Phoenix Chemical
High Performance Lipstick Products

**PELEMOL® ESTERS**
Pelemols have multifunctional properties desirable in lipsticks. These properties include solvency, pigment wetting, lubricious substantivity, superior cushion, gloss, emolliency, spreadability, and moisturization. Additionally, several of the Pelemol Esters are 100% vegetable-derived.

**PELEMOL® BB** is the ester formed by the reaction of behenic acid with behenyl alcohol. It is completely vegetable-derived and exists as an off-white, 100% active, oil-soluble flake. **PELEMOL® BB**, when introduced into the oil phase of an emulsion, will build viscosity at low solids for a richer feel. It is, therefore, very cost-effective.

**PELEMOL® CR** is a 100% active, lipophyllic, vegetable-derived ester. It is a soft paste in consistency, melting at skin temperatures, and its lubriciousness and castor oil compatibility make it an excellent candidate for use in lipstick, make-up products, and powders. **PELEMOL® CR** contains a double bond and hydroxyl functionality. Unlike many esters, it is these electron rich groups that give **PELEMOL® CR** a degree of polarity that broadens its compatibility in cosmetic preparation where emulsifiers or other polar constituents may be employed.

**PELEMOL® D-2000** is an oligomeric ester formed by the reaction of PPG-26 and Dimer Acid, synthetic and vegetable-derived. It is a clear viscous, extremely substantive, hydrophobic, pourable liquid. Substantivity to skin is so intense that repeated washing with warm water and soap does not completely remove the product. **PELEMOL® D-2000** is also tasteless and virtually odorless.

**PELEMOL® DD** is a 100% active, hydrophobic, completely vegetable-derived polyester formed by the reaction of dimer dilinoleyl alcohol and dimer dilinoleic acid. It possesses interesting properties and can be characterized as odorless, tasteless, colorless, and glossy.

**PELEMOL® DISM** is a 100% active liquid diester of an alpha hydroxy acid. This ester exhibits excellent skin feel characterized by cushion and emolliency leaving the skin soft and supple. **PELEMOL® DISM** is oil and silicone soluble and can be formulated with these materials in a variety of cosmetic products. **PELEMOL® DISM** is suitable for lipstick and lip products as well as make-up and skin formulations.

In color cosmetics, the PECOSIL® fluorosilicone series would contribute to long wear cosmetics, particularly foundations and blushes, where oil control (sweat proofing) is critical. Use of these products is also dictated in long wear lipstick where their hydrophobic and oleophobic nature produces desired results.

Additionally, FSL-150 has more elegant, silky and luxurious tactile properties than dimethicone. With the ability to vary the length of the silicone backbone (n and m) and the number of fluorine atoms per molecule (m and x), we are able to produce cosmetic raw materials with a range of viscosities and aesthetics.

**PECOSIL® DCU** is a clear, liquid, 100% active silicone ester. In addition to imparting silicone emolliency and “cushion” in skin formulations, it possesses the special property of being miscible with both water and castor oil. It can also function as a silicone-water coupling agent.
**PECOSIL® SILICONES**

**PECOSIL® AS-A Series**
These products comprise a series of alkyl or alkyl aryl polydimethylsiloxane waxes wherein alkyl or alkylaryl functionality varies to produce waxes of different consistency which is used to modify feel and impart various properties to cosmetic products.

The products are described as:

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<th>PHYSICAL FORM</th>
<th>INCI</th>
<th>CAS NO.</th>
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The PECOSIL® AS series are also used for the following purposes: eliminating syneresis, as lubricants in deodorants sticks, to improve mold release for lipstick and soap bars, as bonding agents for hot pour or pressed powder, application where “slip” is desirable, imparting barrier properties to enhance moisturizing in creams, lotions, water resistance in sunscreen products, and high gloss in lipsticks particularly with the use of PECOSIL® ARS-09.

