Technical Information

VARISOFT® EQ 65 Pellets

Readily biodegradable ester quat with excellent conditioning performance

Intended use

Conditioning agent

Benefits at a glance

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

INCI (PCPC name)

Distearoylethyl 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% Ceteareth-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).

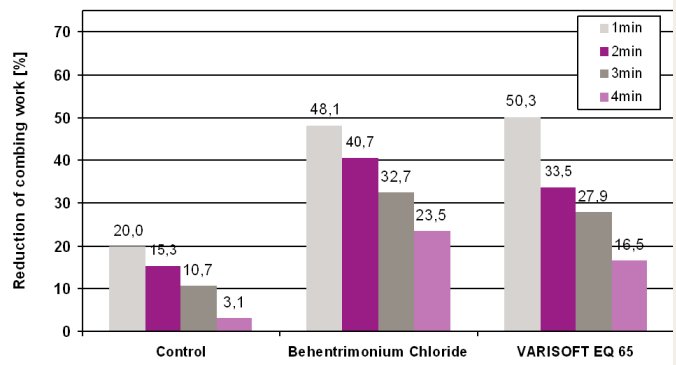

Figure 1: Reduction of combing work depending on rinsing time – comparison between Behentrimonium Chloride and VARISOFT® EQ 65 Pellets.

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 (Ceteareth-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).

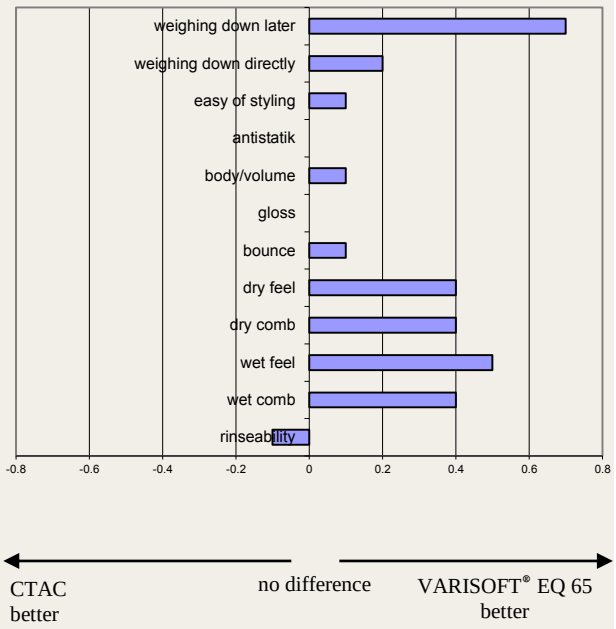

Figure 2: Half head test results – comparison between VARISOFT® EQ 65 Pellets and CTAC (Cetrimonium Chloride).

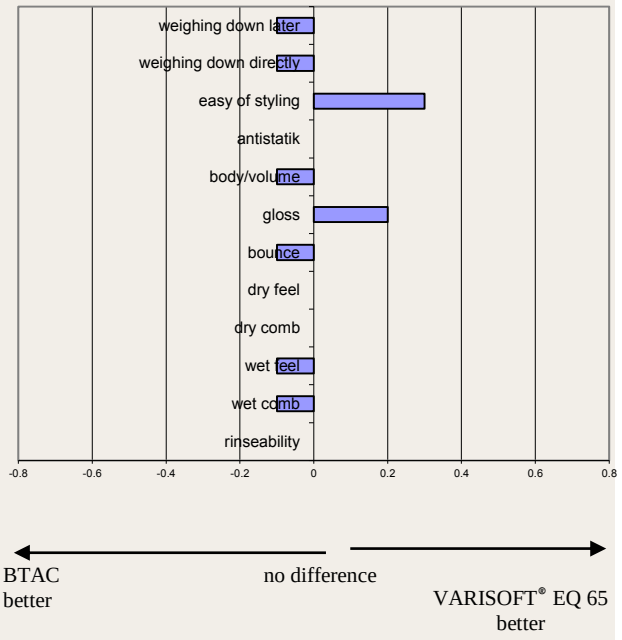

Figure 3: Half head test results – comparison between VARISOFT® EQ 65 Pellets and BTAC (Behentrimonium Chloride), i.e. VARISOFT® BT 85 Pellets.

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 Ceteareth-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

560 kg pallet (28 x 20 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.

Guideline formulations

Intensive Conditioning Hair Rinse WP 45/1	
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.

Preparation:

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 2nd time at 30 °C for 30 seconds to increase viscosity.

Intensive Conditioning Hair Mask WP 103/10	
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.

