


PERSONAL CARE

FORMULATING LASTING PARTNERSHIPS

PRODUCTS DESIGNED WITH CARE

The Penreco product lines of Versagel®, Versastique™, petrolatums and mineral oils are used in numerous cosmetic and personal care applications found in lip, baby, hand, hair and sun care products. Each product line is available in multiple viscosity ranges and is suitable for a wide variety of personal care formulations.

For more than 100 years, Penreco has specialized in niche product blending to meet customer specific requirements. We're proud to offer safe, stable products that provide a moisturizing agent as well as a gel structure for ease of formulation.

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penreco®

CALUMET

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To request a sample, visit penreco.com.

LIP CARE

The lip's exposed membrane structure is different from other skin. Lips do not have the many protective layers of stratum corneum that is found in other skin. Lips also do not have the protection provided by the sweat glands and oil glands. Therefore, the lips are more vulnerable to any exposure to natural elements such as wind, cold, sun, etc. Long-term negligence of the lips will result in chapping, cracking, bleeding and the appearance of premature aging. Because of the structure of their skin, lips require consistent moisturization and protection if they are subject to exposure. We take these needs into account to help you produce various lip care products such as lip oils, glosses, polish, liners, stains, balms, scrubs and lipstick.

PRODUCT FORMULARIES

HYDRATING LIP BALM

This smooth lip balm contains a high level Versastique ME for added structure. Versagel ME and SQ enhance the products smoothness and add extra moisturization while the squalane adds potentially powerful anti-aging properties.

	Raw Material	% W/W
A	**Versastique ME 40T**	**67.3**
	Versagel ME 1600 T	**10.0**
	Versagel SQ 1600 T	**3.6**
B	Ethylhexyl Isononanoate	2.0
	Blanova® Shea Butter Refined Organic	4.0
C	Isononyl Isononanoate	9.0
	Sharomix® EG14	.5
	Fragrance	.02
	Blanova® Coconut Oil	4.0

Procedure: Mix the components of phase A, heating to 100-110°C, until clear and then begin cooling. Premix the components of phase B, by heating slightly and then mixing until homogenous. Add phase C to phase B, mix until homogenous. When phase A is at 70°C, add phase B/C, mix until homogenous.

Formulation developed by and printed with permission from Azelis.

MOISTURIZING LIP GLOSS (CLEAR GEL)

This lip gloss provides excellent occlusivity to help moisturize the lips. The Versagel ME1600 gives this clear, mineral oil-free gel a smooth, silky, nongreasy feel.

Ingredient	Weight (%)
Versagel ME 1600	**81.95**
Phenyl Trimethicone	7.0
Isopropyl Myristate	7.4
Macadamia Integrifolia Seed Oil	2.6
Isopropyl Isostearate	1.0
Propylparaben	.05
Total	100%

Procedure: Mix all ingredients except the propylparaben and heat slowly to 80-85 °C with stirring until the mixture is uniform. Allow blend to cool to 70-75 °C. Add propylparaben and stir until dissolved. Cool to 45 °C and add flavor and color if desired, then fill containers.

DEEP RED LIPSTICK

This lipstick applies easily and gives the lips a soft feel. Mineral oil and petrolatum help add moisturization.

	Ingredient	Weight (%)
A	Ricinus Communis (Castor) Seed Oil	41.9
	Red 40 Lake	5.7
	Red 27 Lake	2.4
	Mica (and) Titanium Dioxide	1.9
	Titanium Dioxide	.95
B	Caprylic/Capric Triglyceride	11.75
	Ultima Petrolatum	**7.45**
	Propylene Glycol Dicaprylate/Dicaprate	6.2
	Copernicia Cerifera (Caranuba) Wax	5.7
	Euphorbia Cerifera (Candelilla) Wax	5.7
	Beeswax	4.3
	Drakeol 21	**2.85**
	Microcrystalline Wax	2.65
	Tocopheryl Acetate	.4
	Propylparaben	.10
	BHT	.05
C	Fragrance	q.s.
	Total	100%

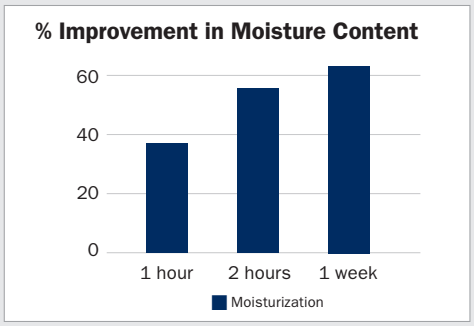
Procedure: Homogenize part A until uniform. Heat part B to 80 °C with stirring until the solids are melted. Add part A with stirring and allow the mixture to cool to 75 °C. Add part C. Pour into molds and cool.

