

HIGH PERFORMANCE

***Hair Care
Products***

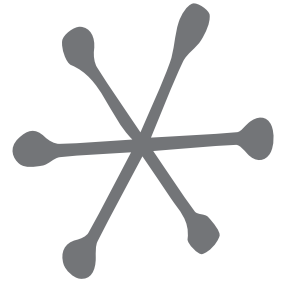
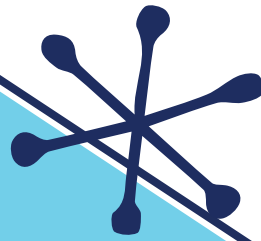


**PHOENIX
CHEMICAL**

THE ART & SCIENCE OF BEAUTY

History Of

Healthy Hair Innovation



Healthy hair starts with using the *right products!*

technology under development. The science behind our high performance products is designed to nurture hair's core structure and allow it to emerge with manageability, softness and shine. We are also committed to developing unique new prototype formulations to spark innovative ideas and solutions to hair care challenges. Our leading innovations will continue to help you meet the latest consumer demands.

Tapping into innovative technology is essential for developing customized hair care product platforms. For over 40 years, **Phoenix Chemical** products have been recognized for their superior performance.

Whether targeting shine or developing multi-functional products to condition hair, there is much exciting hair care



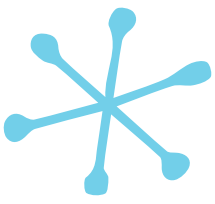
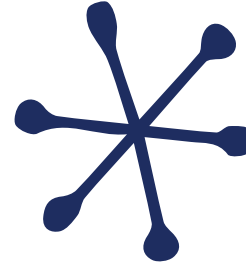


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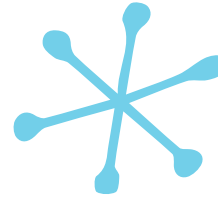
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Anti-Static

(Silicone Phosphates)

Reduces flyaways and increases combability.

PECOSIL PS-100 (Dimethicone PEG-7 Phosphate) Lower molecular weight analog than PS-112. Contains 4 ionizable phosphate groups.

Applications: Water-soluble conditioning surfactant that infuses lather with high foam. Is quite versatile and can function as a foam stabilizer, foaming agent, counterirritant and silky conditioner for shampoos and both rinse-off and leave-in conditioners.

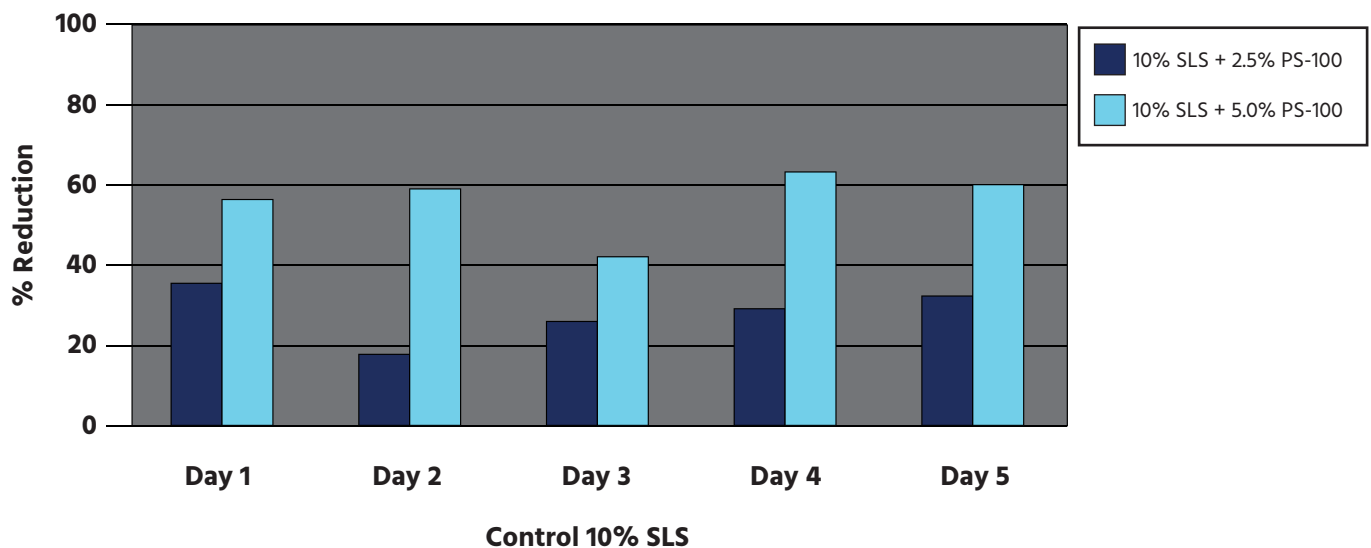
PECOSIL PS-112 (Dimethicone PEG-7 Phosphate) Contains 12 ionizable phosphate groups.

