

## VARISOFT® EQ 65 Pellets

Readily biodegradable ester quat with excellent conditioning performance

- Excellent conditioning agent with good cost performance relation
- Emulsifier with typical cationic skin feel
- Readily biodegradable
- Solvent-free and high flash point
- Vegetable based

Personal Care

## INCI Name

Distearylethyl Dimonium Chloride;  
Cetearyl Alcohol

### Chemical and physical properties (not part of specifications)

Appearance (20 °C)	Pellets
Active matter	approx. 65 %

## Properties

VARISOFT® EQ 65 Pellets is an ester quat based on high purity stearic acid and is compounded with Cetearyl Alcohol. It is a readily biodegradable conditioning agent with a high flash point.

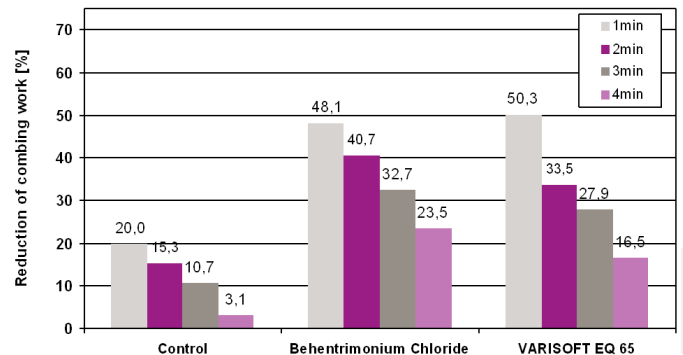
VARISOFT® EQ 65 Pellets improves the conditioning properties of the wet and dry hair. It can also act as an emulsifier providing a sensory profile typical of cationic emulsions:

- Substantive to hair and skin
- Improves detangling and wet combing of hair
- Provides good wet feel of hair
- Superior dry combing and dry feel of hair
- Substantive to skin for good water resistance
- Cationic emulsifier for skin care emulsions

Conditioners including VARISOFT® EQ 65 Pellets have a very rich and creamy appearance.

In a cream rinse treatment VARISOFT® EQ 65 Pellets showed an excellent rinsability and was more easily rinsed out of hair when compared to Behentrimonium Chloride (VARISOFT® BT 85 Pellets), a high performance conditioning agent.

*Figure 1* shows the combing force measurement results of virgin brown hair, predamaged by permanent wave treatment, generated with Diastron MTT 175. The results are based on 3 swatches each. The test formulations were conditioning rinses containing 1 wt% active conditioning agent based on 0.5 % Cetearth-25; 5.0 % Cetyl Alcohol; 1.5 % VARISOFT® EQ 65 Pellets resp. VARISOFT® BT 85 Pellets; and water to 100.0 %, pH = 4. At a realistic rinsing time of 1 min., the reductions of wet coming forces are excellent and very comparable for both quaternaries. With increasing rinsing time, the efficacy of VARISOFT® EQ 65 Pellets decreases. This could be of advantage for the consumer (reduced water consumption, less time consuming).



**Figure 1: Reduction of combing work depending on rinsing time – comparison between Behentrimonium Chloride and VARISOFT® EQ 65 Pellets.**

## Conditioning efficacy

VARISOFT® EQ 65 Pellets shows excellent conditioning properties, which outperform Cetrimonium Chloride and are similar to the very efficient Behentrimonium Chloride.

Technical half head tests with 10 test persons – performed by an external test institute – verified the excellent conditioning properties of VARISOFT® EQ 65 Pellets.

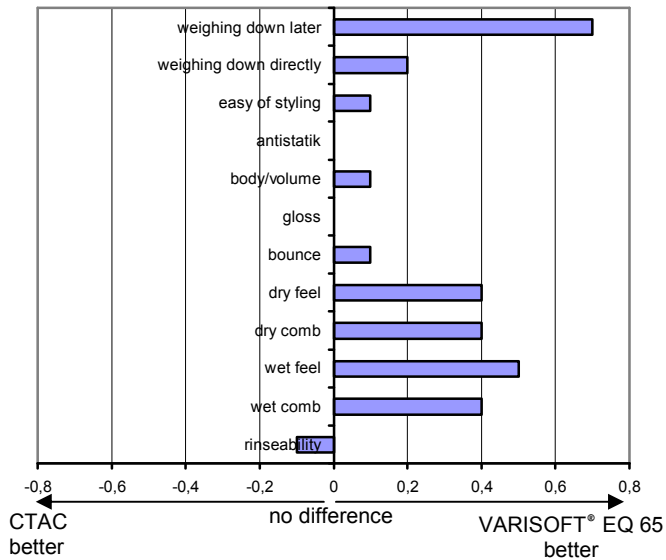
The test formulations contained

- 0.5 % TEGINACID® C (Cetearth-25)
- 5.5 % Cetearyl Alcohol
- 2.0 % active cationic

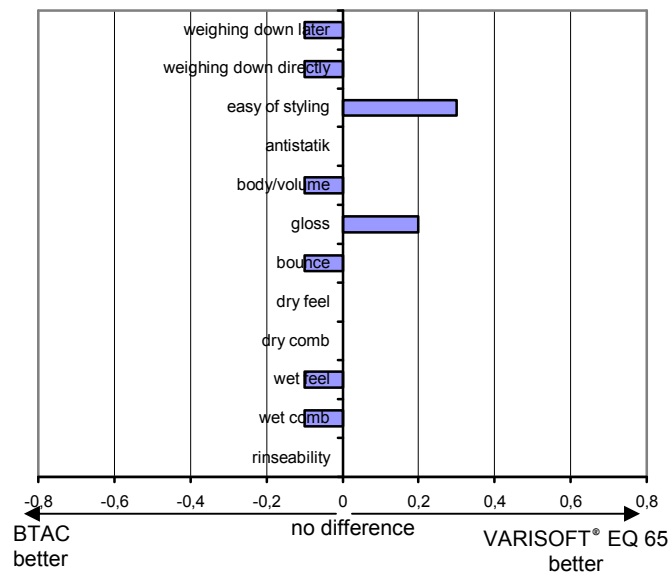
The pH value had been adjusted to 4.5.

