

BioEstolides – Sensory Profile Study

Biosynthetic® Technologies is a specialty product company that supplies BioEstolides™ to the Beauty and Personal Care industry. We produce non-toxic, eco-friendly, sustainable, biobased, biodegradable oils with enhanced performance properties available in commercial volumes. Our vision at Biosynthetic Technology is to deliver high performing, sustainable solutions for a sustainable future.

The market is looking for bio-based alternatives to silicones and petroleum-based products and BioEstolides have been designed to be gentle on the skin and provide a soft satiny feel.

Products Tested:

- BioEstolide 30 (BE30)
- BioEstolide 250 (BE250)
- BioEstolide 1300 (BE1300)
- Sunflower Oil
- Castor Oil
- Mineral Oil
- Petrolatum
- Dimethicone

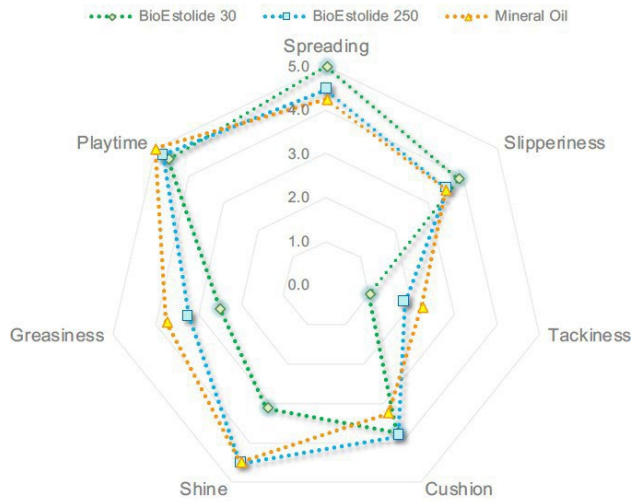
Definitions:

- Playtime - how long the product lasted on top of the skin.
- Spreading - how easily the product spread when rubbed on the skin.
- Slipperiness - how slippery or viscous felt when rubbed on the skin.
- Tackiness - how sticky the product was when you touch it.
- Cushion - how soft the product made the skin feel.
- Shine - how reflective the product made the skin appear.
- Greasiness - how much the product felt like a grease.

Results and Discussion:

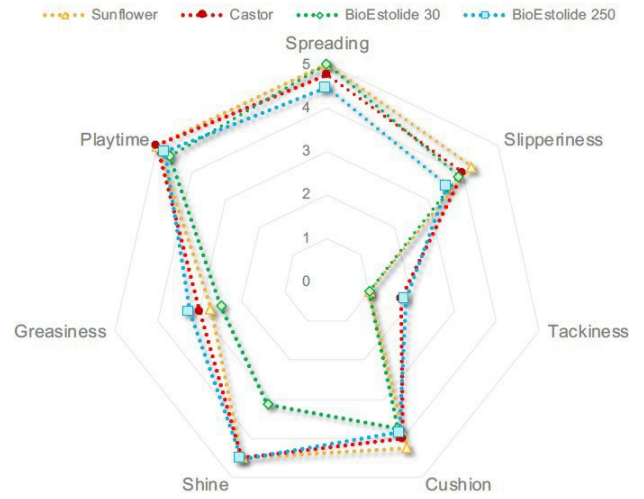
The products were broken out into small groups to allow for simple comparisons between products with the first being a comparison between BioEstolides and a typical mineral oil, the second was a comparison between BioEstolide and other natural oils, and the third is a comparison between BioEstolides and silicone and petrolatum.

