

Technical Information

VARISOFT® EQ 100

High performance conditioning with improved sustainability

Intended use

Conditioning agent.

Benefits at a glance

- Superior conditioning properties compared to market standards especially on wet hair
- Outstanding manageability, lubricity and softness of hair
- Protects against hair breakage
- Solvent free, non-flammable, 100% active matter
- Easy to handle, liquid material
- Primarily based on rapeseed oil, a renewable feedstock
- Readily biodegradable quat
- Low process temperature possible
- Clear Shampoo formulations possible
- Universal application possible

INCI (PCPC Name)

Bis-(Isostearoyl/Oleoyl Isopropyl) Dimonium Methosulfate

Chemical and physical properties (not part of specifications)

Appearance (20 °C)	Liquid
Active matter	100 %

Properties

VARISOFT® EQ 100 is an ester quat based on a special distribution of vegetable sourced fatty acids. It is readily biodegradable and has an improved ecotox profile compared to the common benchmarks.

VARISOFT® EQ 100 provides excellent conditioning properties on both wet and dry hair. It is also very efficient on curly hair types (tested on Mulatto hair).

Due to its liquid form, it is universally applicable in various hair care formulations, such as conditioners, shampoos and leave-in sprays. In surfactant-based formulations it provides a significant thickening benefit.

Conditioning efficacy

VARISOFT® EQ 100 outperforms statistically significant the benchmark Behentrimonium Chloride in all categories on wet hair (detangling, wet comb, and wet feel). The performance on dry hair is at least on the same level. The results were obtained out of conditioner applications in more than 30 sensory hair swatch tests with bleached European hair bundles. The improved wet combability was confirmed by technical combing force measurements.

Technical half head tests – performed by an external test institute – verified the excellent conditioning properties of VARISOFT® EQ 100. Figure 1 half head study shows that for all key parameters VARISOFT® EQ 100 outperformed BTAC (Behentrimonium Chloride), the difference in the “detangling wet” category is statistically significant.

Conditioner test formulations

0.5% TEGINACID® C Pellets (Cetareth-25)

5.0% Cetearyl Alcohol

1.0% active cationic

ad 100% water; pH value = 4.1

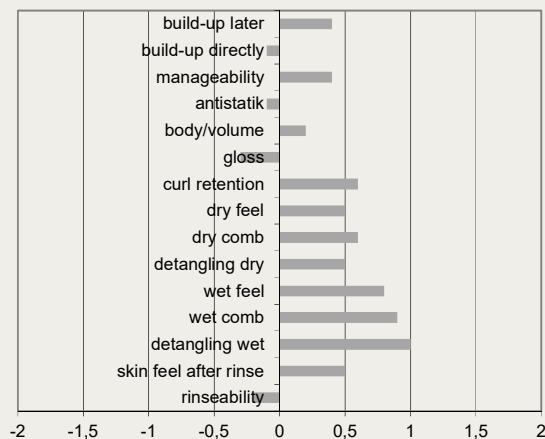


Figure 1: Conditioner half head test results – comparison between VARISOFT® EQ 100 and BTAC (Behentrimonium Chloride).

VARISOFT® EQ 100 is also an efficient conditioning agent out of a shampoo application. Figure 2 shows the result of a sensory hair swatch test, using European bleached hair bundles.

Shampoo test formulations

9.0% Sodium Laureth Sulfate
 3.0% Cocamidopropyl Betaine
 0.2% Cationic Guar
1.0% VARISOFT® EQ 100
 0.5% PEG-7 Glyceryl Cocoate
 0.5% NaCl / 2.5% ANTIL 171
 ad 100% water; pH = 6.0

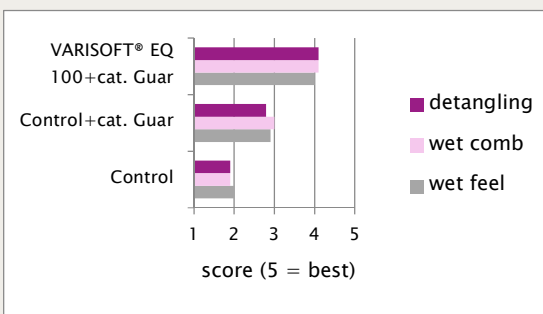


Figure 2: Shampoo sensory hair swatch test results.

Also, for shampoo application a technical half head test has been conducted externally. All tested parameters were improved by adding VARISOFT® EQ 100.

Reduction of hair breakage

VARISOFT® EQ 100 reduces hair breakage out of both shampoo and conditioner applications. Repeated grooming tests done by an independent test institute showed significant reductions of broken hair fibers after 2 000 combing cycles.

Out of a conditioner application, the addition of 1.5% VARISOFT® EQ 100 reduced hair breakage by 40% (statistically significant).

Out of a shampoo application, the addition of 0.8% VARISOFT® EQ 100 reduced hair breakage by 30%, the addition of 1.2% increased the hair breakage reduction to 37% (both statistically significant).

Thickening efficacy in shampoos

In surfactant formulations, VARISOFT® EQ 100 provides a viscosity increase. The necessary thickener concentration can be reduced as additional benefit. Figure 3 shows viscosity data of various concentrations of VARISOFT® EQ 100 in a shampoo base.

Shampoo test formulations

9.0% Sodium Laureth Sulfate
 3.0% Cocamidopropyl Betaine
 0.2% Cationic Guar
x.x% VARISOFT® EQ 100
 0.5% PEG-7 Glyceryl Cocoate
 0.5% NaCl / 1.3% ANTIL 171
 ad 100% water; pH = 6.0

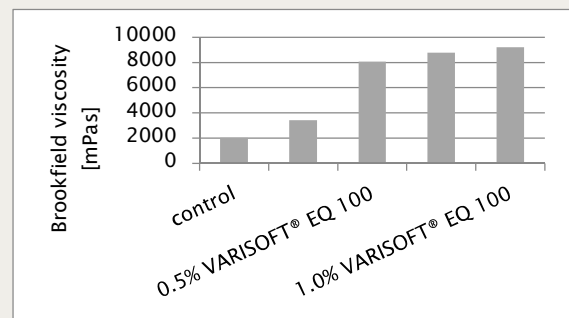


Figure 3: Viscosity effects in shampoo

Application

VARISOFT® EQ 100 can be used for formulating

- Hair conditioners (rinse-off and leave-in)
- Conditioning shampoos
- Hair and body shampoos
- Detangling sprays

Processing

Conditioners

To obtain viscosity stable formulations, the following formulation hints are helpful:

- Higher levels of fatty alcohol are necessary, e. g. > 5% Cetearyl Alcohol per 1% of VARISOFT® EQ 100. The addition of low levels of Oleyl Alcohol is beneficial for stability.
- An emulsifier is necessary for stability, e. g. an solid quat, such as VARISOFT® EQ 65 Pellets; TEGO® Care PBS 6 MB; dermofeel® NC MB.
- Polymers are beneficial for stability, e. g. 0.05% Carbomer or 0.05% Alginate.

An antioxidant agent (e. g. Propyl Gallate, Oxynex LM) is recommended for color stability at higher temperatures.

Shampoos

VARISOFT® EQ 100 is clearly soluble in anionic/ amphoteric surfactant systems in combination with e. g. PEG-7 Glyceryl Cocoate (ratio 1 : 1). Due to its thickening effect, the thickener level can be reduced.

In nonionic/amphoteric systems it is clearly soluble also without solubilizing additive.

Recommended usage concentration

0.5% – 3.0% VARISOFT® EQ 100

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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