydrate	0.3 %
Phase Z	
Preservative, Perfume	q.s.
Preparation: Heat Phases A and B to 75 °C. Add B to A, then homogenize. Cool down while stirring. Add preservative and perfume below 40 °C.	

Conditioning Hair Rinse with Heat Protecting Properties WP 45/1	
Water	90.2 %
VARISOFT® EQ 65 Pellets (Distearoylethyl Dimonium Chloride; Cetearyl Alcohol)	2.0 %
VARISOFT® BT 85 Pellets (Behentrimonium Chloride)	2.0 %
ABIL® T Quat 60 (Silicone Quaternium-22)	0.8 %
TEGO® Alkanol 1618 (Cetearyl Alcohol)	5.0 %
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 40 °C.	

H 01/12

This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments.

The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.
(Status: April, 2008)