

MASCON LT-100

Mascara Concentrate

The Product

MASCON LT-100 is a patent pending, concentrated product of approximately 70% solids content for the formulation of mascara and eyeliner applications. This material is highly effective in formulations for lash lengthening, lash thickening, and for producing richness of color without the negative effects of smudging, smearing or flaking.

MASCON LT-100

INCI: Water (And) Iron Oxides (C.I. 77499) (And) Polyethylene (And) Acrylates/Ethylhexyl Acrylate Copolymer (And) Copernicia Cerifera (Carnauba) Wax (And) Polymethyl Methacrylate (And) Alcohol (And) Lithium Magnesium Sodium Silicate (And) Nylon-6 (And) Caprylyl Glycol (And) Xanthan Gum (And) Triethanolamine (And) Lecithin (And) Sorbic Acid (And) Dimethicone (And) Sorbitan Stearate (And) PEG-40 Stearate (And) Ammonium Polyacrylate

The Technology

The MASCON LT-100 product combines the core ingredients for a mascara or eyeliner system at an optimized ratio, into one concentrated form, with only a few additional raw materials needed in the aqueous phase for a completed formula. This is a notable feat since this new technology supersedes traditional mascara processing which includes limitations such as weighing a large number of raw materials and working in batches to incorporate them, the heating and dissolution of the waxes and solid fatty acids or emulsifiers in powder form, and the milling or pulverization of pigments and powders.

The Lash Factors (Lengthening and Thickening)

Kobo Products has expert knowledge and production of pigment grinding as well as customized fillers (microspheres and fibers). Pigment grinding is a key technology that is essential for developing eye products with intense color and contrast whereas microspheres and fibers have the ability to impart volume and length to a formulation without affecting stability or application. Combining the above mentioned technologies with Kobo's in house formulation expertise, it is possible to deliver MASCON LT-100, a concentrated formulation product.

Desirable qualities of successful mascara formulas are the ability to impart length and thickness to the lashes. A combinatory system of microspheres and waxes in this concentrated product imparts volume to the lashes with lash thickening complemented by the customer's selection of additional materials to the aqueous phase. Lash lengthening is obtained by the use of nylon fibers while a rich color is imparted by employing fine pigment dispersions and translucent materials. This MASCON LT-100 product is exceptional technology for effective and efficient mascara/eyeliner formulating. Formulators uniquely have the option to vary the percentage of concentrate versus the choice and quantity of gellants and humectants in their aqueous phase as a way to control the total solids and rheological nature of the finished product.

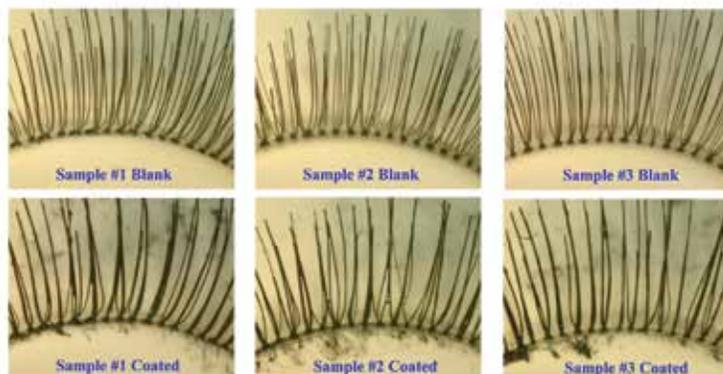


Figure 1. Images of false, virgin eyelashes & eyelashes coated in mascara made with MASCON LT-100 (top & bottom respectively)

Formulation and Process

This product is an overall simplification of the mascara/eyeliner process for time, energy and cost preservation. The concentrate production is a cold process boosting energy saving capabilities since no heating or cooling is necessary thus minimizing the carbon footprint. Manufacturers can effortlessly make a dilute, aqueous solution and customize the product with their individual choice of a gelling or thickening agent and supplemental ingredients. The concentrate is subsequently added at room temperature to the aqueous phase with stirring for an ultimate homogenous product. There is no need for high HLB emulsifiers, multiple vessels, or extended processing time. For the end user, this concentrate offers a product that is paraben-free and has an ultra low level of emulsifier (<0.5%). By formulating with only a small level of emulsifiers, water resistance is optimized and generally less irritation is found. Furthermore, by using MASCON LT-100, less inventory of ingredients needs to be kept and less quality control testing on individual components needs to be performed. Panel testing has also validated the concept of using a concentrated product for mascara/eyeliner application.

Product Benefits

This technology alleviates the traditional mascara processing limitations while producing a lash lengthening and thickening material of rich color. MASCON LT-100 allows for variation of formulations to be made rapidly, efficiently, and effectively. This is a new technology designed to aid formulators, quality control, and manufacturing personnel to enhance the development of new products for the marketplace. Kobo formulators are continuing to develop further enhancements and support of this technology for our customers.