Products in **bold** are supplied by Calumet Specialty Products Partners, L.P.

VERSAGEL ME 750 MOISTURIZATION AND LIP CONDITIONING BENEFITS STUDY

In the clinical study, participants applied Versagel ME 750 to the lips. Moisture content of the lips was measured with a NOVA Dermal Phase Meter (NOVA DPM) which measures the moisture in the skin by measuring an electrical parameter (impedance). Measurements were taken on the right and left side of the lower lip to quantify the moisture content of the stratum corneum. Overall, there was a 61% improvement in lip moisture content in 1 week. Additionally, lip condition was graded by skilled clinician comparing all improvements to baseline. The clinical grading of lip condition correlated with the instrumentally measured improvement in skin moisturization at 1h, 2h, and 1 week:

- Lip Lines: Decreased 62%
- Scaling: Decreased 27%
- Cracking: Decreased 22%



Study #C01-C138

The high sensitivity of lip skin is well known and partly due to its much lower number of skin layers compared to regular skin. This makes lips highly susceptible to dryness. The excellent performance of Versagel ME in lip care applications is due to its exceptional mildness, moisturization, and lip conditioning benefits – which also makes it an excellent ingredient for leave-on skincare products such as creams and lotions.

BABY CARE

Babies have mild and sensitive skin which require extra care and attention. It is very thin and it is much different from the skin of adults. Use of mild soaps, shampoos, wipes, lotions and oil ensures the protection of the baby's delicate skin. Today's baby care products need to be gentle on the skin to prevent rashes and other skin irritations. We take these needs into account to help you produce various baby care products such as oils, balms, moisturizers, lotions, sun block and diaper creams.

PRODUCT FORMULARIES

DIAPER RASH LOTION

This diaper lotion goes on easily and has a smooth consistency. High levels of petrolatum and mineral oil create an excellent moisture barrier.

	Raw Material	% W/W
A	**Amber Petrolatum**	**18.75**
	Drakeol 7	**10.0**
	Zinc Oxide	10.0
	Glyceryl Oleate (and) Propylene Glycol	2.0
	Dimethicone	1.0
	Benzyl Alcohol	1.0
	Cod Liver Oil	0.50
	Beeswax	0.25
B	Deionized Water	54.0
	Propylene Glycol	1.0
	Aloe Barbadensis Leaf Juice	1.0
	Sorbitol	0.5
	Total	100%

Procedure: Mix the part A ingredients except zinc oxide at 65 °C. Slowly sift the zinc oxide into the mixture at 65 °C while maintaining good agitation. Mix the part B ingredients at 55 °C. Add part B to part A with good stirring, then allow to cool. Continue mixing and cooling to ambient temperature and add fragrance with mixing as desired.

SUNSCREEN LOTION (IN-VITRO SPF 20)

A smooth sunscreen lotion with minimal whitening and a pleasant, emollient after-feel. Versagel M 200 as a suspension vehicle provides lubricity and wash-off resistance to this formula.

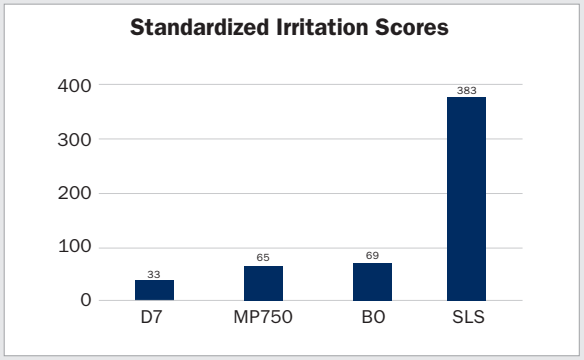
	Raw Material	% W/W
A	Isopropyl Palmitate	5.0
	Cetearyl Alcohol (and) Ceteareth-20	4.0
	Cetyl Dimethicone	2.0
	Glyceryl Stearate (and) PEG-100 Sterate	4.0
	Aluminum Starch Octenylsuccinate	0.5
	Zinc Oxide	5.0
	Versagel M 200	**5.0**
	Cyclomethicone	4.0
	Ethylhexyl Methoxycinnamate	7.5
B	Deionized Water	59.4
	Propylene Glycol	3.0
	Tetrasodium EDTA	0.1
C	Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben	2.0
	Total	100%

Procedure: Disperse the zinc oxide in Versagel M200 with high agitation. Heat to 70 - 75 °C and add the rest of the part A ingredients with good mixing until the blend is lump-free. Mix part B at 75 - 80 °C with good mixing. Add part A to part B with stirring. Allow the blend to cool to 45 °C. Add part C with stirring. Cool to the desired filling temperature.

