

Novel ternary wax-resin composites for use in long-wearing cosmetics

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Introduction

Oil soluble film formers are widely used to improve the wear of many types of cosmetic formulations such as emulsions, anhydrous, powders, etc. To meet savvy customers' demand, there is always a need for film formers of superior performance. Solid resins in general give better adhesion and longer wear than liquid types. However, they often require high heat to melt or a long dissolution process.

Our objective was to create a new solid material that would provide long wear benefits and could be easily incorporated into multiple types of systems.

Product: Koboguard® HRPC

INCI Name: Hydrogenated Polycyclopentadiene (And) Polyethylene (And) Copernicia Cerifera (Carnauba) Wax (And) Tocopherol

Key Attributes:

- Proprietary ratio to maximize the synergy in film forming, leading to superior long wear
- Easy to use in formulation process

Patent pending: PCT/US2009/040147



Easy Use of Koboguard® HRPC over Solid Resins

1. Drop Melting Point Comparison

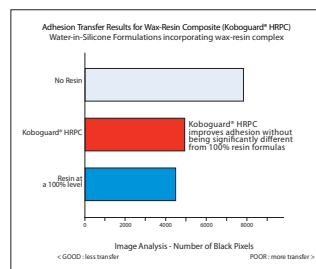
Hydrogenated Polycyclopentadiene	Polyethylene	KOBOGUARD® HRPC
> 110°C	> 100°C	85°C

2. Dissolution in solvent --- ~25% reduction in time needed

Koboguard® HRPC is a ternary composite with resins as the major components. Its low melting point will save time and energy in the production process for anhydrous products like lipstick. Polyethylene and carnauba wax often require high shear and high temperature for dissolution in oil phase. Koboguard® HRPC is not dispersible in silicones. When silicones are present, an oil soluble co-solvent is recommended.

Koboguard® HRPC for Long Wear

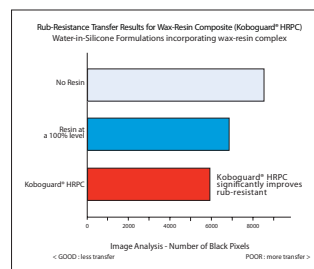
Transfer Resistance Test



It can be seen from the above charts that Koboguard® HRPC provided almost the same degree of adhesion along with improved rub resistance when compared to the pure resin. We also found that transfer resistance was improved in mascara and lipstick formulations.

The improved wear property is unavailable from the individual constituent materials or a simple blend. Instead, it is a result of the optimized ratio based on many experiments. At this ratio, the synergism in mechanical and physical properties maximizes and translates to better rub-resistance, water-resistance and ease of processing.

Rub-Resistance Test



Improve Wear in Lipgloss

1. Synthetic Wax	76.00%
2. Fumed Silica	4.00%
3. KOBOGUARD® HRPC	19.50%
4. KTZ® Roussillon - Pearlescent Pigment	0.50%

Hydrogenated polyisobutene is often used to provide shine and long wear in lipgloss. However, the formula can feel greasy. This formula used synthetic wax to create shine. Synthetic wax has light feel but poor transfer resistance. Incorporation of Koboguard® HRPC into this formula resulted in not only a better, non-greasy feel but also higher gloss.

Lengthening Mascara Formulation

1. Beeswax	8.00%	12. TriethanolAmine	1.00%
2. KOBOGUARD® HRPC	5.00%	13. KNY-1.7 - Nylon Fiber	0.50%
3. Ozokerite	5.00%	14. Hydroxyethylcellulose	0.30%
4. Stearic Acid	3.00%	15. Methylparaben	0.20%
5. Copernicia Cerifera (Carnauba) Wax	2.00%	16. Water	2.50%
6. Microcrystalline Wax	2.00%	17. DSPCS-I2 - Microsphere Complex	1.00%
7. Sorbitan Sesquioleate	1.00%	18. Phenoxyethanol (And) Caprylyl Glycol (And) Potassium Sorbate (And) Water (And) Hexylene Glycol	0.60%
8. Propylparaben	0.10%	19. Imidazolidinyl Urea	0.15%
9. Water	32.90%	20. WSJ24BAMP - Black Iron Oxide Dispersion	13.75%
10. WBG25BL2 - Carbon Black Dispersion	15.00%		
11. W60BAMP - Black Iron Oxide Dispersion	6.00%		

Many thickening and lengthening mascara's are water based. They contain waxes for build up and thickening and usually have water dispersible film formers. By using a small amount of Koboguard® HRPC in the inner oil phase there is now an additional film former in the inner phase. This can aid in giving deposit on to the lash and better adherence to the lashes for longer wear.

Conclusion

Koboguard® HRPC is a wax-resin composite. Its film forming and adhesion ability was optimized at a proprietary composition. This novel material can be used for cosmetic formulations to enhance transfer resistance and improve wear of the product's film on the skin, hair, lashes and nails, thereby improving overall performance.

Acknowledgement

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