*Figure 2* half head study shows that for most parameters tested VARISOFT® EQ 65 Pellets outperformed CTAC (Cetrimonium Chloride).

*Figure 3* half head study shows that the conditioning properties of VARISOFT® EQ 65 Pellets are very similar to the ones of the highly efficient BTAC, VARISOFT® BT 85 Pellets (Behentrimonium Chloride).



**Figure 2: Half head test results - comparison between VARISOFT® EQ 65 Pellets and CTAC (Cetrimonium Chloride).**



**Figure 3: Half head test results - comparison between VARISOFT® EQ 65 Pellets and BTAC (Behentrimonium Chloride), i.e. VARISOFT® BT 85 Pellets.**

## Application

VARISOFT® EQ 65 Pellets can be used for formulating

- Hair conditioners (rinse-off and leave-in)
- Skin care creams and lotions

Due to the content of Cetearyl Alcohol, the amount of additional fatty alcohol can be reduced.

## Preparation

VARISOFT® EQ 65 Pellets can be dispersed in water at approximately 75 °C. Addition of nonionic emulsifiers such as Cetareth-25 would improve the processability of VARISOFT® EQ 65 Pellets in water.

The viscosity of conditioners including VARISOFT® EQ 65 Pellets can be optimized by applying a second homogenization step after cooling down to room temperature.

VARISOFT® EQ 65 Pellets shows great stability at lower pH values. At formulation-pH of 5 and above, VARISOFT® EQ 65 Pellets tends to hydrolyze. Therefore, we recommend adjusting the pH of a cream rinse conditioner formulation containing VARISOFT® EQ 65 Pellets to around 4.

## Recommended usage concentration

1 - 10 % VARISOFT® EQ 65 Pellets

## Packaging

600 kg pallet (24 x 25 kg bag)

## 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 accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

## Guide Line Formulations

<b>Intensive Conditioning Hair Rinse WP 45/1</b>	
VARISOFT® EQ 65 Pellets	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 %
Water	90.2 %
Preservative, Perfume	q.s.
<b>Preparation:</b>	
1. Add all ingredients to water and heat to 75 °C with adequate mixing until all ingredients are dissolved.	
2. Homogenize.	
3. Cool down while stirring.	
4. Add preservatives and perfume at temperature below 40 °C.	
5. Homogenize for a 2 <sup>nd</sup> time at 30 °C for 30 seconds to increase viscosity.	

<b>Intensive Conditioning Hair Mask WP 103/10</b>	
Phase A	
TEGO® Alkanol 1618 (Cetearyl Alcohol)	3.0 %
TEGIN® M Pellets (Glyceryl Stearate)	0.5 %
VARISOFT® EQ 65 Pellets	2.0 %
TEGO® Amid S 18 (Stearamidopropyl Dimethylamine)	1.3 %
ABIL® T Quat 60 (Silicone Quaternium-22)	1.5 %
Phase B	
Water	89.6 %
TEGO® Cosmo C 100 (Creatine)	0.3 %
Glycerin	1.0 %
Panthenol	0.5 %
Citric Acid Monohydrate	0.3 %
Phase Z	
Preservative, Perfume	q.s.
<b>Preparation:</b>	
Blend phases A and B separately. Heat them up to 85 °C. Combine and homogenize for 30 seconds. Add preservative and perfume below 30 °C. Homogenize for a 2 <sup>nd</sup> time at 30 °C for 30 seconds to increase viscosity.	

<b>Eco-friendly Conditioner, PEG-free AK 85/10</b>	
VARISOFT® EQ 65 Pellets	3.1 %
TEGO® Alkanol 1618 (Cetearyl Alcohol)	4.4 %
Glycerin	2.0 %
Water	90.5 %
Preservative, Perfume	q.s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>1. Add all ingredients to water and heat to 85 °C with adequate mixing until all ingredients are dissolved.</li> <li>2. Homogenize.</li> <li>3. Cool down while stirring. Add preservatives and perfume at temperature below 40 °C.</li> <li>4. Homogenize for a 2<sup>nd</sup> time at 30 °C for 30 seconds to increase viscosity.</li> </ol>	

<b>Hand and Body Lotion</b>	
<b>ADP 5616-160</b>	
Water	74.60 %
Sodium Chloride	0.05 %
Glycerin	7.65 %
VARISOFT® EQ 65 Pellets	4.75 %
Petrolatum	4.55 %
TEGOSOFT® P (Isopropyl Palmitate)	4.25 %
TEGO® Alkanol 16 (Cetyl Alcohol)	3.75 %
ABIL® 350 (Dimethicone)	0.40 %
Preservative	q.s.
Citric Acid ad pH 4.2 - 4.3	q.s
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>Using overhead stirring, add water and glycerin in a steel container and heat to 70 °C.</li> <li>Add VARISOFT® EQ 65 Pellets, Petrolatum, TEGOSOFT® P, TEGO® Alkanol 16 into the container separately with holding the material at temperature after each addition.</li> <li>Add ABIL® 350 into the vessel and hold the temperature for 20 minutes.</li> <li>Homogenize.</li> <li>Continue to stir until the mixture cools to 40 - 45 °C.</li> <li>Add preservative.</li> <li>Adjust pH to 4.2-4.3 with Citric Acid (10 % in water).</li> </ol>	

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(Status: April, 2008)

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