Applications: Water-soluble conditioning surfactant that infuses lather with high foam. Is quite versatile and can function as a foam stabilizer, foaming agent, and silky conditioner for shampoos and both rinse-off and leave-in conditioners.

Irritation Reduction of SLS/SLES:

Research has shown the effectiveness of **PECOSIL® PS-100** silicone phosphate ester in reducing irritation to the eye and skin as described in patent (U.S. Patent 5,869,161). It was determined that silicone phosphate esters can reduce eye and skin irritation of fatty alcohol sulfates or fatty alcohol ether sulfates by a factor of 3.

Irritation Mitigation



Anti-Static

(Silicone Phosphates)

Summary:

At **2.5% PECOSIL PS-100**, erythema reduction averaged **27%**.

At **5.0% PECOSIL PS-100**, erythema reduction averaged **55%**.

Irritation mitigation continued after 5-days of repeated insult.

Irritation Reduction of Glycolic Acid:

Independent studies indicate that **PECOSIL® PS-100** can significantly reduce the primary irritation index (PII) of glycolic acid by as much as **58%**.

The results are presented below:

10% Glycolic Acid Solution Alone	10% Glycolic Acid Solution with 10% PECOSIL® PS-100
PII * 3.88	PII* 1.63

Primary Irritation Index	
0.0 – 0.5	Non-Irritating
0.6 – 2.0	Mild
2.1 – 5.0	Moderate
>5.1	Severe

Hair Color Applications

(Vegetable-Derived Esters and Cocamide MEA)

Products in this category increase dye adhesion, increase dye viscosity, and decrease powder bleach dusting.

PELEMOL OL (Oleyl Lactate)

Applications: Successfully increases dye adhesion to hair and contributes to conditioning and volumizing.



Without OL



With OL

PELEMOL DO (Decyl Oleate)

Applications: Useful as a spreading aid and as a solubilizer in hair dye systems. Keeps hair soft during and after dye process.

PHOENAMID 70-EXTRA (Cocamide MEA)

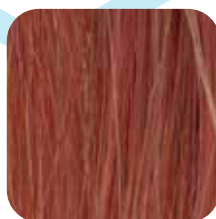
Applications: Of special value in temporary hair colors, where it is used at 28-30% level to form firm hair dye gels, preventing them from “running”.

PELEMOL OPG (Ethylhexyl Pelargonate)

Applications: Anti-dusting for hair bleach powder.

PELEMOL 123 (Oleyl Canolate)

Applications: Enhances hair color when added to hair dyes and contributes to conditioning and volumizing.



Without 123



With 123

Shine & Gloss

(Polydimethylsiloxane Wax)

Imparts shine to hair products.

PECOSIL ARS-09 (Phenylisopropyl Dimethicone) Refractive Index: 1.5185

Applications: Suitable for hair glossing products, heat treatments, hair spray, styling gels and conditioners.

PECOSIL ARS-12 (Lauryl Phenylisopropyl Methicone) Refractive Index: 1.4685

Applications: Suitable for hair glossing products, blow-dry sprays, styling gels and conditioners.

PECOSIL AS-18 (Stearyl Dimethicone)

Applications: Liquid paste hydrophobic silicone wax. Leaves hair shiny and glistening.

