



Featuring
Sunflower
Wax

DEODORANTS

STRAIGHT FROM
NATURE

Current market expectations for innovative deodorant products include a naturally-derived, sturdy structure with the right amount of pay-off. A stick formula needs to suspend a large volume of powder, and remain structurally intact after multiple applications.

Sunflower Wax is completely natural and structures oils quickly and effectively, making it the wax of choice for new deodorant systems.

CURRENT MARKET TRENDS IN DEODORANTS*

- Clean beauty movement expands into deodorants.
- Sticks continue to grow as the preferred product form with a 20% increase since 2015.
- Natural and eco claims are largely on the rise in North America.
- Users, concerned about aluminum compounds, are considering natural formulas.
- Efficacy, including application, wear and odor neutralization, are all still important.



OUR HYPOTHESIS

Sunflower Wax is equal to better in both structuring and gelling efficiency and can replace Ozokerite Wax in deodorant sticks.

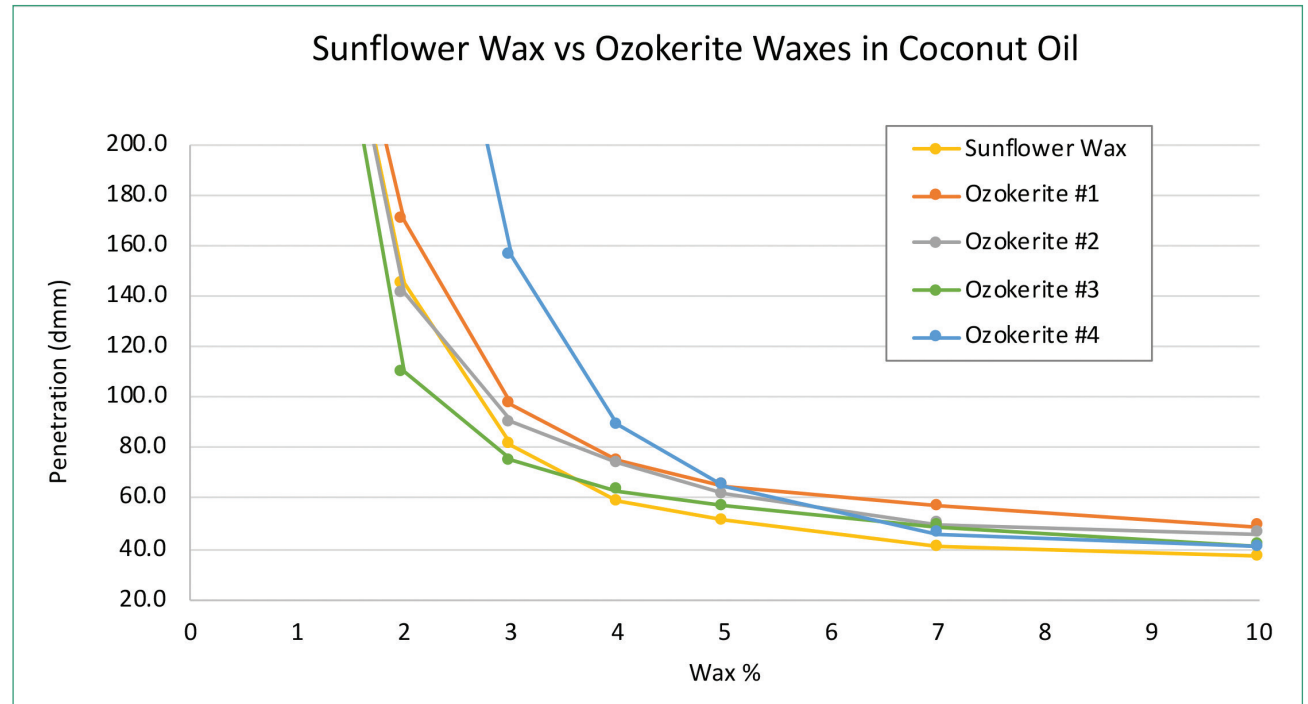
Ozokerites are blends of branched and linear hydrocarbons, with many available options on the market, all with different melt points and gelling/structuring properties. The following chart confirms that Sunflower Wax gels more efficiently than all the Ozokerites tested. Based on industry information, coconut oil¹ was chosen for this initial test.

* <https://clients.mintel.com/report/a-year-of-innovation-in-deodorants-2019>

¹ According to Mintel, Coconut Oil is the most common carrier oil used in natural deodorants (November 2020)

READING GEL CHARTS

A gel chart is a simple visual guide that helps formulators choose the right oils, the right waxes, and the right percentages, to achieve the system hardness desired. When reading a gel strength graph, remember the results are inverse. The lower the value the harder the gel, and the higher the value the softer the gel.



EXPERIMENT

Koster Keunen laboratories developed a reproduction of a best-selling natural deodorant that uses Ozokerite as a structurant. Based on the gel chart above, we chose both Ozokerite #3 and Ozokerite #4 to structure our formulation as they showed the most efficiency. Once the deodorant was developed with Ozokerite #3, and Ozokerite #4 (formula versions A and B), we then replaced Ozokerite with Sunflower Wax for the "All-Natural Version". These formulas were then compared by both measurable and subjective properties.