Preparation:

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 2nd time at 30 °C for 30 seconds to increase viscosity.

Eco-friendly Conditioner, PEG-free AK 85/10	
VARISOFT® EQ 65 Pellets	3.1%
TEGO® Alkanol 1618 (Cetearyl Alcohol)	4.4%
Glycerin	2.0%
Water	90.5%
Preservative, Perfume	q.s.

Preparation:

1. Add all ingredients to water and heat to 85 °C with adequate mixing until all ingredients are dissolved.
2. Homogenize.
3. Cool down while stirring. Add preservatives and perfume at temperature below 40 °C.
4. Homogenize for a 2nd time at 30 °C for 30 seconds to increase viscosity.

Hand and Body Lotion ADP 5616-160	
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

Preparation:

1. Using overhead stirring, add water and glycerin in a steel container and heat to 70 °C.
2. Add VARISOFT® EQ 65 Pellets, Petrolatum, TEGOSOFT® P, TEGO® Alkanol 16 into the container separately with holding the material at temperature after each addition.
3. Add ABIL® 350 into the vessel and hold the temperature for 20 minutes.
4. Homogenize.
5. Continue to stir until the mixture cools to 40 – 45 °C.
6. Add preservative.
7. Adjust pH to 4.2–4.3 with Citric Acid (10 % in water).

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Evonik Nutrition & Care GmbH
Goldschmidtstraße 100 45127 Essen, Germany
P.O.BOX 45116 Essen PHONE + 49 201 173-2854 FAX +49 173-1828

personal-care@evonik.com www.evonik.com/personal-care

Product specification

Material VARISOFT EQ 65 PELLETS
Spec.Code K00 Standard

Evonik Nutrition & Care GmbH
Business Line Personal Care
Goldschmidtstrasse 100
45128 Essen
Phone: +49 (201) 173-2524
Fax: +49 (201) 173-1828
http://www.evonik.com/personal-care
personal-care@evonik.com

Inspection Characteristics	Method	Limits	Units	Z
Appearance 25°C	GM_0170_00	OK		X
Odour	GM_0175_02	TYPICAL, TYPICAL		X
pH-Value 5 %	GM_0133_01	3.0-6.0	pH-Value	X
Colour to Gardner	GM_0140_02	<=3.0		X
Quaternary uncorrected	GM_0502_07	60.00-64.00	%	X
Methylchloride	GM_5071_01	<=50	ppm	X

Appearance 25°C	white/ivory pellets
Odour	TYPICAL

Report on inspection certificate: X = specific/actual value, C = unspecific value/conformity, T = not reported

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All warranty claims in respect of the conformity of our product are subject to our General Terms and Conditions of Sale and Delivery. The data listed above reflects the criteria for our internal quality tests. We do not hereby make any express or implied warranty, whether for specific properties or for fitness for any particular application or purpose. All values are valid for the product when despatched from the works.

The Standard Test Methods can be obtained from specialized publishers. Evonik's test methods are available on request.

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VARISOFT® EQ 65 Pellets

Product data record

1. General information

1.1 Manufacturer / Supplier

Evonik Nutrition & Care GmbH
Personal Care Business Line
Goldschmidtstrasse 100
D-45127 Essen / Germany
Phone: +49 (201) 173-2524
Fax: +49 (201) 173-1828
personal-care@evonik.com
http://www.evonik.com/personal-care

1.2 Product Description

1.2.1 Raw material category Cationic Surfactant with Conditioning Properties

1.2.2 Ingredients according to INCI

Distearoylethyl Dimonium Chloride; Cetearyl Alcohol

1.2.3 Composition

Components	Source	Ratio
Distearoylethyl Dimonium Chloride	vegetable / synthetic	approx. 65 %
Cetearyl Alcohol	vegetable	approx. 35 %

This composition information serves for information of our customers only.
It is neither relevant for the composition listing according to Regulation (EC) No 1223/2009, nor does it reflect the chemical composition according to the different chemical regulations in the world which is disclosed in the table "information on ingredients/hazardous components" in the relevant parts of the respective (Material) Safety Data Sheets.

1.2.4 Solvents, preservatives and other additives

	CAS No.	EINECS / EC No.	content	Function
no additives				

No components which are listed in Annex II of the Regulation (EC) No 1223/2009 and its modifications and updates are added to and are not to be expected in the above mentioned product due to the raw materials used and the production process.

2. Information on production process

General description of production process:
Mixture

The product is not irradiated.

VARISOFT® EQ 65 Pellets are produced in the strictest absence of any animal derived material of any type.