Products in **bold** are supplied by Calumet Specialty Products Partners, L.P.

MINERAL OIL AND VERSAGEL MP STUDY TO DETERMINE COMPARATIVE MILDNESS OF INGREDIENTS

A clinical study was conducted using 100 micro liters occlusive patches of product applied to backs of subjects for 14 days. Using the Berger & Bowman Grading score, the skin patches were evaluated and given standardized cumulative irritation scores. The study showed that Drakeol 7 (D7) was more than 50% less irritating than a commercial baby oil (BO) while Versagel MP 750 had a similarly low irritation score to BO. The study also showed the anionic surfactant sodium lauryl sulfate (SLS) which is a known skin irritant as a positive control. The BO and SLS provided benchmarks that further showed how both Drakeol 7 White Mineral Oil and Versagel MP are very mild ingredients in applications such as moisturizers and offer hydration without irritating sensitive skin.



Study #C00-C023

HAND CARE

Penreco products are used in numerous dermatologically-supported creams and lotions that help fortify the skin barrier. Penreco patented gel technology offers superior moisturization, stabilization and suspension properties. Our petrolatum manufacturing process delivers high purity, extremely stable and custom natural colors, and our white oils are refined to meet the purity specifications of the USP/NF and FDA.

PRODUCT FORMULARIES

HEALTHY HANDS LOTION

This thick, rich lotion spreads easily on the skin. It contains a high level of petrolatum for extra moisturization.

	Ingredient	Weight (%)
A	**Snow Petrolatum**	**70.0**
	Glycol Stearate SE	5.0
	Isopropyl Palmitate	3.1
	Cetyl Alcohol	2.0
	Polysorbate 20	1.0
	Tocopheryl Acetate	0.1
	Propylparaben	0.1
B	Deionized Water	17.5
	Methylparaben	0.2
C	Aloe Barbadensis Leaf Juice	0.7
	Diazolidinyl Urea	0.3
	Fragrance	q.s.
	Total	**100%**

*Products in **bold** are supplied by Calumet Specialty Products Partners, L.P.

Procedure: Heat part A to 75-80 °C with stirring until uniform. Heat part B to 75-80 °C with stirring. Add part B to part A with stirring. Allow the mixture to cool with stirring. Below 50 °C, add the part C ingredients sequentially. Continue stirring to 30 °C and package.

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24/7 SKIN LOTION

This rich, smooth lotion leaves the skin feeling soft and moist.The product spreads easily and does not leave a greasy afterfeel.

	Ingredients	Weight (%)
A	**Drakeol 7**	**7.0**
	Myreth-3 Myristate	5.0
	Sorbitan Stearate	3.6
	Cetyl PPG-2 Isodeceth-7 Carboxylate	3.0
	Steareth-100	2.4
	Dimethicone	0.5
B	Deionized Water	72.5
	Glycerin	2.5
	Carbomer	0.5
C	Sodium Hydroxide (10% aq. Solution)	2.0
D	Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben	1.0
	Fragrance	q.s.
	Total	**100%**

*Products in **bold** are supplied by Calumet Specialty Products Partners, L.P.

Procedure: Disperse the Carbomer into rapidly agitated deionized water. Add the glycerin, and heat to 70-75 °C with vigorous stirring. Heat part A to 75-80 °C with stirring. Add part A to part B with stirring and allow to cool. After 5 minutes, add part C. At 40 °C, add part D. Continue stirring to 30 °C.

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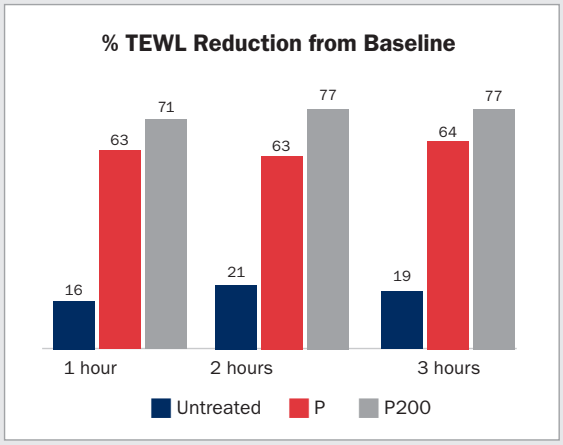
PETROLATUM AND VERSAGEL® P200 SKIN BARRIER REPAIR STUDY

A clinical study was conducted using petrolatum and Versagel P on the volar forearms of test subjects with self-perceived dry skin. TEWL measurements (DermaLab) were taken at baseline 1 hour, 2 hours, and 3 hours with re-application after each test. The study showed that petrolatum had over 60% decrease in Transepidermal Water Loss (TEWL) and Versagel P200 (gelled Petrolatum) had even higher TEWL at over 70% and both were much more efficacious than the untreated site. Thus, proving that petrolatum and Versagel P200 are highly effective moisturizing ingredients for use in hand creams and lotions.