The PECOSIL® FS Series

**PECOSIL® FSL-150, FSL-300, FSH-150, FSH-300, FSU-150, FSU-300** a line of fluorinated organo-functional silicones.

**PECOSIL® FS** fluorosilicones are both hydrophobic and oleophobic, whereas dimethicone is only hydrophobic. PECOSIL® FSL and FSH therefore would be preferentially used in sunscreens for sweat proof products (oil repellency), hair shampoos and conditioners for sebum control and quick drying.

**PECOSIL® ARS-09** is a 100% active liquid, hydrophobic, completely synthetic/vegetable derived ester formed by the reaction of decyl alcohol and oleic acid. It can be characterized as a relatively dry ester with a slight characteristic oleyl odor. It is useful in creams and lotions to reduce tack or as a vehicle to incorporate heavy oils into a formulation. **PECOSIL® ARS-09** can also be used as a spreading aid or as a solubilizer. It is useful at 2 - 10% levels.

**PECOSIL® DP-72** is the tetraester of dipentaerythritol and hydroxystearic acid/istearic acid. This 100% active hydrophobic, occlusive, skin conditioning, emollient ester is similar to lanolin in feel and consistency. **PECOSIL® DP-72** is a paste with excellent water-holding capacity, due to the presence of hydroxyl groups in the molecule. Recommended use levels: 1 – 10%.

**PECOSIL® DP-144B** is a truly unique polyester. It is the reaction product of dipentaerythritol, tetrapolyhydroxystearic acid, and behenic acid. **PECOSIL® DP-144B** is 100% active, tacky, and substantive. It will hold three (3) times its weight in water and is a superior lipstick ester, producing moisturization and occlusive humectancy. Compared to lanolin based lipstick, **PECOSIL® DP-144B** increases the melting point of a lipstick by 5°C without sacrificing creaminess or payout. The stick demolds easier and **PECOSIL® DP-144B** has no odor and no taste.

**PECOSIL® GPR** is a 100% active, liquid, hydrophobic ester. It is vegetable-derived, polymeric octaester. It is very substantive to skin, lubricious, and glossy. **PECOSIL® GPR** also exhibits considerable cushion and spreadability. **PECOSIL® GPR** contains a castor oil moiety, ricinoleic acid. Since castor oil is composed of about 80% glyceryl ricinoleate, it is not surprising that **PECOSIL® GPR** polyglyceryl-6 ricinoleate functions as a pigment wetting and dispersing agent. These properties suggest that **PECOSIL® GPR** would be useful as a Pigment wetting and grinding aid for lipstick products and for use in skin and make-up products.

**PECOSIL® GTAR** is a 100% active, liquid, hydrophobic ester. It is vegetable-derived and functions as an emollient and pigment dispersant. It is formed by the acetylation of castor oil and possesses a slight characteristic castor odor. Among its other properties, **PECOSIL® GTAR** exhibits cushion, good play time, and high shine. These excellent properties make **PECOSIL® GTAR** highly useful in lipstick, make-up products, skin lotions, and creams at 1% - 20% levels.

**PECOSIL® GTIS** is a 100% active, liquid triester. The reaction product of glycerine and istearic acid, **PECOSIL® GTIS** exhibits excellent cushion and is uniquely suited for use in lipstick, lip gloss, and other lip products where it can also be useful in modifying melting points. On rub-in, **PECOSIL® GTIS** leaves the skin with a lubricious and glossy appearance.
PELEMOL® ICB is a 100% active low viscosity, stable, vegetable-derived, liquid ester. It is both odorless and tasteless and exhibits excellent emolliency and skin spreadability characteristics. PELEMOL® ICB exhibits broad solubility in oils and silicone, and is useful as a melting point modifier in lipstick and make-up systems. It also imparts emolliency and sheen to lipsticks, and is suitable for anhydrous skin products or emulsion systems. Use levels of 2 – 5% are indicated in skin products and 5 – 10% in lipstick and lip products.

PELEMOL® II is the ester formed by the reaction of Isostearyl Alcohol and Isostearic Acid. PELEMOL® II is a 100% vegetable-derived clear liquid and imparts shine, spreadability and emolliency to skin. It is suitable for use in color cosmetics and in skin products at a level of 2 - 10%.

