



## ANTI-AGING CLINICAL STUDY

# VERSAGEL® & VERSASTIQUE™

The Penreco® gelled hydrocarbon technology is used in a multitude of cosmetic 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.

For more than 100 years, Penreco has specialized in niche product blending to meet customer specific requirements, so we know the importance of producing sustainable, eco-friendly, safe and performance-driven products. Versagel is a versatile, multi-functional product with a wide range of uses and benefits. Versastique is a semi-solid gel that enables unique transformational textures and effects.

Versagel and Versastique SQ products are a great additive or substitute in both oil-based formulas and emulsions. The SQ product lines are a gelled form of squalane. Squalane is naturally present in the skin lipid barrier and is an ingredient known for its exceptional skin membrane fluidizing and moisturizing properties, and its ability to penetrate the skin to deliver benefits. Squalane is a non-GMO, plant-derived ingredient and Versagel SQ is a high-quality replacement for shark and olive squalene. It is derived from plant sugar, is ECOCERT approved, and is readily biodegradable as well.

In skin care, gelled squalane helps to facilitate an even distribution of active ingredients and it softens the skin to help it be easily absorbed.

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**penreco**®

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# ANTI-AGING CLINICAL STUDY

## ANTI-AGING CLINICAL DESIGN

### OBJECTIVE

Evaluate the anti-aging effect of Versagel Squalane & Versastique Squalane compared to Squalane and Placebo

### GENERAL

Independent, 4 weeks, randomized, double blinded  
Twelve subjects per treatment cell  
Efficacy evaluation timepoints: baseline, immediate, 2 weeks, and 4 weeks

### STUDY POPULATION

Healthy females aged 35–65 with Fitzpatrick Skin Type I-IV  
Having mild to moderate (3–6) score on the Griffiths scale for the following facial conditions:

- Photoaging
- Fine lines
- Wrinkles
- Lack of radiance/luminosity/brightness
- Uneven skin tone

### ANTI-AGING CLINICAL TEST FORMULATIONS

Vehicle (Lotion Base Formula)

Vehicle + SQ (Lotion Base Formula + Squalane\*)

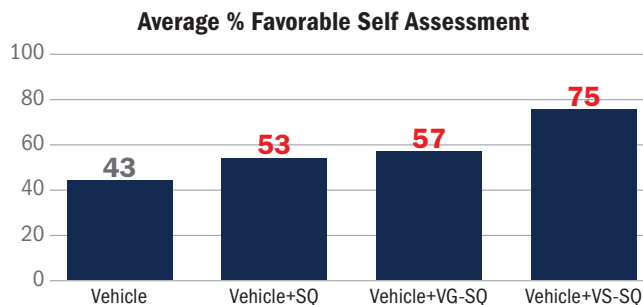
Vehicle + VG-SQ (Lotion Base Formula + Versagel® SQ 1600T\*)

Vehicle + VS-SQ (Lotion Base Formula + Versastique™ SQ Clear\*)

\*Formulated to contain 5% Squalane

### SELF-ASSESSMENT QUESTIONNAIRE

Analyzed answers to questions about subjects' perceived results



Versagel & Versastique receive highly-favorable self-assessment ratings by the subjects of the anti-aging clinical study. Favorable responses were “agree” and “strongly agree” to a list of 20 questions regarding the properties and skin care benefits of the 4 test products used in the clinical study. Subjects favorably reported the positive benefits of products containing squalane — especially Versastique-SQ. These results support the strong anti-aging efficacy of these ingredients.

## SUMMARY OF VERSAGEL & VERSASTIQUE ANTI-AGING SUPERIORITY

VG-SQ & VS-SQ outperformed SQ on 6 major anti-aging efficacy parameters

VG-SQ 28% better than SQ

VS-SQ 28% better than SQ

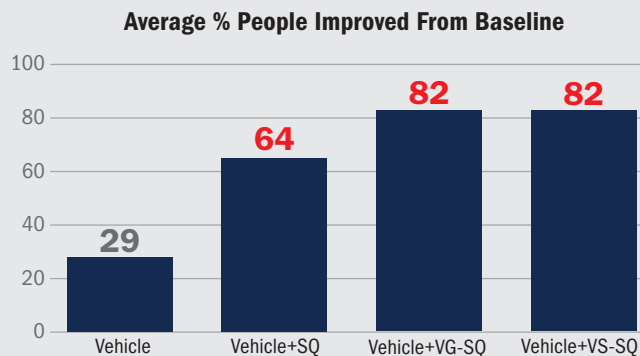
*Significant* improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