Study #C05-C055

HAIR CARE

Navigating the wide range of hair types — from straight to wavy or curly strands — can be very confusing. In fact, individual members of one family can have different hair textures and curl patterns, which makes buying product even more difficult.

The Versagel SF product as a base ingredient empowers consumers with the tools and resources to personalize hair care and achieve positive results that is right for each individual.

CUSTOMIZE YOUR FORMULA

The suggested formulation boasts a lavender scent, known to promote relaxation, as well as have anti-microbial properties, which can help reduce inflammation and prevent dry, itchy scalp. It also contains argan oil, known to provide moisture, fight frizz, promote shine and neutralize hair damage.

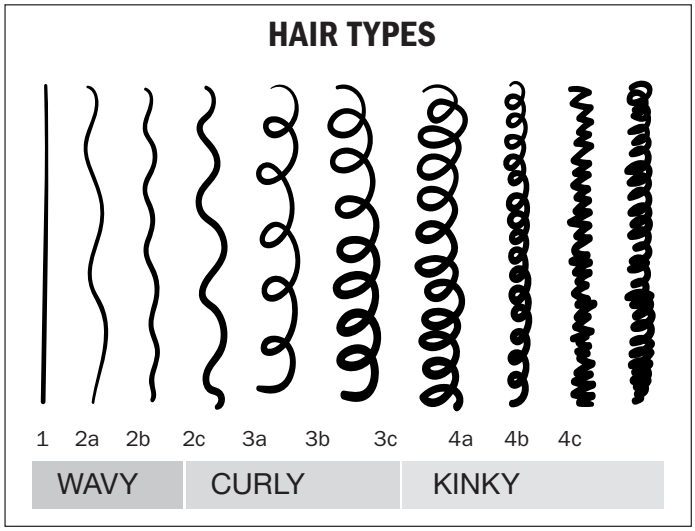
The Versagel SF product can be used at 100% of the formulation. We suggest you start there and test how it feels when you apply it as well as how it performs on your hair.

The next step is to vary the gel-to-oil ratio. When blending Versagel SF with an oil, the suggested gel content is between 50 and 100 percent. One ounce of the Versagel SF product is close to 23 grams in weight.

A customized hair treatment takes between 6 and 48 mL of oil. Since a teaspoon holds approximately 6 mL, a treatment requires only 1 to 8 teaspoons of argan oil. Therefore, if you add increments of 6 mL or 2 teaspoons, you can vary the viscosity of the product to your preference.

Heating Instructions: Do not heat the Versagel SF product directly on the stove top, as it will likely scorch. Heat the material using either a hot plate or a glass container submerged in water on the stove top. The ideal temperature for the Versagel SF product is recommended not to be heated above 90 °C.

Mixing Instructions/Time: After the Versagel SF product is heated, mix the oil and stir until homogeneous. Generally, the blend is complete when no lumps are visible, the blend has a smooth texture and the blend does not immediately separate once the mixing stops.



Alternatively, you can substitute the oil for one of the below suggestions based on your own preference:

- Almond Oil
- Apricot Oil
- Argan Oil
- Babassu Oil
- Bergamot Oil
- Castor Oil
- Coconut Oil
- Corn Oil
- Cottonseed Oil
- Cypress Oil
- Fennel Oil
- Geranium Oil
- Grapeseed Oil
- Lemongrass Oil
- Olive Oil
- Rice Bran Oil
- Tamanu Oil
- Tea Tree Oil

SUN CARE

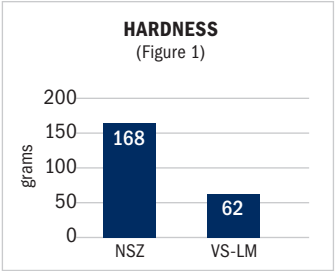
WHY FORMULATE WITH VERSASTIQUE

Studies on the Versastique product line demonstrate that formulations utilizing the Penreco® Versastique Low Melt products (VS-LM) provide an effective solution for creating high performing mineral sunscreen sticks. To illustrate the benefits of formulating with Versastique, mineral sunscreen prototypes were developed and tested against a market-leading commercial benchmark (NSZ).