PELEMOL® ISB is a 100% active ester and exists as a soft, opaque, off-white paste at ambient temperatures. It melts at skin temperature and imparts an extremely emollient and soft feel to skin. PELEMOL® ISB is generally soluble in oil and insoluble in water. It is an effective moisture barrier and imparts “slip” to powders.

PELEMOL® ISHS is a 100% active emollient, completely vegetable-derived ester that is offered as a soft paste. It can also be described as an occlusive emollient that can help to reduce transepidermal water loss, keeping skin hydrated and soft.

PELEMOL® ODR is a 100% active, liquid ester. It is synthetic/vegetable-derived and is hydrophobic in nature. It functions as an occlusive moisturizer and is extremely emollient and substantive to skin. PELEMOL® ODR has both a double bond and hydroxy functionality. It could be expected to, and, in fact, exhibits a broad range of solubility characteristics. It can function as a pigment grinding aid and its solvency in castor oil, cyclomethicone, and other esters make PELEMOL® ODR of great interest for use in lipstick and in color cosmetics in general.

PELEMOL® PTL is a 100% active vegetable/synthetic-derived tetraester. Its appearance can be described as an opalescent soft paste. It is very hydrophobic, lubricious, and substantive to skin, functioning as an occlusive emollient. PELEMOL® PTL is readily dispersible in castor oil, in cyclomethicone, and in other esters.

PELEMOL® PHS-8 is a 100% active, all vegetable-derived polyester. It is a viscous, substantive, yellow liquid at ambient temperatures and as with any polymer, will tend to fractionate on cooling. Product clarity and homogeneity is restored on heating and stirring with no adverse effect on the product. PELEMOL® PHS-8 has many nucleophilic sites and, although oil soluble, will complex water via hydrogen bonding on the skin surface. It will, therefore, function as a skin conditioner and humectant. Its substantivity and solubility profile strongly suggests its use in color cosmetics.

PELEMOL® PHS-8 also functions as a superior pigment wetting, grinding, and coating agent.

GIOVAREZ® TRANSFER-RESISTANT POLYMERS are film formers that dry to a water-insoluble film. These glossy, water in-soluble films are highly effective in transfer-resistant systems. Recommended use level is approximately 5%.

GIOVAREZ® 1800 is the homopolymer of octadecyl vinyl ether. It is a 100% active, water-insoluble, waxy, nonionic resin. When cast on a glass plate from a molten state, it forms a continuous, glossy, somewhat soft film. Since it melts at about 45ºC, it can easily be incorporated into waxes where it can be utilized as a melting point depressant.

GIOVAREZ® AC-5099M is a 50% solution of an acrylic polymer (Cyclo Alkyl Methacrylate Copolymer) in Permethyl™ 99AD (Isododecane, Permethyl Corp.). It is a clear, almost water-white liquid, which dries to a glossy, continuous, hard, water-insoluble film. When formulated into cosmetic products, the polymer film becomes more flexible due to oils and esters present in the formulated product which act as plasticizers for the acrylic film.

GIOVAREZ™ BTB-50 is a 50% solution of an acrylic polymer (Alkyl Methacrylate Copolymer) in Permethyl 99AD (Isododecane, Permethyl Corp.). It is a clear, almost water-white liquid, which dries to a glossy, clear, continuous, hard but flexible, water-insoluble film. When formulated into cosmetic products, the polymer film becomes more flexible due to oils and esters present in the formulated product which act as plasticizers for the acrylic film.

GIOVAREZ™ P-0580 is a unique solvent-free 35% polyurethane emulsion. Aliphatic based and free of isocyanate monomers, GIOVAREZ™ P-0580 forms a tough yet flexible coating. Moreover, it exhibits excellent non-yellowing UV stability and is compatible with water-based acrylics. The product forms a high gloss, abrasion resistant coating which is derived from a low viscosity easy-to-apply aqueous emulsion.
**PELEMOL® ESTERS continued**

**PELEMOL® P3D** is a 100% vegetable polyester derived from 1,3 propanediol and dimer dilinoleic acid. It is a 100% active, slightly yellow, pourable liquid. **PELEMOL® P3D** is slightly tacky, substantive, glossy and has no taste or odor. Its solubility in castor oil and esters make it an ideal ester for lipsticks, lip balms and other lip products. Additionally, **PELEMOL® P3D**’s insolubility in water and alcohol contributes to long wear properties in leg make-up and sunscreen products.