Hydrogels

(Polymeric Hydrogels)

These film formers overcome the negative attributes of PVP. PECOGE L Hydrogels provide the following functionality:

- ◆ Smooth continuous polymer films
- ◆ Are not tacky when dry and retain a tack free surface
- ◆ Contains re-wet and re-set properties
- ◆ Impart manageability and conditioning to hair
- ◆ Are suitable for use in water or hydro-alcoholic based systems

PECOGEL H-12/A (VP/Polycarbamyl Polyglycol Ester)

PECOGEL H-115/A (VP/Polycarbamyl Polyglycol Ester)

PECOGEL H-1220/A (VP/Polycarbamyl Polyglycol Ester)

Silkiness & Manageability

(Quaternaries and Amidoamines)

Cationic conditioners that are rich in silky conditioning with an elegant, light feel.

DICOPAMINE PC-35 (Cetrimonium Chloride (and) Dimethicone PEG-7 Phosphate)

Applications: A clear, aqueous solution of Cetrimonium Chloride and Dimethicone PEG-7 Phosphate. This unique conditioning agent serves both to condition hair and to bring the conditioner to the hair surface. It is especially effective on permed hair where it will impart softness and volume. Dicopamine PC-35 can be easily fragranced, colored, and thickened and offered as a finished product.

CATEMOL 220-B (Behenamidopropyl Dimethylamine Behenate)

Applications: Conditioners and Shampoos. It is also useful as a w/o emulsifier and gelling agent.

CATEMOL S180 (Stearamidopropyl Dimethylamine)

Applications: Substantive conditioner that builds viscosity and adds softness.

CATEMOL S180-S (Stearamidopropyl Dimethylamine Stearate)

Applications: Cationic conditioner and viscosity builder.

CATEMOL WPC (Steapyrium Chloride)

Applications: A conditioner that imparts a silky essence and leaves hair with a very soft feel.

CATEMOL MMM (Cocamidopropyltrimonium Chloride (and) Butylene Glycol)

Applications: Excellent conditioner and anti-stat to mitigate static fly-away. Thickening agent.

CATEMOL HBC-18 (Hydroxypropyl Bisstearyldimonium Chloride)

Applications: This conditioning material is a distearyl quaternary that gives softer hair conditioning compared to monoquats. It reduces static charge to provide conditioning with outstanding static control and helps prevent static flyaway.

Silkiness & Manageability

(Quaternaries and Amidoamines)

CATEMOL 220 (Behenamidopropyl Dimethylamine)

Applications: An antistatic agent, softener and conditioning agent in hair conditioners and shampoos. Must be neutralized.

Detangling & Anti-Frizz

(Dimethicone Derivatives and Natural Butters)

Imparts a silky feel and improves combability at low use levels.

PECOSIL SPP-50 (Potassium Dimethicone PEG-7 Panthenyl Phosphate)

Applications: This product is a dimethicone PEG-7 phosphate molecule to which 12 units of panthenol have been covalently bonded. It is suitable for shampoos, conditioners, styling gels, body washes, fortified treatment conditioning for dry or chemically treated hair. This product is a lower molecular weight version of **Pecosil PAN-12**.

PECOSIL AS-26 (Ceretyl Dimethicone)

Applications: Provides anti-frizz and manageability to hair via its hydrophobic barrier properties.

PELEMOL TT (Tribehenin (and) Caprylic/Capric Triglyceride)

Applications: Mimics the properties and performance of shea butter, providing anti-frizz, conditioning and manageability.

BIOGEL Butters (Hydrogenated Oils)

Applications: 100% naturally-derived hydrogenated oils which impart smoothness and moisturization.

Conditioning & Cleansing

(Silicone Panthenols and Hydrolyzed Wheat Protein)

Shampoo and conditioning materials have been developed to covalently bond both silicone and panthenol together to enhance the properties of silicone (substantivity, softness and sheen) and panthenol (hydration and volume). Water-soluble conditioning surfactants infuse lather with high foam and soothing silky comfort.

PECOSIL PAN-12 (Potassium Dimethicone PEG-7 Panthenyl Phosphate)

Applications: This product is a dimethicone PEG-7 phosphate molecule to which 12 units of panthenol have been covalently bonded. It is suitable for shampoos, conditioners, styling gels, body washes, fortified treatment conditioning for dry or chemically treated hair.

PECOSIL PAN-400 (Potassium Dimethicone PEG-7 Panthenyl Phosphate)

Applications: This product functions like **Pecosil PAN-12** except that it was designed for anhydrous systems.

