

Koboguard 5400 : A Solid Hydrocarbon Resin For Long Wear Cosmetics

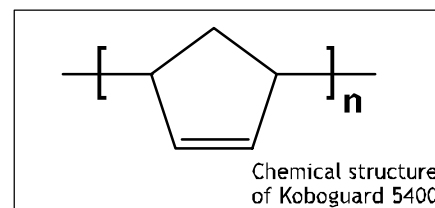
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Most conventional oil-soluble, solid resins used in cosmetics over the years were chemically based upon rosin. These materials usually have high odor and have other well-known issues associated with their natural origin and structure. There is a trend for cosmetic companies to avoid the use of materials that are based upon rosin due to its allergenic profile. The search for a low odor, oil-soluble resin that perform well in cosmetic applications has led us to explore materials used in other fields and industries and for various applications.

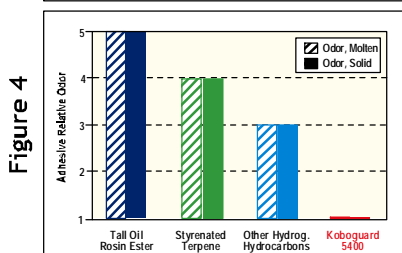
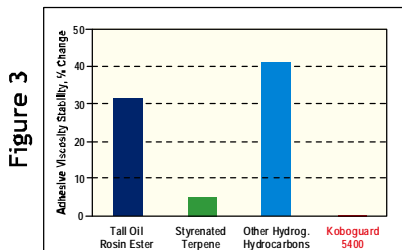
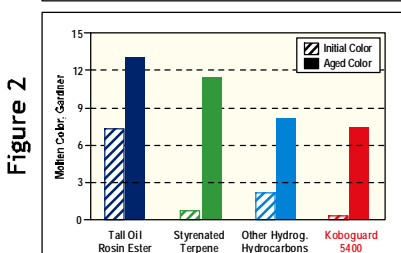
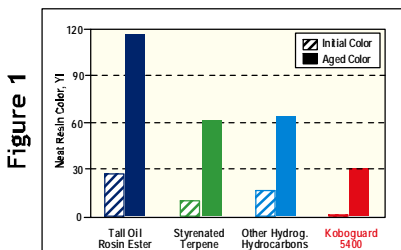
We have found a low molecular weight polymer, Koboguard 5400, that has excellent potential for substitution into formulations where traditional rosin-based ingredients have been used. Koboguard 5400 is a hydrogenated hydrocarbon resin with an INCI name of Polycyclopentadiene. This ingredient has excellent compatibility with many volatile and nonvolatile solvents, but is most effectively used in cosmetic systems where a volatile hydrocarbon solvent, such as Permethyl 99A, is present. It may also be used in the surface-treatment of pigments.

INCI name : Polycyclopentadiene
CAS# : 68132-00-3



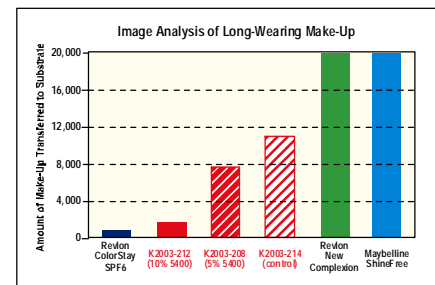
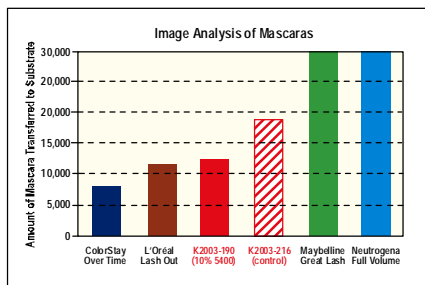
Physicochemistry : Color, Odor, Viscosity & Stability

Color of resin have been measured (initial and aged : 5 hours at 175°C) and expressed as Yellowness index (figure 1). Color (figure 2) and Adhesive Viscosity Stability (figure 3) have also been measured in a test formulation. Odor Ratings of formulated resins are shown in figure 4.



Rub-Resistance

Dried films of the individual liquid makeups and mascaras were tested for rub-resistance. The resulting image was processed by a computer using SCION software and converted into data. The graphs then illustrate the differences between various marketed products. The charts also show how the addition of Koboguard 5400 to formulations can improve the integrity of the film and create a longer wearing cosmetic.



Availability

- Concentrated 70% solutions of Koboguard 5400 available in Isododecane, C10-13 Isoparafin, and various esters and oils.
- Lucentite gels of Koboguard 5400 available in Isododecane, C10-13 Isoparafin, and various esters and oils.
- Koboguard 5400 surface treatments for pigments and powders.

Formulation Examples

Long Wearing SPF Foundation K2003-208

This gel makeup combines sunscreen properties (micronized titanium dioxide dispersion) with excellent wear supported by Koboguard 5400. It has a very smooth application due in part to the crosspolymer surface-treated pigments and powders, as well as the silicone gel. Iridescent pearls provide a slight shimmer and glow to the overall finish.

