

BioEstolides – OSI Oxidative Stability Study

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At Biosynthetic® Technologies, we are a specialty ingredient company in the Beauty and Personal Care industry, that is dedicated to the health and safety of both our customers and the environment. We strive to delivering innovations for a safe and sustainable future by are socially responsible and meet evolving consumer needs. Our unique products; BioEstolides™, are stable bio-derived oils from a natural non-GMO source with unique performance features. These renewable and biodegradable oils deliver high performance benefits as an emollient with enhanced stability, exceptional moisturization characteristics and a light, satiny feel. BioEstolide™ are multi-functional and not only enhance the feel and performance of other cosmetic ingredients, but they come with some powerful benefits of their own.

When formulating quality personal care products, oxidative stability is an important property to understand. The oxidative stability of the ingredients in the formulation will impact shelf life and how long products last over time. With the added uncertainty in the market in 2020 as a result of COVID, it's more important than ever to understand how well ingredients will store and how long they will last. Working with more stable ingredients reduces the risk of having materials expire before they can be used or end up in formulations with short shelf-lives.

The market is also looking for more and more bio-based and natural products and not all bio-based products are able to still offer the benefit of enhanced oxidative stability often found in typical mineral oil or synthetic products. BioEstolides however are bio-based and come with excellent oxidative stability so the market no longer needs to pick between using ingredients that are either bio-based or long lasting.

To measure oxidative stability a standardized method was used which holds the samples at elevated temperatures and measures how long it takes for the material to oxidize. BioEstolides are naturally resistant to oxidation and therefore last longer even at elevated temperatures as a result of their unique structure and performance properties.

Method: Oil Stability Index Testing (AOCS Cd 12b-92)

Products Tested:

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

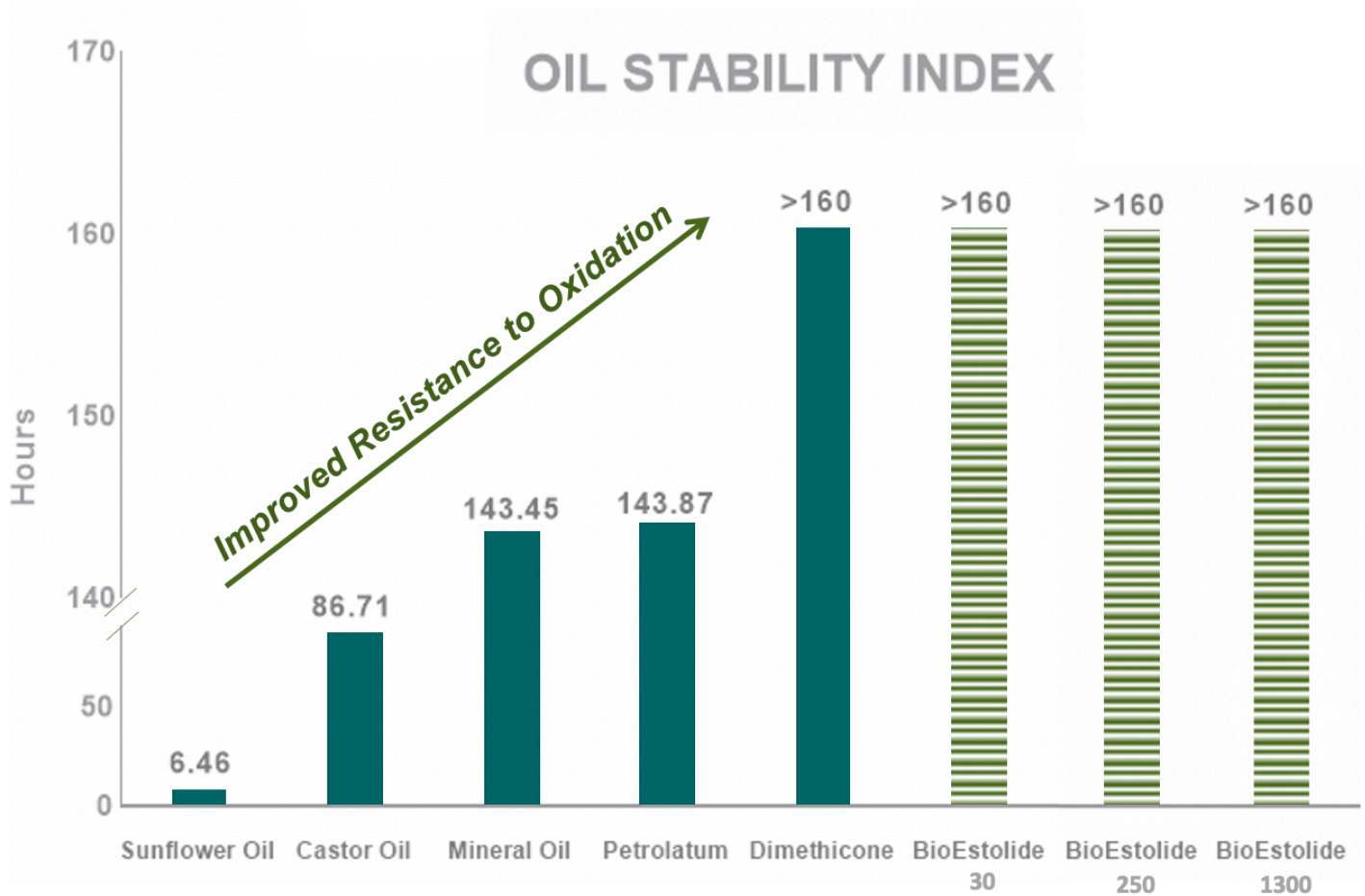
Procedure:

All products are individually heated to 110°C and monitored until sufficient oxidation has taken place as specified per AOCS Cd 12b-92.

Results and Discussion:

All products were tested using the same conditions and testing was stopped at 160 hours. As products oxidized during the test, any materials that went rancid prior to the completion of the test were removed from the testing and the timeframe for how long they lasted was documented.

Results for all samples are shown below. All BioEstolide samples reached the maximum 160 hours so they are shown in one bar for simplicity on the graph.



Only the BioEstolides and Dimethicone lasted the full 160 hours, far outlasting the other natural products and even outlasting mineral oil and petrolatum. This enhanced oxidative stability is a strong performance benefit that enhances the overall stability and shelf life of a formulation and allows industry to move toward more bio-based products that do not require a sacrifice on stability.

Conclusion

BioEstolides offer the personal care market a stable bio-based alternative to mineral oil that can outlast other bio-based products. BioEstolides are bio-based, biodegradable, gentle on the skin, non-toxic, and non-bioaccumulative. It's 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.

BioEstolide Technology

Biosynthetic Technologies' flexible chemistry allows for the products to be specifically designed to meet a wide range of formulation requirements and can be customized if needed. The estolide is made by linking natural fatty acids together to form oligomers. The fatty acids can come from almost any natural oil source. In this instance the BioEstolides™ are formed using fatty acids from castor oil. This unique estolide structure provides the product unique protection from oxidation so it does not easily go rancid or break down over time.

BioEstolide Applications

Baby Care, Bath & Shower, Body Care, Color Cosmetics, Hair Shampoo, Hair Conditioner, Hair Setting Aid, Hair Relaxer, Hair Dye, Decorative Cosmetics, Skin Creams and Lotions, Depilatories, Ethnic Hair Care, Food & Pharma, Hair Cleansing, Hair Conditioning, Hair Styling, Hair Treatment, Household Cleaning, Lubrication, Make-up Remover, Pharmaceutical, Skin Care, Skin Cleansing, Tanners etc.

Biosynthetic® Technologies

Biosynthetic® Technologies is committed to sustainability and focused on the responsible use of natural resources. We incorporate sustainability into both our products and manufacturing practices. We are constantly looking for ways to minimize [the] negative impacts on the environment while conserving energy and natural resources. Our objective is to make sustainability a point of difference for our business, and we are confident that this strategy will generate even greater benefits for the environment in which we operate, the people that we work with and the communities we are part of. We understand that health and environmental awareness play just as large a role for consumers as quality and efficacy. As such, we use natural feedstocks in our products and our manufacturing facility is operating with a NEGATIVE carbon footprint!