**PELEMOL® DSR-V** has been developed as an effective replacement for Cyclomethicone D3. **PELEMOL® DSR-V** is composed of a scientifically chosen blend of **PELEMOL® P-810** (Propanediol Decaprylate/Caprate) and **PELEMOL® DISM** (Disostearyl Malate) to achieve identical flow, spreadability, initial feel, softness and cushion on rub-in that is associated with Cyclomethicone D3.

**PELEMOL® T91854** is the polymeric ester principally composed of the reaction product of isostearyl alcohol and trilinoleic acid. It is a dark amber liquid and has no taste and virtually no odor. **PELEMOL® T91854** is very emollient and extremely glossy on skin. Its properties strongly suggest its use in lipstick, lip products and in color cosmetics as a pigment dispersant. **PELEMOL® T91854** is an occlusive skin conditioning and viscosity increasing agent. **PELEMOL® T91854** is 100% vegetable-derived.

**PELEMOL® VL** is a clear, slightly yellow, 100% active liquid mixed ester. It is developed as a 100% vegetable-derived replacement for lanolin oil. **PELEMOL® VL**’s tactile properties, physical properties, and solubility characteristics make it a very viable candidate to replace lanolin oil.

**PELEMOL® 3G22** is a 100% active, solid, all vegetable-derived monoester of behenic acid and polyglycerin-3. As such, each molecule contains four unreacted, free hydroxy groups at one end and one long C22 alkyl moiety as a behenate ester at the other end.

**PELEMOL® DISD** is the diester formed by the reaction of isosteryl alcohol and dimer dilinoleic acid. It is a 100% vegetable-derived, light yellow, clear liquid at ambient temperatures. **PELEMOL® DISD** owes its liquidity to its highly branched configuration. It is extremely emollient and exhibits considerable “playtime”. **PELEMOL® DISD** is useful in color cosmetics such as lipstick, make-up, foundations, mascara and eye products.

**PHOENATE® COPA** is the monophosphate ester of castor oil and is offered as a 100% active clear, yellow, liquid. It functions as a pigment dispersing and coating agent.

**PHOENATE® COPA** is anionic in character and will hydrogen bond with hydroxy groups on a pigment surface. The resultant castor oil coating enhances the pigments dispersibility in castor oil and other oily phases.

**PELEMOL® TGC** is a clear, oil-soluble, slightly yellow, slightly viscous triester. It is, in fact, surprisingly low in odor for a citrate triester. It is substantive to skin and extremely emollient. The hydroxyl functionality in **PELEMOL® TGC** makes it a uniquely effective wetting agent for pigments. In addition to its compatibility with castor oil, **PELEMOL® TGC** is a very effective pigment wetting and grinding vehicle for anhydrous pigment systems containing mineral oil, petrolatum, and/or microcrystalline wax due to **PELEMOL® TGC**’s compatibility with hydrocarbons. **PELEMOL® TGC** also has the unique property of being miscible with cyclomethicone, the resulting solution being extremely “silly” and soft in feel.

**PELEMOL® TISC** is a viscous, slightly yellow, 100% active liquid, tristearoyl ester of citric acid. Citric acid is a tetrafunctional molecule containing three carboxy and one hydroxy group. In **PELEMOL® TISC**, the three carboxy groups are esterfied leaving a free hydroxy group. This free hydroxy group creates a degree of hydrophilicity, facilitating emulsification and wetability. **PELEMOL® TISC** is soluble in most vegetable and mineral oils, esters, and cyclomethicone. It is insoluble in water, ethanol, and glycols. **PELEMOL® TISC** is all vegetable-derived.