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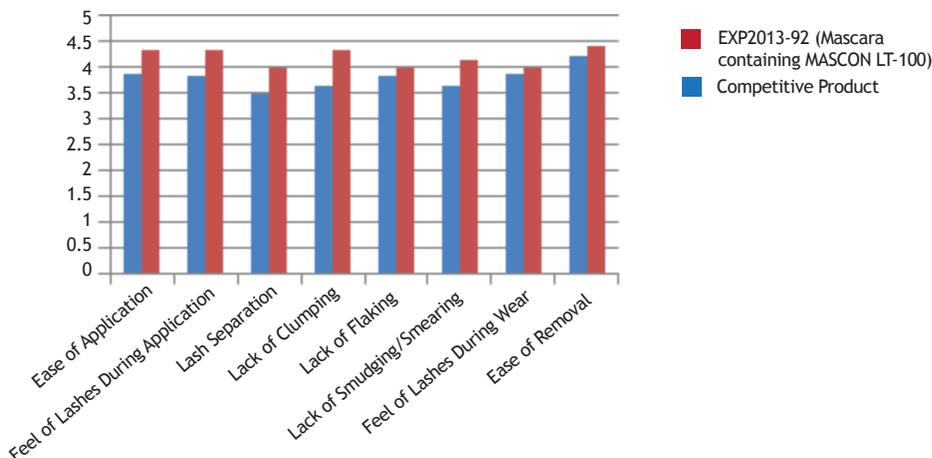
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MASCON LT-100

Mascon Performance Attributes (EXP2013-92 Mascara containing MASCON LT-100 vs. Competitive Product)

MASCON LT-100 coats lashes to help lengthen, without clumping, flaking or smudging



Kobo Concentrate Mascara with MASCON LT-100

Formula KMA-043

Part 1

- **MASCON LT-100** - Kobo Products: *Water (And) Iron Oxides (C.I. 77499) (And) Polyethylene (And) Acrylates/Ethylhexyl Acrylate Copolymer (And) Copernicia Cerifera (Carnauba) Wax (And) Polymethyl Methacrylate (And) Alcohol* 50.00%
- NOMCORT® HP-30 - Ikeda Corporation: *Hydrogenated Polydecene* 6.00%

Part 2

- *Deionized Water* 37.50%
- PVP K-90 - ISP: *Polyvinylpyrrolidone* 2.00%
- Optiphen Plus - ISP: *Phenoxyethanol (And) Caprylyl Glycol (And) Sorbic Acid* 0.40%

Part 3

- Glycerin U.S.P. Natural 96% - Cognis Corp.: *Glycerin* 3.00%
- Natrosol® 250 HHR CS - Hercules/Aqualon: *Hydroxyethylcellulose* 0.60%
- **MAKIMOUSSE 25** - Daito/Kobo Products: *Sodium Polyacrylate StarchI* 0.50%

Manufacturing Procedure

1. At room temperature - Combine the MASCON LT-100 concentrate and Polydecene together and stir for 5 minutes slowly with a Cowles in a 250ml SS beaker.
2. Premix Part 2 by adding the PVP to the water until clear. Add preservative. Pour Part 2 into the Main Beaker (Part 1). Stir with a Cowles dispersator at low-med speed 15 minutes at room temperature until homogenous.
3. Add Glycerin, and Natrosol® and MAKIMOUSSE 25 to the Main Beaker. Mix until thickened.

Description

The MASCON LT-100 product combines the core ingredients for a mascara or eyeliner system at an optimized ratio, into one concentrated form, with only a few additional raw materials needed in the aqueous phase for a completed formula. These is a notable feat since this new technology supersedes traditional mascara processing which includes limitations such as weighing a large number of raw materials and working in batches to incorporate them, the heating and dissolution of the waxes and solid fatty acids or emulsifiers in powder form, and the milling or pulverization of pigments and powders.

One may simply create a dilute aqueous solution in manufacturing with choice of a gelling or thickening agent and any ancillary ingredients. Add the aqueous phase to the concentrate at room temperature and stir the two phases together in one tank until homogenous. This process will achieve a mascara or eyeliner product with excellent color and wear and for mascara, also good lengthening and thickening. MAKIMOUSSE 25 is used to thicken the formula.

MASCON LT-100

Mascara and Eyeliner Concentrate FAQs

Question: Procedure

We understand that the mascara concentrate was manufactured without the use of additional heat. We also understand that manufacturing of products developed with the concentrate does not require additional heat in production. Is that correct?