The studies performed utilize a texture analyzer and third party In-vitro SPF water-resistance testing. The studies demonstrated the Versastique products offer comparable or improved hardness, friction, transfer rate and efficacy.

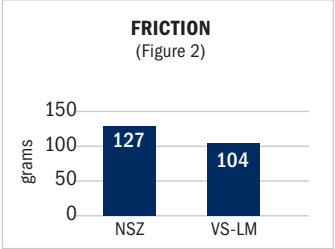
HARDNESS

Versastique prototypes have lower hardness (grams) than the wax-structured benchmark while maintaining sufficient structure and integrity. Softer stick products are gentler to apply onto the skin. (Figure 1)



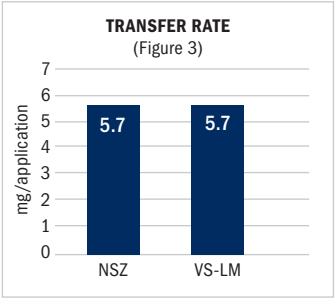
FRICTION

Versastique prototypes have lower friction (grams) than the commercial benchmark. Thus, we can conclude that the Versastique prototypes take less force to spread product over the surface. (Figure 2)



TRANSFER RATE

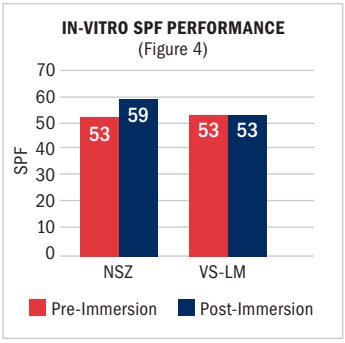
Versastique sunscreen prototypes have comparable or improved transfer rates (mg/application) compared to NSZ. Thus, we can conclude the amount of product being applied is equivalent or improved compared to the benchmark. This means Versastique sunscreens are gentler and easier to apply without applying excess product to the skin. (Figure 3)



EFFICACY

In-Vitro SPF Performance (static vs. post-immersion)

Versastique sunscreen prototypes have comparable SPF performance to the benchmark. The water-resistant properties of Versastique enable equivalent or higher **SPF post-immersion** vs. the **static or pre-immersion** values. The mildness, high efficiency, and water resistance properties of Versastique makes it an attractive base for high-performance mineral sunscreens. Due to the performance/formulation dynamics of mineral UV filters, it is important to optimize mineral sunscreen formulation. The incorporation or removal of one ingredient can significantly change overall product performance. (Figure 4)



RR# 2019 – 0006
RR# 2019 – 0002.
In-vitro sunscreen evaluation sample numbers: 20-088 to 20-093.

SUN CARE

Versastique offers a simplified solution and formula optimization requiring less ingredients to create high-performance, water-resistant stick products. The prototypes achieved comparable performance to a market-leading benchmark with a more efficient formulation (10 ingredients vs. 15) while also providing superior texture. Additionally, the co-polymer system in Versastique provides a higher melt point than traditional wax bases so the sunstick doesn't melt when exposed to the sun or higher temperatures.* Formulation strategy included optimized ingredients such as SPF booster, dispersants, waterproofing agents, structurants and a skin feel enhancer.

The VersaSun stick formulation combines Versastique and mineral sunscreen agents for an even and protective application that goes on smoothly.

FORMULATION

VersaSun LM (VS-LM)

PHASE	TRADE/COMMON NAME	WT%	FUNCTION
A	**Versastique Low Melt ME 5T**	52.9%	Base
A	Sunflower Wax Granules	10.0%	Structurant
B	Dispersun OL-100	2.5%	Dispersant
C	Z-Cote HP1®	21.6%	Sunscreen agent
D	Hallbrite® BHB	5.0%	SPF Booster + Dispersant
D	SunSpheres™ Powder	2.0%	SPF Booster
D	Cosmedia® DC	2.0%	Water-proofing agent
D	Vitamin E	1.0%	Antioxidant
D	LexFeel™ Natural	2.0%	Skin-feel modifier
D	Valvance® Touch	1.0%	Skin-feel modifier

MIXING INSTRUCTIONS

- Melt Phase A components at approximately 220°F
- Add Phase B to Melted Phase A and mix at 220°F for 15 minutes.
- Add Phase C to the blend and mix at 220°F for 30 minutes.
- Add Phase D components to blend and mix at 220°F for 2 hours.
- Pour blend into sample containers and allow to cool.

*Products in **bold** are supplied by Calumet Specialty Products Partners, L.P.