**PELEMOL® GTHS** is a modified hydrogenated Castor Oil that functions as an effective rheological modifier in cosmetic formulations. Rheological modifiers for cosmetic applications containing oils are a challenging proposition and continue to be challenging for the formulator attempting to achieve cosmetic efficacy. Most cosmetic compositions are thickened by clays, fumed silica and structuring waxes, of which, clays are most commonly used. The usage level and processing are formulation dependent.

**PELEMOL® D3GP** is a new developmental mixed ester specifically targeted for use in lipstick applications. **PELEMOL® D3GP** is a 100% vegetable-derived functional equivalent to animal based mixed alkyl cholesterol and lanosterol based esters that are used in lipstick.

**PELEMOL® DISM** is a liquid diester of an alpha hydroxy acid. This ester exhibits excellent skin feel characterized by cushion and emolliency leaving the skin soft and supple. **PELEMOL® DISM** is oil and silicone soluble and can be formulated with these materials in a variety of cosmetic products. **PELEMOL® DISM** is suitable for lipstick and lip products as well as make-up and skin formulations. Recommended use levels: 2 – 10%.

**PELEMOL® P-810** is the diester formed by the reaction of 1,3-propanediol and caprylic/capric acids. It is a 100% active, easily pourable, clear, water-white, and virtually odorless liquid. **PELEMOL® P-810** is characterized by two significant properties, 100% vegetable-derived and extremely dry.

_Pelemol Esters continued after the chart..._
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<th>Cushion</th>
<th>Occlusive Humectant</th>
<th>Substantive</th>
<th>Conditioner</th>
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PELEMOL® ESTERS continued

PELEMOL®P3D is a 100% vegetable polyester derived from 1,3 propanediol and dimer dilinoleic acid. It is a 100% active, slightly yellow, pourable liquid. PELEMOL® P3D is slightly tacky, substantive, glossy and has no taste or odor. Its solubility in castor oil and esters make it an ideal ester for lipsticks, lip balms and other lip products. Additionally, PELEMOL® P3D’s insolubility in water and alcohol contributes to long wear properties in лeg make-up and sunscreen products.

PELEMOL® DSR-V has been developed as an effective replacement for Cyclomethicone D5. PELEMOL® DSR-V is composed of a scientifically chosen blend of PELEMOL® P-810 (Propanediol Decaprylate/Caprate) and PELEMOL® DISM (Disostearyl Malate) to achieve identical flow, spreadability, initial feel, softness and cushion on rub-in that is associated with Cyclomethicone D5.

PELEMOL® T91854 is the polymeric ester principally composed of the reaction product of isostearoyl alcohol and trilinoleic acid. It is a dark amber liquid and has no taste and virtually no odor. PELEMOL® T91854 is very emollient and extremely glossy on skin. Its properties strongly suggest its use in lipstick, lip products and in color cosmetics as a pigment dispersant.

PELEMOL® P-810 is characterized by two significant properties, 100% vegetable-derived and extremely dry. PELEMOL® P-810 is a diester formed by the reaction of isosteryl alcohol and dimer dilinoleic acid. It is a 100% active, solid, all vegetable-derived monoester of behenic acid and polyglycerin-3. As such, each molecule contains four unreacted, free hydroxy groups at one end and one long C22 alkyl moiety as a behenate ester at the other end.

PELEMOL® D3GP is a 100% vegetable-derived functional equivalent to animal based mixed alkyl cholesterol and lanosterol based esters that are used in lipstick applications. PELEMOL® D3GP is a 100% vegetable-derived functional equivalent to animal based mixed alkyl cholesterol and lanosterol based esters that are used in lipstick.

PELEMOL® DISM is a liquid diester of an alpha hydroxy acid. This ester exhibits excellent skin feel characterized by cushion and emolliency leaving the skin soft and supple. PELEMOL® DISM is oil and silicone soluble and can be formulated with these materials in a variety of cosmetic products. PELEMOL® DISM is suitable for lipstick and lip products as well as make-up and skin formulations. Recommended use levels: 2 – 10%.

PELEMOL® 3G2 is a 100% active, solid, all vegetable-derived monoester of behenic acid and polyglycerin-3. As such, each molecule contains four unreacted, free hydroxy groups at one end and one long C22 alkyl moiety as a behenate ester at the other end.