PECOSIL PAN-1218Q (Steardimonium Hydroxypropyl Panthenyl PEG-7 Dimethicone Phosphate Chloride)

Applications: This product is a dodecapanthenol quaternary, as it contains 12 panthenol groups and 12 quaternary groups. It is suitable for shampoos, conditioners, styling gels, body washes, fortified treatment conditioning for dry or chemically treated hair.

PECOSIL PAN-418 (Steardimonium Hydroxypropyl Panthenyl PEG-7 Dimethicone Phosphate Chloride)

Applications: This product is a dodecapanthenol quaternary, as it contains 12 panthenol groups and 12 quaternary groups. It is suitable for shampoos, conditioners, styling gels, body washes, fortified treatment conditioning for dry or chemically treated hair. This product is a lower molecular weight version of **PECOSIL PAN-1218Q**.

PECOSIL PSQ-418 (Steardimonium Hydroxypropyl PEG-7 Dimethicone Phosphate Chloride)

Applications: This product is a silicone phosphate tetrastearyl quaternary. The base for this material is Dimethicone PEG-7 Phosphate. It has been quaternized to increase substantivity to hair. It is suitable for use in shampoos, conditioners, styling gels, blow-dry sprays and hair glossing products.

Conditioning & Cleansing

(Silicone Panthenols and Hydrolyzed Wheat Protein)

PECOSIL CA-1240 (Silicone Quaternium-12)

Applications: Excellent for treated hair and daily use.

PECOSIL AD-3640 (Silicone Quaternium-8)

Applications: Excellent for treated hair and daily use. **Pecosil AD-3640** will tend to give deeper conditioning than **Pecosil CA-1240**.

NEOPRO W-40 (Hydrolyzed Wheat Protein/PEG-20 Acetate Copolymer)

Applications: Substantive film forming conditioner. Helps repair split ends. Helps moisturize and hydrate dry hair.

PHOENOTAINE C-35 (Sodium Cocamidopropyl PG-Dimonium Chloride Phosphate)

Applications: Sulfate-free shampoos, color treatment shampoos, mild body washes and daily use cleansers.

PHOENAMID LMEA (Lactamide MEA)

Applications: Due to its conditioning and anti-static properties that help to increase the softness and smoothness of hair, it is ideal for use in shampoos and leave-on conditioners.

Product Functionality

	Conditioning	Cleansing	Anti-Static	Shine/Gloss	Detangling	Anti-Frizz	Hair Color	Silkiness	Manageability	Hold	Irritation Mitigation
BIOGEL Butters	●			●	●	●		●	●		
Catamol HBC-18	●		●						●	●	
Catamol MMM	●	●	●								
Catamol S180	●						●				
Catamol S180-S	●										
Catamol WPC	●	●							●		
Catamol 220	●		●								
Catamol 220-B	●		●						●		
Dicopamine PC-35	●										
Neopro W-40	●								●	●	
Pecogel H-12/A	●								●	●	
Pecogel H-115/A	●								●	●	
Pecogel H-1220/A	●								●	●	
Pecosil AD-3640	●			●				●	●		
Pecosil ARS-09				●	●			●			
Pecosil ARS-12				●	●			●			
Pecosil AS-18				●	●			●			
Pecosil AS-22				●		●			●	●	
Pecosil AS-26				●		●			●	●	
Pecosil CA-1240	●			●				●	●		
Pecosil PAN-12	●			●	●			●	●		
Pecosil PAN-1218Q	●		●	●	●			●	●		
Pecosil PAN-400	●			●	●			●	●		
Pecosil PAN-418	●		●	●	●			●	●		
Pecosil PSQ-418	●	●		●	●			●	●		
Pecosil PS-100	●	●	●	●							●
Pecosil PS-112	●	●	●	●			●				●
Pecosil SPP-50	●			●	●			●	●		
Pelemol DO	●				●	●					
Pelemol OL	●			●			●	●	●		
Pelemol OPG	●						●				
Pelemol TT	●				●				●		
Pelemol 123	●						●				
Phoenamid 70-Extra		●					●				
Phenotaine C-35	●	●							●		

Open online!



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