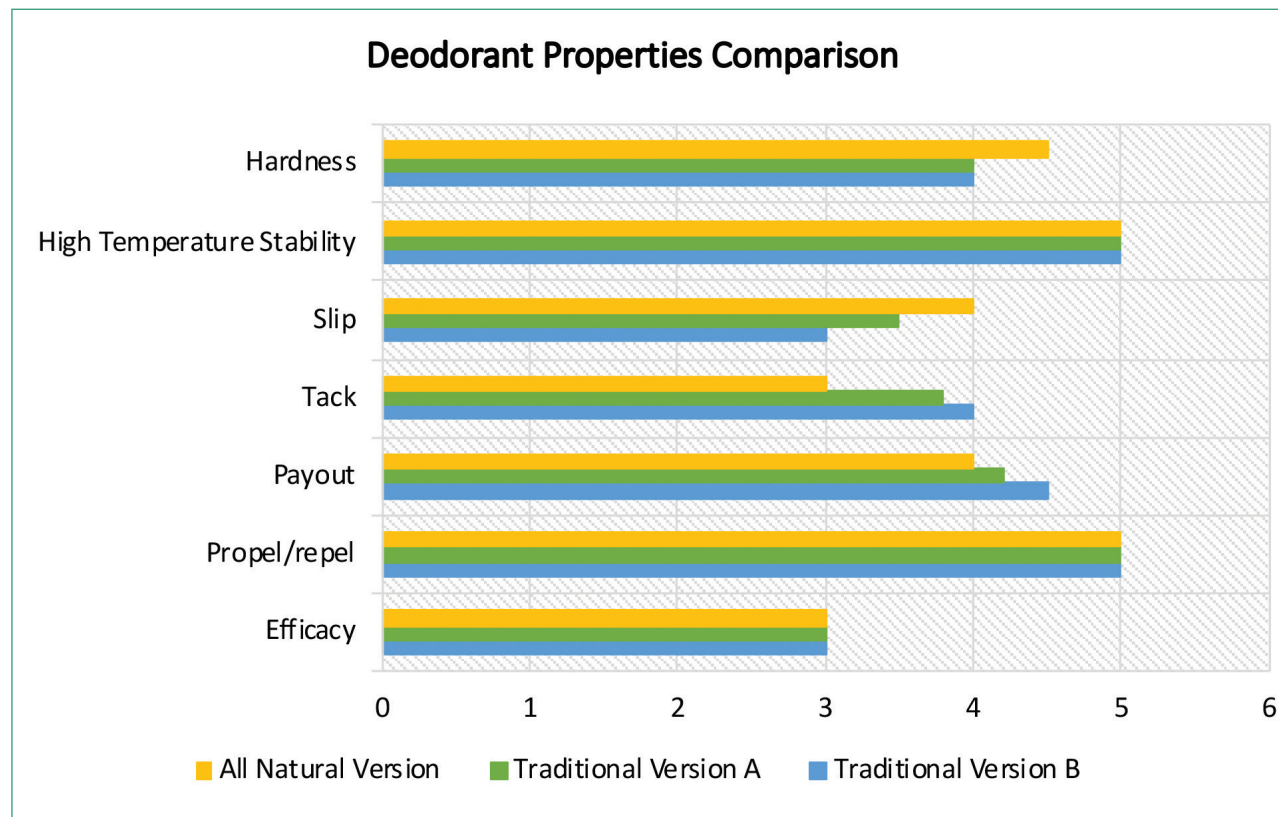


FORMULA

Ingredient INCI Name (Trade Name)	Traditional Version A	Traditional Version B	All-Natural Version
Ozokerite, (Koster Keunen Ozokerite 70)	8.0	–	–
Ozokerite, (Koster Keunen Ozokerite 175)	–	8.0	–
Helianthus Annuus (Sunflower) Seed Wax, (Koster Keunen Sunflower Wax)	–	–	8.0
Theobroma Cacao (Cocoa) Butter, (Koster Keunen Cocoa Butter)	8.0	8.0	8.0
Polyhydroxystearic Acid, (Koster Keunen Kester Wax K-60P)	13.0	13.0	13.0
Cocos Nucifera (Coconut) Oil	22.0	22.0	22.0
Caprylic/Capric Triglyceride	16.0	16.0	16.0
Magnesium Hydroxide	20.0	20.0	20.0
Maranta Arundinacea Root Powder (Arrowroot Powder)	12.0	12.0	12.0
Tocopheryl Acetate	1.0	1.0	1.0

RESULTS AND DISCUSSION

Results show that Sunflower Wax outperformed both Ozokerites as a structuring agent in a natural deodorant system. The All-Natural Version was slightly harder and had a higher melt point (penetration = 73.5 dmm, melt point = 68.0 °C) than the Traditional Version A (penetration = 95.5 dmm, melt point = 62.0 °C) and Traditional Version B (penetration = 99.5 dmm, melt point = 64.0 °C). All formulas passed multiple propel/repel, high temperature stability, and efficacy tests. The Traditional Versions had slightly higher payout and higher tack, the All-Natural Version had good payout with lower tack, and a dryer slip.



CONCLUSION

Sunflower Wax is an excellent starting point for replacing Ozokerites *and other petrochemical waxes*² in existing formulations. It should also be the structuring wax of choice when developing new formulas (natural or otherwise), as it provides structure at a very effective rate in all oil mediums tested.

²See full studies at www.kosterkeunen.com