PELEMOL® TGC is a clear, oil-soluble, slightly yellow, slightly viscous triester. It is, in fact, surprisingly low in odor for a citrate triester. It is substantive to skin and extremely emollient. The hydroxyl functionality in PELEMOL® TGC makes it a uniquely effective wetting agent for pigments. In addition to its compatibility with castor oil, PELEMOL® TGC is a very effective pigment wetting and grinding vehicle for anhydrous pigment systems containing mineral oil, petrolatum, and/or microcrystalline wax due to PELEMOL® TGC’s compatibility with hydrocarbons. PELEMOL® TGC also has the unique property of being miscible with cyclomethicone, the resulting solution being extremely “silky” and soft in feel.

PELEMOL® TISC is a viscous, slightly yellow, 100% active liquid, trisostearoyl ester of citric acid. Citric acid is a tetrafunctional molecule containing three carboxy and one hydroxy group. In PELEMOL® TISC, the three carboxy groups are esterfied leaving a free hydroxy group. This free hydroxy group creates a degree of hydrophilicity, facilitating emulsification and wetability. PELEMOL® TISC is soluble in most vegetable and mineral oils, esters, and cyclomethicone. It is insoluble in water, ethanol, and glycols. PELEMOL® TISC is all vegetable-derived.

PELEMOL® GTHS is a modified hydrogenated Castor Oil that functions as an effective rheological modifier in cosmetic formulations. Rheological modifiers for cosmetic applications containing oils are a challenging proposition and continue to be challenging for the formulator attempting to achieve cosmetic efficacy. Most cosmetic compositions are thickened by clays, fumed silica and structuring waxes, of which, clays are most commonly used. The usage level and processing are formulation dependent.

PELEMOL® TGC is a new developmental mixed ester specifically targeted for use in lipstick applications. PELEMOL® TGC is a 100% vegetable-derived functional equivalent to animal based mixed alkyl cholesterol and lanosterol based esters that are used in lipstick.

PELEMOL® TGC is a clear, oil-soluble, slightly yellow, slightly viscous triester. It is, in fact, surprisingly low in odor for a citrate triester. It is substantive to skin and extremely emollient. The hydroxyl functionality in PELEMOL® TGC makes it a uniquely effective wetting agent for pigments. In addition to its compatibility with castor oil, PELEMOL® TGC is a very effective pigment wetting and grinding vehicle for anhydrous pigment systems containing mineral oil, petrolatum, and/or microcrystalline wax due to PELEMOL® TGC’s compatibility with hydrocarbons. PELEMOL® TGC also has the unique property of being miscible with cyclomethicone, the resulting solution being extremely “silky” and soft in feel.

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PELEMOL® DISM is a liquid diester of an alpha hydroxy acid. This ester exhibits excellent skin feel characterized by cushion and emolliency leaving the skin soft and supple. PELEMOL® DISM is oil and silicone soluble and can be formulated with these materials in a variety of cosmetic products. PELEMOL® DISM is suitable for lipstick and lip products as well as make-up and skin formulations. Recommended use levels: 2 – 10%.

PELEMOL® P-810 is the diester formed by the reaction of 1,3-propanediol and caprylic/capric acids. It is a 100% active, easily pourable, clear, water-white, and virtually odorless liquid. PELEMOL® P-810 is characterized by two significant properties, 100% vegetable-derived and extremely dry.

Phenolate® COPA is the monophosphate ester of castor oil and is offered as a 100% active clear, yellow, liquid. It functions as a pigment dispersing and coating agent. Phenolate® COPA is amionic in character and will hydrogen bond with hydroxy groups on a pigment surface. The resultant castor oil coating enhances the pigments dispersibility in castor oil and other oily phases.

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PELEMOL® ICB is a 100% active low viscosity, stable, vegetable-derived, liquid ester. It is both odorless and tasteless and exhibits excellent emolliency and skin spreadability characteristics. PELEMOL® ICB exhibits broad solubility in oils and silicone, and is useful as a melting point modifier in lipstick and make-up systems. It also imparts emolliency and sheen to lipsticks, and is suitable for anhydrous skin products or emulsion systems. Use levels of 2 – 5% are indicated in skin products and 5 – 10% in lipstick and lip products.