*VersaSun LM melt point = 190.6 °F
NSZ melt point = 167.0 °F

The Benchmark product ingredients include:
Active ingredients: Zinc Oxide (21.6%)
Inactive ingredients: Octyldodecyl, Neopentanoate, C12-15 Alkyl Benzoate, Polyethylene, Paraffin, Silica, Neopentyl Glycol Diethylhexanoate, Ozokerite, Isopropyl Myristate, Adipic Acid/Diglycol Crosspolymer, Triethoxycaprylylsilane, Neopentyl Glycol Diisostearate, Caprylyl Glycol, Tocopheryl Acetate

VERSAGEL®

TYPICAL PROPERTIES

	VISCOSITY @ 25 °C D2983 (cPs)	VISCOSITY @ 110 °C (cPs)	SPECIFIC GRAVITY @ 25/25 °C D4052	SAYBOLT COLOR D156	FLASH POINT °C ASTM D92 (D93*)	POLARITY LOG P
VERSAGEL M (70 VIS White Mineral Oil)						
M 200	13,330 - 27,700	-	0.8421	+30	>175	10.0
M 500	47,000 - 57,000	-	0.8445	+30	>175	10.0
M 750	67,000 - 83,000	-	0.8434	+30	>175	10.0
M 1600	132,000 - 198,000	-	0.8425	+30	>175	10.0
VERSAGEL MC (Isohexadecane)						
MC 750	35,000 - 53,000	-	0.7856	+30	>95	8.2
MC 1600	50,000 - 70,000	-	0.7983	+29	>95	8.2
VERSAGEL MD (Isododecane)						
MD 500	20,000 - 35,000	-	0.7486	+23	>45*	6.2
MD 1600	40,000 - 55,000	-	0.7496	+23	>45*	6.2
VERSAGEL ME (Hydrogenated Polyisobutene)						
ME 500	50,000 - 75,000	-	0.8264	+30	>149	9.7
ME 750	85,000 - 110,000	-	0.8265	+30	>149	9.7
ME 1600	140,000 - 180,000	-	0.8280	+30	>149	9.7
ME 2000	245,000 - 325,000	-	0.8269	+30	>149	9.7
VERSAGEL MG (Hydrogenated Poly (C6-14 Olefin))						
MG 500 T	50,000 - 75,000	-	0.8204	+30	>175	6.2
MG 750 T	85,000 - 110,000	-	0.8169	+30	>175	6.2
MG 1600 T	140,000 - 180,000	-	0.8292	+29	>175	6.2
VERSAGEL MX (600 VIS White Mineral Oil)						
MX 500 T	58,400	-	0.8735	+30	>250	10.0
MX 750 T	75,500	-	0.8687	+30	>250	10.0
MX 1600 T	132,000 - 198,000	-	0.8688	+30	>250	10.0
VERSAGEL P (Petrolatum)						
P 100	-	382	0.8649	+Opaque (Lovibond <3.0y)	>249	10.5
P 200	-	4,619	0.8650	+Opaque (Lovibond <2.0y)	>249	10.5
VERSAGEL SF (C13-14 Isoparaffin)						
SF	12,000	-	0.7824	+30	>96	6.8
VERSAGEL ML (C12-15 Alkyl Benzoate)						
ML 750	99,000	-	0.9262	+30	>199	8.2
ML 1600	250,000	-	0.9272	+29	>199	8.2
VERSAGEL MN (Isononyl Isononanoate)						
MN 750	155,000	-	0.8540	+28	>149	5.9
MN 1600	265,000 - 339,000	-	0.8549	+29	>149	5.9
VERSAGEL MP (Isopropyl Palmitate)						
MP 750	82,000 - 108,000	-	0.8520	+30	>160	8.1
MP 1600	160,000 - 200,000	-	0.8520	+28	>160	8.1
VERSAGEL HSQ (C13-15 Alkane)						
HSQ 200 T	13,500		0.8080	+25	>200	6.2
VERSAGEL SQ (Squalane)						
SQ 500 T	52,000	-	0.8076	+28	>218	9.6
SQ 1600 T	138,000	-	0.8077	+29	>218	9.6

Hydrocarbons, Esters and Natural Hydrocarbons

Versagel products are used in a wide variety of formulations. Product properties such as texture and phase stability depend on several factors like the Versagel used, it's viscosity, other formulation ingredients, relative amounts of all ingredients, order of addition, and other formulation variables. The calculated Log P (Mol Inspiration) can be used to compare the relative polarity of each Versagel. We hope that formulators find these Log P values helpful when deciding which Versagel to incorporate into their formulations. In general, the non-polar Versagel products have higher Log P values and should mix well with non-polar formulation bases. Surfactants and emulsifiers enable mixing of polar and non-polar substances so they can have a significant impact on formula stability when utilized.