### PARAMETERS

- Periocular Wrinkles
- Skin Tone Evenness
- Skin Smoothness & Texture
- Skin Elasticity
- Skin Radiance
- Overall Appearance

### CONCLUSION

- Squalane is an efficacious anti-aging ingredient.
- Versagel & Versastique delivery system significantly improves anti-aging efficacy of squalane on 6 major anti-aging parameters.
- Efficacy benefits of Versagel-SQ and Versastique-SQ are perceivable (visual, tactile and image analysis).
- Subjects favorably reported the positive benefits of products containing squalane — especially Versastique-SQ.
- Versagel-SQ and Versastique-SQ can be used to create high-performing anti-aging products.



## ANTI-AGING EFFICACY – CLINICAL GRADING

### IMPROVEMENT OF OVERALL APPEARANCE

Lotion containing Versagel-SQ and Versastique-SQ superior to Squalane- and Placebo-containing lotions

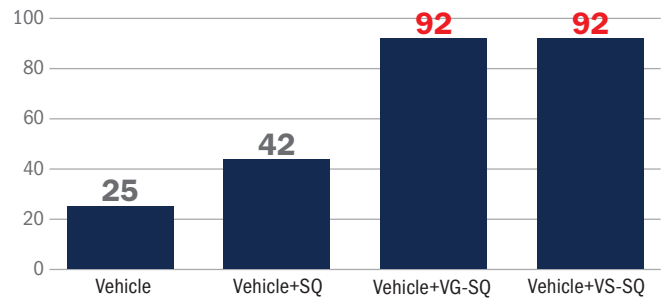
#### Result

VG-SQ is 119% more effective than SQ

VS-SQ is 119% more effective than SQ

**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

Average % People Improved From Baseline After 4 Weeks



## ANTI-AGING EFFICACY – VISUAL

### ANTI-AGING IMPROVEMENT FROM VERSAGEL SQUALANE (VISIA)

After 4 weeks, her face shows noticeable anti-aging benefits.

- Better coloration around her eyes
- Firmer skin around her eyes
- Less redness in her cheeks
- Lighter/brighter and more even overall complexion

Product contained Versagel-SQ 1600T

Baseline



4 Weeks



## ANTI-AGING EFFICACY – IMAGE ANALYSIS

### REDUCTION OF PERIOCCULAR WRINKLES

This subject received the lotion containing Versastique-SQ Clear.

After 4 weeks, her face shows reduction in total area of periorcular wrinkles.

After 4 weeks, her face shows noticeable anti-aging benefits.

- Reduction in wrinkles
- Lighter/brighter and more even overall complexion

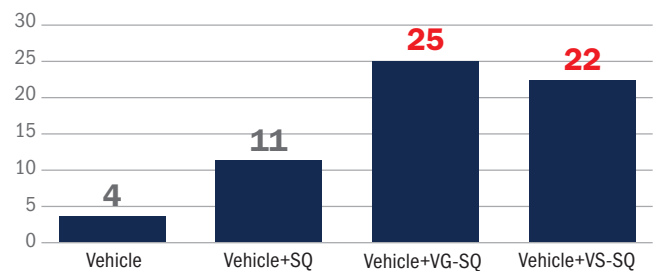
#### Result

VG-SQ is 127% more effective than SQ

VS-SQ is 100% more effective than SQ

Change from baseline to 4 weeks for selected panelists

Average % Wrinkle Reduction From Baseline After 4 Weeks



## ANTI-AGING EFFICACY – CLINICAL GRADING

### IMPROVEMENT OF SKIN RADIANCE

Lotion containing SQ, VG-SQ, and VS-SQ were all significantly better after 4 weeks, VG-SQ parity to SQ, VS-SQ directionally better than SQ