PELEMOL® II is the ester formed by the reaction of Isostearyl Alcohol and Isostearic Acid. PELEMOL® II is a 100% vegetable-derived clear liquid and imparts shine, spreadability and emolliency to skin. It is suitable for use in color cosmetics and in skin products at a level of 2 - 10%.

PELEMOL® ISB is a 100% active ester and exists as a soft, opaque, off-white paste at ambient temperatures. It melts at skin temperature and imparts an extremely emollient and soft feel to skin. PELEMOL® ISB is generally soluble in oil and insoluble in water. It is an effective moisture barrier and imparts “slip” to powders.

PELEMOL® ISHS is a 100% active emollient, completely vegetable-derived ester that is offered as a soft paste. It can also be described as an occlusive emollient that can help to reduce transpidermal water loss, keeping skin hydrated and soft.

PELEMOL® ODR is a 100% active, liquid ester. It is synthetic/vegetable-derived and is hydrophobic in nature. It functions as an occlusive moisturizer and is extremely emollient and substantive to skin. PELEMOL® ODR has both a double bond and hydroxy functionality. It could be expected to, and, in fact, exhibits a broad range of solubility characteristics. It can function as a pigment grinding aid and its solvency in castor oil, cyclomethicone, and other esters make PELEMOL® ODR of great interest for use in lipstick and in color cosmetics in general.

PELEMOL® PTL is a 100% active vegetable/synthetic-derived tetraester. Its appearance can be described as an opalescent soft paste. It is very hydrophobic, lubricious, and substantive to skin, functioning as an occlusive emollient. PELEMOL® PTL is readily dispersible in castor oil, in cyclomethicone, and in other esters.

PELEMOL® PHS-8 is a 100% active, all vegetable-derived polyester. It is a viscous, substantive, yellow liquid at ambient temperatures and as with any polymer, will tend to fractionate on cooling. Product clarity and homogeneity is restored on heating and stirring with no adverse effect on the product. PELEMOL® PHS-8 has many nucleophillic sites and, although oil soluble, will complex water via hydrogen bonding on the skin surface. It will, therefore, function as a skin conditioner and humectant. Its substantivity and solubility profile strongly suggests its use in color cosmetics.

GIOVAREZ® TRANSFER-RESISTANT POLYMERS are film formers that dry to a water-insoluble film. These glossy, water-in-soluble films are highly effective in transfer-resistant systems. Recommended use level is approximately 5%.

GIOVAREZ® 1800 is the homopolymer of octadecyl vinyl ether. It is a 100% active, water-insoluble, waxy, nonionic resin. When cast on a glass plate from a molten state, it forms a continuous, glossy, somewhat soft film. Since it melts at about 45ºC, it can easily be incorporated into waxes where it can be utilized as a melting point depressant.

GIOVAREZ® AC-5099M is a 50% solution of an acrylic polymer (Cyclo Alkyl Methacrylate Copolymer) in Permethyl™ 99AD (Isododecane, Permethyl Corp.). It is a clear, almost water-white liquid, which dries to a glossy, continuous, hard, water-insoluble film. When formulated into cosmetic products, the polymer film becomes more flexible due to oils and esters present in the formulated product which act as plasticizers for the acrylic film.

GIOVAREZ™ BTB-50 is a 50% solution of an acrylic polymer (Alkyl Methacrylate Copolymer) in Permethyl 99AD (Isododecane, Permethyl Corp.). It is a clear, almost water-white liquid, which dries to a glossy, clear, continuous, hard but flexible, water-insoluble film. When formulated into cosmetic products, the polymer film becomes more flexible due to oils and esters present in the formulated product which act as plasticizers for the acrylic film.