International Nomenclature of Cosmetic Ingredients (INCI)

Each product line includes the gelled (substrate) and Ethylene/Propylene/Styrene Copolymer, Butylene/Ethylene/Styrene Copolymer.

All products are also available with Tinogard®, Pentaerythrityl Tetra-di-t-butyl Hydroxyhydrocinnamate, and will be indicated by a T in the name. Tinogard® is a registered trademark of BASF SE.

VERSASTIQUE™

The Versastique product line includes gelling four substrates:
■ SQ Squalane ■ ML C12-15 Alkyl Benzoate ■ ME Hydrogenated Polyisobutene ■ M Mineral Oil

VERSASTIQUE SQ
Anti-Aging
Solid stick form of squalane derived from plant sugar is a sustainable replacement for shark and olive squalene. It closely mimics the body's natural moisturizers and is absorbed quickly and effectively, without leaving greasy residue on the skin.

VERSASTIQUE ML
Soothing
Solid stick form of C12-15 alkyl benzoate provides a light and dry skin feel. It's known as an emulsifier and stabilizer for antiperspirant actives.

VERSASTIQUE ME
Light-Moisturizing
Solid stick form of hydrogenated polyisobutene is very light, non-greasy, and has good spreading properties. It has a wide range of chemical compatibility, and solubility for sunscreen agents and is a great mineral oil-free alternative.

VERSASTIQUE M
Moisturizing
Solid stick form of mineral oil provides increased moisturization and convenience over regular mineral oil.

TYPICAL PROPERTIES

VERSASTIQUE LOW MELT

	SQ 5 T	ML 5 T	ME 5 T	M 5 T
Viscosity @ 130 °C (cPs) D2983	4.6	4.1	5.2	4.3
Specific Gravity @ 25/25 °C D4052	0.81	0.93	0.83	0.85
Flash Point ASTM D92 (°C)	220	195	145	188
Melting Point (°C) D3954	85	81	85	88
Appearance	Clear solid	Clear solid	Clear solid	Clear solid
Gardner Color	0.6	0.3	0.6	0.3
Hardness (g) typical	20	20	20	20

International Nomenclature of Cosmetic Ingredients (INCI)
The **Versastique Low Melt** product line includes the gelled (substrate) and Butyl Stearate, Isostearyl Alcohol, Hydrogenated Styrene/Butadiene Copolymer, Dibutyl Ethylhexanoyl Glutamide, Dibutyl Lauroyl Glutamide, Pentaerythrityl Tetra-di-t-butyl Hydroxyhydrocinnamate

Please note that only the viscosity and appearance are listed on the CoA.
The remaining data are typical results that are not regularly reported on the CoA.

PETROLATUMS

TYPICAL PROPERTIES

	Melting Point, °F (°C) USP/ASTM D127	Viscosity SUS @ 210 °F ASTM D2161	Maximum Lovibond Color 2" Cell IP17	Consistency @ 77 °F USP/ASTM D937	Pour Point, °F (°C) ASTM D97
WHITE PETROLATUM USP					
Ultima	130/140 (54/60)	60/75	0.5Y	155/180	
Super	125/135 (52/57)	–	0.5Y	170/205	
PenClear™ Super White	125/135 (52/57)	–	0.5Y	170/205	
Snow	125/135 (52/57)	64/75	2.0Y	170/205	
Regent	118/130 (48/54)	57/70	2.0Y	210/240	
PenClear™ Snow White	125/135 (52/57)	64/75	2.0Y	170/205	
Lily	125/135 (52/57)	64/75	8.0Y 0.5R	170/205	
PETROLATUM USP					
Cream	125/135 (52/57)	64/75	18.0Y 1.5R	175/205	
Royal	118/130 (48/54)	57/70	35.0Y 3.0R	210/240	
Blond	125/135 (52/57)	68/82	35.0Y 2.0R	175/205	
Amber	125/135 (52/57)	68/82	35.0Y 7.0R	175/205	
OINTMENT BASES WHITE PETROLATUM, USP					
Ointment Base No. 4	118/125 (48/52)	45/65	1.5Y	250/275	
Ointment Base No. 6	122/133 (50/56)	60/70	1.5Y	195/230	
Ointment Base No. 8	118/127 (48/53)	55/65	1.5Y	220/250	
TECHNICAL PETROLATUM					
Red	120/135 (49/57)	70/82	Minimum 35.0Y 10.0R	175/205	
3070	125/140 (52/60)	60/95	Dark Green	130/175	
1180 Industrial	150/164 (66/73)	80/105	D1500 3.0/5.0	50/85	
MINERAL JELLY					
Mineral Jelly No. 5		50	2.0Y	Over 350	75/90 (24/32)
Mineral Jelly No. 10		60	1.0Y	270/330	95/105 (35/41)
Mineral Jelly No. 15		45	0.5Y	170/220	95/105 (35/41)

Penreco specializes in NICHE PRODUCT BLENDING to meet customer or monograph (including, not limited to USP/NF, EP, JP) specific requirements.