BioEstolide vs Mineral Oil



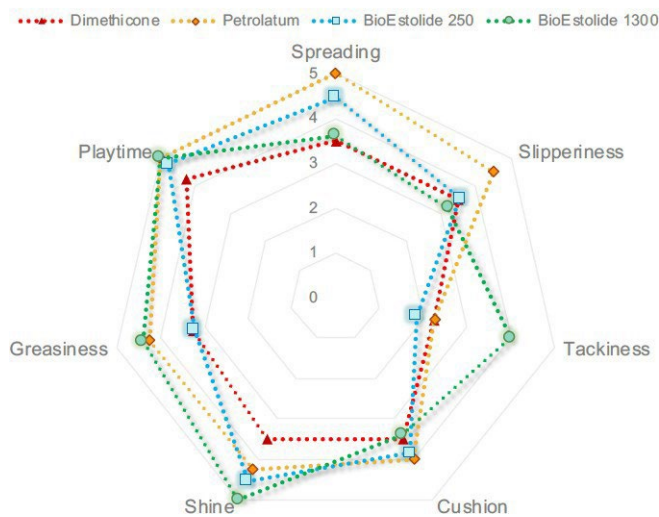
BioEstolides have a softer gentler feel when compared to mineral oil.

BioEstolide and Natural Oils



BioEstolides spread easily with ample playtime.

BioEstolide, Silicone, Petrolatum



BioEstolides are now being used as a silicone replacement in various applications including hair care

BioEstolides provide a sensation of both slipperiness and cushion which results in a soft satiny feel

In table format, the properties can be visualized from a different perspective:

	Playtime	Spreading	Slipperiness	Tackiness	Cushion	Shine	Greasiness
BioEstolide 30	4.7	5	4	0	3.8	3.1	2.6
BioEstolide 250	4.8	4.5	3.6	1	3.8	4.5	3.2
BioEstolide 1300	4.8	3.8	3.2	3.9	3.4	5	4.3
Mineral Oil	5	4.3	3.6	1.3	3.2	4.5	3.8
Dimethicone	5	3.6	3.5	1.3	3.6	3.5	3.2
Petrolatum	4.2	5	4.7	1.3	4	4.2	4.2
Castor Oil	5	4.8	4.1	1	3.9	4.5	3.1
Sunflower Oil	4.9	5	4.2	0	4.1	4.5	2.9

Conclusion

BioEstolide 30 offers high playtime, cushion, spreading and slipperiness with low tackiness, shine and greasiness. BioEstolide 250 offers high playtime, cushion and spreading, with low tackiness and greasiness. These products are recommended for skin care formulations where a soft, satiny feel is desired or in haircare where soft, manageability is desired.

BioEstolide 1300, the highest viscosity product, has ample playtime with less spreading and slipperiness. This product may be suitable for products such as color cosmetics where the goal is for the product to remain in place and in sunscreens where it is important for product to stay on the skin.

BioEstolides offer the personal care market bio-based alternative to mineral oil, dimethicone, petrolatum, or other common natural emollients with the added benefit of being more stable than natural oils, yet sustainable, biodegradable, gentle on the skin, non-toxic, and non-bioaccumulative.

It is becoming more and more important to ensure the personal care industry is able to offer the market safe sustainable products that still meet the performance expectations that consumers have come to expect from name brand products.

BioEstolides™ Performance and Applications

BioEstolides™ are suitable for use in skin care, hair care, sun care and color cosmetics. Using castor based fatty acids as the base of our product lines, we have developed a class of molecules that offer exceptional moisturization, are easy to apply, and have ample playtime. BioEstolides™ offer enhanced oxidative, hydrolytic, and thermal stability. The BioEstolide line is available in multiple viscosity grades to offer the formulator the latitude to create products. Lower viscosity grades offer excellent solubility while the higher viscosity grades disperse heavier particles and can be used as thickener.

BioEstolides™ are used to formulate creams, lotions, balms, gels, serums, aerosols, solids, and solid and gel sticks. In color cosmetics, they are used in tinted moisturizers, foundations, blush, bronzer, highlighters, lip balms, oils and sticks, mascara, and eye make-up. In sun care formulations, they solubilize chemical sunscreens or aid in the dispersion of physical sunscreens for reef-safe products. In haircare, they are used to improve manageability, create shine, and protect the hair cuticle in shampoos, rinse-out conditioners, leave-in conditioners, thermal protectants, hair dyes, hair lighteners, hair relaxers and other styling aids.