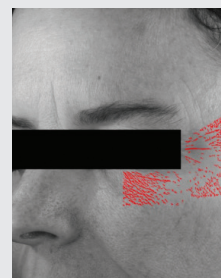
#### Result

VG-SQ is comparable to SQ

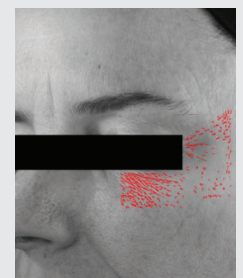
VS-SQ is 11% more effective than SQ

**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

Baseline



4 Weeks



# ANTI-AGING EFFICACY – CLINICAL GRADING

## REDUCTION OF PERIOCCULAR WRINKLES

Lotion containing Versagel-SQ and Versastique-SQ was superior to Squalane and placebo lotions

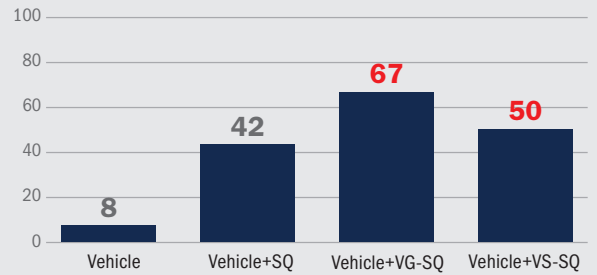
### Result

VG-SQ is 60% more effective than SQ

VS-SQ is 19% more effective than SQ

**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

Average % People Improved From Baseline After 4 Weeks



## IMPROVEMENT OF SKIN ELASTICITY

Lotion containing Versagel-SQ superior to SQ and lotion containing Versastique-SQ was equally effective to SQ

### Result

VG-SQ is 24% more effective than SQ

VS-SQ is equally effective as SQ

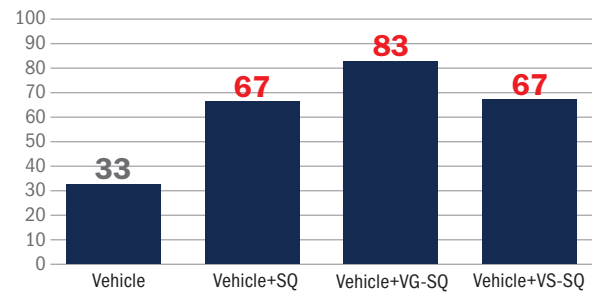
**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

### Measurement

Clinical assessment of pinch recoil of left crows feet area (LCFA) by skilled clinician

- Pinch skin with thumb and forefinger
- Hold in place 2 seconds
- Measure time for skin to recover
- Lower time is better

Average % People Improved From Baseline After 4 Weeks



## IMPROVEMENT OF SMOOTHNESS & TEXTURE

Lotion containing SQ, VG-SQ and VS-SQ significantly improved smoothness and texture when compared to the vehicle after 4 weeks

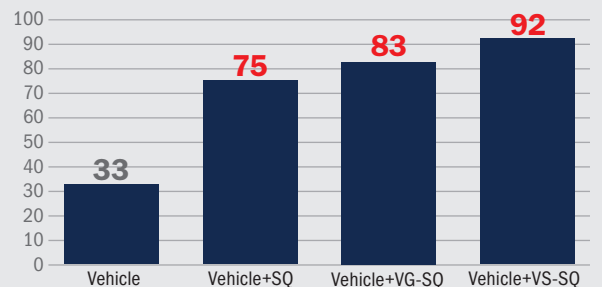
### Result

VG-SQ is 11% more effective than SQ

VS-SQ is 23% more effective than SQ

**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

Average % People Improved From Baseline After 4 Weeks



## IMPROVEMENT OF SKIN TONE EVENNESS

Lotion containing SQ, VG-SQ and VS-SQ were all significantly better than the vehicle after 4 weeks

### Result

VG-SQ is 11% more effective than SQ

VS-SQ is 33% more effective than SQ

**Significant** improvement from baseline via Wilcoxon signed ranked test ( $p \leq 0.05$ )

Study #C19-D069

Average % People Improved From Baseline After 4 Weeks