Origin of vegetable starting material: palm oil, rapeseed oil

GMO-Status:
The item does not contain ingredients that might have been derived from GM sources. However max 0.9 % cross-contamination is possible. Any protein or DNA is not present. Consequently the product will be PCR negative when tested.

2.1 By products

		method
1,4-Dioxane	not applicable	
Residual solvents	not applicable	
Dichloroacetic acid	not applicable	Chromatography
Monochloroacetic acid	not applicable	Chromatography
Free amines	1.2 % free amine (average)	Chromatography
Pesticides	meets the valid regulatory requirements for limits on agricultural pesticides	
Nitrosamines	not determined	
Total heavy metals	max. 20 ppm	AAS-ICP
As, Cd, Co, Cr, Hg, Ni, Pb, Sb	Each < 1 ppm	AAS-ICP
Latex	not to be expected in the product due to the raw materials used and the production process	
VOC	< 3 % according to SR (Swiss Right) 814.018	

2.2 CMR (Carcinogenic, Mutagenic or Reprotoxic)

The use in cosmetic products of substances classified as CMR substances, of category 1A or 1B or 2 under Part 3 of Annex VI to Regulation (EC) No 1272/2008 shall be prohibited.

Further Information:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:342:0059:0209:en:PDF

Some of the CMR substances mentioned below and listed in Annex VI to Regulation (EC) No 1272/2008 are used as starting materials or solvents for the production of our cosmetic raw materials and may require reporting under California Proposition 65 or the Safe Cosmetics Act, SB 484.

The presence of these prohibited substances has to be seen as non-intended. It is stemming from impurities of the starting materials or the manufacturing process which is technically unavoidable in good manufacturing practice.

CMR substance	Starting material	max. concentration	method
Ethylene Oxide	no		
Propylene Oxide	no		
Octamethylcyclotetrasiloxane (D4)	no		
2-Ethylhexanoic Acid	no		
n-Hexane	no		
Methyl Chloride	yes	< 50 ppm	
Dimethyl Sulphate	no		

2.3 "Allergens" according to the Regulation (EC) No 1223/2009

The presence of substances, the mentioning of which is required under the column 'Other' in Annex III, shall be indicated in the list of ingredients in addition to the terms parfum or aroma.

The cosmetic raw materials and the cosmetic actives supplied by Evonik Personal Care are manufactured without the use of perfumes and fragrances. An analytical proof for the absence in traces of the substances to be mentioned in addition to the terms parfum or aroma is not performed in cosmetic raw materials, which are chemically produced.

None of these substances have been intentionally added to our cosmetic raw materials or are formed during the manufacturing process according to our knowledge of the chemistry.

2.4 Food Ingredients listed in Annex IIIa of Commission Directive 2007/68/EC.

None of these substances have been intentionally added to our cosmetic raw materials or are formed during the manufacturing process according to our knowledge of the chemistry.

3. Microbiological status

Total Viable Count max. 100 cfu/g
Pathogens* absent/g

*Pathogens are: Enterobacteria, Pseudomonas, Enterococci, Candida albicans, Staphylococci

4. Shelf life / storage conditions

24 months after production (unopened original packaging)

5. Regulatory Status

5.1 Customs tariff number 38249093

5.2 Regulatory status (chemical regulations)

Europe

Components	REACH status	CAS No.	EINECS / EC No.
Distearoylethyl Dimonium Chloride	pre-registered	67846-68-8	267-382-0
Cetearyl Alcohol	Reg. No. 01-2119485905-24, 01-2119485907-20	67762-27-0	267-008-6

Other countries

Country		yes / no	Remark
Distearoylethyl Dimonium Chloride			
Australia	AICS:	no	
China	IECSC:	yes	
Canada	DSL: NDSL:	yes	
Taiwan	TCSI:	yes	
Cetearyl Alcohol			
Australia	AICS:	yes	
China	IECSC:	yes	
Canada	DSL: NDSL:	yes	
Taiwan	TCSI:	yes	

In the following countries the relevant authorities currently do not require pre-market approval for cosmetic raw materials:

Brazil, Japan, South Korea, Philippines, USA

5.2.1 Regulatory status (cosmetic regulation)

Country		yes / no	Remark
Distearoylethyl Dimonium Chloride			
China	CFDA:	yes	
Japan	JSQI:	no	

Country		yes / no	Remark
Cetearyl Alcohol			
China	CFDA:	yes	
Japan	JSQI:	yes	JSQI No. 101316, but specifications not controlled

6. Toxicology and Ecotoxicology

Refer to summary of ecotoxicological and toxicological data