Regulatory Information

- Petrolatum is included on the TSCA Inventory.
- The CAS number for all products listed above is 8009-03-8.
- See Safety Data sheet for additional health, safety and disposal information.
- All Penreco USP petrolatums meet the following FDA regulations: 21 C.F.R. § 172.880 regarding direct food additives, 21 C.F.R. § 178.3700 regarding indirect food additives, and 21 C.F.R. § 573.720 regarding animal food additives.

WHITE OILS

TYPICAL PROPERTIES

	VISCOSITY		SPECIFIC GRAVITY	FLASH POINT ASTM D92 (Typical)		POUR POINT ASTM D97 (Typical)	
	ASTM D7042 SUS @ 100 °F	ASTM D7042 cSt @ 40 °C	ASTM D4052 @ 77 °F	°F	°C	°F	°C
MINERAL OIL USP							
Drakeol® 600	515/625	99.0/120.0	0.8600/0.8780	507	264	11	-12
Drakeol 350	350/370	66.7/71.2	0.8570/0.8730	469	243	5	-15
Drakeol 35	340/365	65.8/71.0	0.8640/0.8810	467	242	3	-16
Drakeol 34	370/410	72.0/79.5	0.8580/0.8720	478	248	5	-15
Drakeol 32	312/330	60.0/63.3	0.8560/0.8760	459	237	5	-15
Drakeol 21	200/215	38.4/41.5	0.8530/0.8760	439	226	5	-15
Drakeol 19	180/190	34.9/37.3	0.8520/0.8760	434	223	5	-15
LIGHT MINERAL OIL NF							
Drakeol 15	145/155	28.1/30.3	0.8500/0.8730	407	208	5	-15
Drakeol 13	125/135	24.2/26.3	0.8480/0.8670	391	199	5	-15
Drakeol 10	102/115	19.0/21.9	0.8380/0.8640	407	208	3	-16
Drakeol 10B	95/105	17.7/20.2	0.8670/0.8840	333	167	-23	-31
Drakeol 9	80/90	14.2/17.0	0.8330/0.8610	391	199	-15	-26
Drakeol 7	65/75	10.8/13.6	0.8330/0.8610	369	187	-15	-26
Drakeol 6 VR	10.0/10.6*	9.4/10.0	0.8340/0.8380	348	176	-20	-29
Drakeol 5	50.2/60.0	7.0/9.6	0.8180/0.8610	337	169	10	-12
Draketex® 50	48.0/53.0	6.5/7.8	0.8200/0.8610	320	160	10	-12
Peneteck	39.5/44	3.9/5.3	0.8210/0.8370	305	152	-27	-33
TECHNICAL MINERAL OIL							
Parol® 100	100/115	20.3	0.8440	407	208	-5	-21
Parol 80	75/90	15.3	0.8500	381	194	-5	-21
Parol 70	65/75	10.8/13.6	0.8330/0.8610	369	187	-9	-23
4463 Oil	42/59	–	0.8490	325	162	50	10
6970 Oil	50/75	–	0.8460	349	176	-30	-34
6970 LP Oil	50/75	9.4	0.8410	337	169	-30	-34

**reported in cSt*

Penreco specializes in NICHE PRODUCT BLENDING to meet customer or monograph (including, not limited to USP/NF, EP, JP) specific requirements.

Regulatory Information

- White mineral oil is included on the TSCA Inventory.
- The CAS number for all products listed above is 8042-47-5.
- See Safety Data sheet for additional health, safety and disposal information.
- All Drakeol products, Draketex 50, and Peneteck meet the following FDA regulations: 21 C.F.R. § 172.878 regarding direct food additives, 21 C.F.R. § 178.3620 (a) regarding indirect food additives, and 21 C.F.R. § 573.680 regarding animal food additives and H1 food processing lubricant standards. Penreco technical mineral oils meet 21 C.F.R. § 178.3620 (b) regarding indirect food additives and 21 C.F.R. § 573.680 regarding animal food additives.
- All Drakeol products are inhibited with less than 20 ppm dl-alpha tocopherol (vitamin E).

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