



A BETTER WAY TO FORMULATE

VERSAGEL®

VERSAGEL® ML

FAST ABSORBING DRY-FEEL GEL

Penreco's® Versagel technology is used in thousands of cosmetic, pharmaceutical and personal care products around the world. Our innovative patented system for thickening and gelling hydrocarbon materials offers an infinite number of customized rheological properties.

- Clear, colorless (does not discolor with age), hydrophobic, thermally reversible and without syneresis.
- Creates a film barrier for added moisturization, delivers superior stabilization and suspension properties.
- Available in multiple viscosity ranges and compatible with many common ingredients.
- Easier and safer than gels made using metal stearates or fumed silica.
- Provides enhanced fragrance retention and waterproofing properties.

For more than 100 years, Penreco has specialized in niche product blending to meet customer specific requirements. If you are interested in finding out more about the many attributes of our gelled technology, we can provide supporting clinical studies. Please contact your Penreco sales representative and our technical experts will be happy to find a solution that's right for you.

Let us show you a better way to formulate.

penreco®

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To request a sample, visit penreco.com.

VERSAGEL® ML

FAST ABSORBING DRY-FEEL GEL

The Versagel ML products are based on C12-15 Alkyl Benzoate, which provides a light, dry and non-greasy skin feel. It provides superior solubility, broad ingredient compatibility, and water proofing properties. It also brings additional benefits such as suspension and stability of APIs such as organic sunscreen agents and topical pain relievers. It's known as an emulsifier and solubilizer for sunscreen agents and antiperspirant actives. The suggested use level of these gels ranges from 5% to 70%, depending on the specific application. Versagel ML products can be easily combined with other oil-phase ingredients in the formula when they are mixed at elevated temperature. To ensure uniformity during mixing, it is highly recommended that nonpolar or less polar ingredients be added to the gel first. Cyclomethicone and nonpolar esters can also be added to formulations containing Versagel ML materials to modify the aesthetics of finished products.

APPLICATIONS

- Color Cosmetics: mascara, lipstick, lip liner, lip gloss, rouge, multi-use illuminator, eyeshadow, foundation
- Skin Care: serums, gels, oils, lotions, creams, balms, butters
- Sun Care: self-tanning, sunblock/sunscreen, bronzing gel, after sun, suntan oil
- Hair Care: treatments, conditioners, serums, oils, pomade, colorants

TYPICAL PROPERTIES

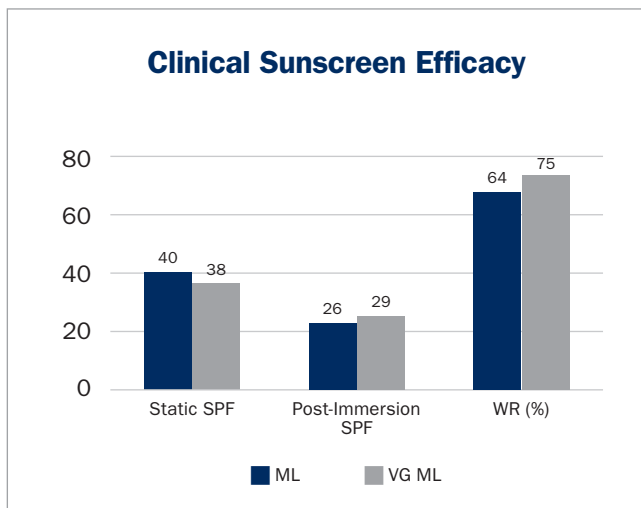
| | VISCOSITY @ 25 °C (cPs) | SPECIFIC GRAVITY @ 25 °C | SAYBOLT COLOR D-156 | FLASHPOINT °C ASTM D-92 |
|--|----------------------------|-----------------------------|------------------------|----------------------------|
| VERSAGEL ML (C12-15 Alkyl Benzoate) | | | | |
| ML 750 | 105,000 | 0.92 | +25 | >205 |
| ML 1600 | 280,000 | 0.92 | +25 | >200 |

International Nomenclature of Cosmetic Ingredients (INCI):

C12-15 Alkyl Benzoate (and) Ethylene/Propylene/Styrene Copolymer (and) Butylene/Ethylene/Styrene Copolymer

CLINICAL EFFECT OF VERSAGEL ON SUN PROTECTION FACTOR (SPF)

This study showed that both sunscreen lotion containing ML and VG ML performed similarly for static sunscreen protection with average SPF of 40 and 38 respectively. Similar comparative performance was seen after 40 minutes of immersion with SPF of 26 vs. 29 for ML and VG ML respectively. Both products can be classified as good water resistance with WR of 64% vs. 75% for ML and VG ML respectively. The 15% improvement in water resistance achieved by VG ML placed its performance on the threshold of very good water resistance. This result shows that VG ML can be used to improve the water resistance of sunscreen products.



Penreco® is a registered trademark of Calumet Refining, LLC ("Calumet"), which is a wholly owned subsidiary of Calumet Specialty Products Partners, L.P.