Pt.	Percent	Ingredients	INCI name	Supplier
1	14.00 5.00	Soltrol 130 Koboguard 5400	Polycyclopentadiene	Chevron-Phillips Kobo Products
2	2.00 1.00	Lucentite SAN Ethyl Alcohol 39C	Lithium Magnesium Sodium Silicate (And) Quaternium 18 (190 proof)	Kobo Products Warner-Graham
3	7.00 10.00 3.50 0.50 0.51 0.21 0.06 1.00 1.00 0.50 6.75 3.25 12.98	BTD-TTS2 PM9P60M170 Tospearl 2000B GMS-11S2 BGYO-TTS2 BGRO-TTS2 BGBO-TTS2 Kobo Pearl Interval Gold Kobo Pearl Interval Red Nylon 2159V Soltrol 130 GE1111-22-401-01P Permethyl 99A	Titanium Dioxide (And) ITT/TCS Crosspolymer Titanium Dioxide (And) Isododecane (And) Alumina (And) Dimethicone (And) Polyhydroxystearic Acid Polymethylsilsesquioxane Mica (And) Triethoxy Caprylylsilane Red Iron Oxide (And) ITT/TCS Crosspolymer Black Iron Oxide (And) ITT/TCS Crosspolymer Mica (And) Titanium Dioxide (And) Tin Oxide Mica (And) Titanium Dioxide (And) Tin Oxide Nylon-12 Isododecane (And) PEG/PPG-20/15 Dimethicone Isododecane	Kobo Products Kobo Products Kobo Products Kobo Products Kobo Products Kobo Products Kobo Products Kobo Products Kobo Products Chevron-Phillips GE / KoboProducts Presperse
4	0.75 0.75 0.10	Sorbitan Oleate Sorbitan Isostearate Propylparaben	Sorbitan Oleate Sorbitan Isostearate Propylparaben	Lipo Chemicals Uniqema ISP Sutton
5	0.50 10.12 0.10	Sodium Chloride Deionized Water Methylparaben	Sodium Chloride Water Methylparaben	Morton Salt Protameen
6	1.25 0.85 0.20	Candelilla Wax White Beeswax dl-alpha Tocopherol	Candelilla Wax White Beeswax dl-alpha Tocopherol	Frank B. Ross Frank B. Ross Roche
7	13.52	GE1111-22-403 01P	Isododecane (And) C30-45 Alkyl Cetearyl Dimethicone Crosspolymer	GE / Kobo Products
8	2.00 0.35 0.25	Deionized Water dl-Panthenol Imidazolidinyl Urea	Water dl-Panthenol Imidazolidinyl Urea	Roche Sutton Labs
	100			

Long Wearing Mascara K2003-190

This is a water in isododecane mascara with long lasting properties supported by Koboguard 5400 and a volatile base formula. It has good lengthening properties and includes Vitamin B5 to keep the lashes conditioned. Helicone Sapphire lends its unique optical properties to the formulation for a hint of blue shimmer in a deep black base.

Pt.	Percent	Ingredients	INCI name	Supplier
1	25.20 8.50	Permethyl 99A Koboguard 5400	Isododecane Polycyclopentadiene	Presperse Kobo Products
2	2.00 1.00	Lucentite SAN Ethyl Alcohol 39C	Lithium Magnesium Sodium Silicate (And) Quaternium 18 (190 proof)	Kobo Products Warner Graham
3	7.00 3.00 1.75 3.00 7.45	Black NF Tospearl 2000 Helicone Sapphire HC GE1111-22-401-01P Permethyl 99A	Iron Oxide (C.I. 77499) Polymethylsilsesquioxane Polyacrylate Isododecane (And) PEG/PPG-20/15 Dimethicone Isododecane	Kobo Products Kobo Products Kobo Products GE / Kobo Products Presperse
4	0.10 0.25 11.50	Methylparaben Sodium Chloride Deionized Water	Water	Protameen Morton Salt
5	10.00 6.00 3.75 6.50 0.10	Glyceryl Stearate White Beeswax Carnauba Wax Polyethylene 617A Propylparaben	Glyceryl Stearate White Beeswax Carnauba Wax Polyethylene 617A Propylparaben	Emery Frank B. Ross Frank B. Ross Honeywell ISP Sutton
6	2.00 0.35 0.25	Deionized Water dl-Panthenol Imidazolidinyl Urea	Water dl-Panthenol Imidazolidinyl Urea	Roche Sutton Labs
	100			

Koboguard 5400 is a low molecular weight polymer (polycyclopentadiene) effective in cosmetics and which helps to improve the adhesion and substantivity of the cosmetic film to the skin, lashes, hair or nail. It can also improve the water-resistance of the film.

Levels of 5-20% are recommended, but it can be used in lower or higher concentrations as necessary. It is an excellent alternative to rosin-based derivatives.

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