Answer:

Yes. We did not need to add heat to manufacture the concentrate with our proprietary process. This helps to retain the complete integrity of the ingredients and minimizes oxidation which can occur with heating and long processing times. We designed the concentrate such that new mascara and eyeliner products may be developed on the bench, in process scale-up, and finally in manufacturing without heat. This will save development time and will minimize efforts in production.

Question: Customize the Formula

Can formulators add their own thickener/water and proprietary ingredients to the mascara concentrate and customize it to their liking?

Answer:

Yes, this is correct. Formulators have the flexibility to add their proprietary or favorite ingredients to their own aqueous phase. They then combine their aqueous phase directly to the mascara concentrate.

Secondly, project teams could also add ingredients directly to the concentrate where it might also provide a performance advantage. For instance, they could add viscous tackifiers such as, hydrogenated polydecene or polybutene directly to the concentrate. The concentrate is more suitable for the addition of these types of materials due to its viscosity and its ability to envelop hydrophobic liquids. You would then combine the newly modified concentrate with the aqueous phase.

Question: Optimizing the Formula

How do formulators optimize the system to obtain the best mascara with their ingredients?

Answer:

We do not know precisely what the end limitations are on the performance for the overall system developed by each formulator. For mascara systems we have found a level of 50% concentrate combined with a 50% aqueous solution or phase works well. For eyeliner formulas, the concentrate may be diluted further.

Through a combination of experimental formula design, technical testing and panel/consumer tests, a project team should be able to achieve an innovative and high performance product utilizing the mascara concentrate as the base. The best product will be obtained by optimizing the package and brush combination for mascaras with the formulation. With cold process manufacturing and utilization of the mascara concentrate, the turnaround time for completing a DOX (Design of Experiments) will be significantly improved, leading to better performing products.

Question: Thickeners

Can you provide us with some choices for basic thickeners to apply to the formulator's aqueous phase?

Answer:

Xanthan gum, HEC (Natrosol® 250 HHR CS), PVP-K90 and Makimousse 25 can all provide good results. These ingredients may be used to form a solution as the basis for the aqueous phase. Some materials, such as Makimousse 25, that rapidly develops viscosity may be added after the aqueous phase and concentrate have been combined. We have found this to be a favorable approach to making mascaras with the concentrate. Combinations of these materials also work well.

There are many more hydrocolloids and aqueous clays that can provide a compatible thickening phase for the concentrate. Hectorite, as well as some of the synthetic aqueous clays can work well.

Organophilic clays are not recommended and are not compatible.

There are a number of pre-gelled thickeners and formulation aids available that may be used. Some of these contain emulsifiers that may transform the nature of the product, such as silicone formulation aids. We have also found that cationic materials are generally less favorable for use with the concentrate.



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MASCON LT-100 FAQs

Question : Color Availability

Why is only a black shade available? Can we modify its color?

Answer:

The black shade may be fine-tuned by formulators for color by either adding other pigments or pearlescent materials directly to their aqueous phase or in some cases to the concentrate. We can manufacture concentrates that are formulated to a brown shade upon request. Additionally, the brown shade could be further altered by the formulator to black-brown, if needed by combining black concentrate with brown concentrate. If adding ultramarines to the formulation, always monitor the pH so it is greater than 7.0.

Question: Componentry

How does the formulator and packaging engineer know which brush to use with products developed with the mascara concentrate?

Answer:

More open spiral brushes, newer molded types and larger diameter wipers will help to increase payoff. The hollow filament type will provide better definition. Wipers with a tighter interface between the rod and orifice will help to reduce payoff. We recommend technical testing and panel tests for optimizing the package.

Question: Differentiation

Would there be much difference between a mascara or eyeliner developed by one company to another that formulate with this product?

Answer:

It would depend upon the resources and time invested by each company for their own degree of customization. However, if two companies were to use the concentrate and the identical materials and aqueous phase, then the performance should more or less be the same. The packaging in most cases will have a high degree of influence on the end result.

Question: Testing and Patents

Does each company need to perform micro challenge testing, safety testing, stability, regulatory and patent searches?

Answer:

Micro: Yes. Our data shows us that we have a robust preservative system for the concentrate, but each company needs to consider additional preservatives to complement their aqueous phase. We have found that a level of 0.40% Optiphen Plus or similar preservatives added to that phase work well.

Safety: The mascara concentrate was successfully tested for in-vitro ocular toxicity using the HET-CAM test. However, the final product developed by each company should be safety tested, as well. This normally involves human use via clinical testing.

Stability: The mascara concentrate is stable based upon Kobo stability testing, but each company needs to run their own stability protocol which may involve monitoring ambient and elevated temperatures, freeze-thaw, viscosity, color, etc. These are the stability tests that we used in developing the concentrate.

Regulatory & Patents: Each company should also pursue their own regulatory, intellectual and patent strategies for their own products that are developed with the concentrate. The concentrate itself is patent-pending.