GIOVAREZ™ P-0580 is a unique solvent-free 35% polyurethane emulsion. Aliphatic based and free of isocyanate monomers, GIOVAREZ™ P-0580 forms a tough yet flexible coating. Moreover, it exhibits excellent non-yellowing UV stability and is compatible with water-based acrylics. The product forms a high gloss, abrasion resistant coating which is derived from a low viscosity easy-to-apply aqueous emulsion.
PECOSIL® SILICONES

PECOSIL® AS-A Series
These products comprise a series of alkyl or alkyl aryl polydimethylsiloxane waxes wherein alkyl or alkyl/aryl functionality varies to produce waxes of different consistency which is used to modify feel and import various properties to cosmetic products.

The products are described as:

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The PECOSIL® AS series are also used for the following purposes: eliminating syneresis, as lubricants in deodorants sticks, to improve mold release for lipstick and soap bars, as bonding agents for hot pour or pressed powder, application where “slip” is desirable, imparting barrier properties to enhance moisturizing in creams, lotions, water resistance in sunscreen products, and high gloss in lipsticks particularly with the use of PECOSIL® ARS-09.

The PECOSIL® FS Series

PECOSIL® FSL-150, FSL-300, FSH-150, FSH-300, FSU-150, FSU-300 a line of fluorinated organo-functional silicones.

PECOSIL® FS fluorosilicones are both hydrophobic and oleophobic, whereas dimethicone is only hydrophobic. PECOSIL® FSL and FSH therefore would be preferentially used in sunscreens for sweat proof products (oil repellency), hair shampoos and conditioners for sebum control and quick drying.

PECOSIL® DO is a 100% active liquid, hydrophobic, completely synthetic/vegetable derived ester formed by the reaction of decyl alcohol and oleic acid. It can be characterized as a relatively dry ester with a slight characteristic oleyl odor. It is useful in creams and lotions to reduce tack or as a vehicle to incorporate heavy oils into a formulation. PECOSIL® DO can also be used as a spreading aid or as a solubilizer. It is useful at 2 - 10% levels.

PECOSIL® DP-72 is the tetraester of dipentaerythritol and hydroxystearic acid/isostearic acid. This 100% active hydrophobic, occlusive, skin conditioning, emollient ester is similar to lanolin in feel and consistency. PECOSIL® DP-72 is a paste with excellent water-holding capacity, due to the presence of hydroxyl groups in the molecule. Recommended use levels: 1 – 10%.

PECOSIL® DP-144B is a truly unique polyester. It is the reaction product of dipentaerythritol, tetrapolyhydroxystearic acid, and behenic acid. PECOSIL® DP-144B is 100% active, tacky, and substantive. It will hold three (3) times its weight in water and is a superior lipstick ester, producing moisturization and occlusive humectancy. Compared to lanolin based lipstick, PECOSIL® DP-144B increases the melting point of a lipstick by 5°C without sacrificing creaminess or payout. The stick demolds easier and PECOSIL® DP-144B has no odor and no taste.

PECOSIL® GPR is a 100% active, liquid, hydrophobic ester. It is vegetable-derived, polymeric octaester. It is very substantive to skin, lubricious, and glossy. PECOSIL® GPR contains a castor oil moiety, ricinoleic acid. Since castor oil is composed of about 80% glycerol ricinoleate, it is not surprising that PECOSIL® GPR polyglyceryl-6 ricinoleate functions as a pigment wetting and dispersing agent. These properties suggest that PECOSIL® GPR would be useful as a pigment wetting and grinding aid for lipstick products and for use in skin and make-up products.

PECOSIL® GTAR is a 100% active, liquid, hydrophobic ester. It is vegetable-derived and functions as an emollient and pigment dispersant. It is formed by the acetylation of castor oil and possesses a slight characteristic castor odor. Among its other properties, PECOSIL® GTAR exhibits cushion, good play time, and high shine. These excellent properties make PECOSIL® GTAR highly useful in lipstick, make-up products, skin lotions, and cream at 1% - 20% levels.

PECOSIL® GTIS is a 100% active, liquid triester. The reaction product of glycerine and isostearic acid, PECOSIL® GTIS exhibits excellent cushion and is uniquely suited for use in lipstick, lip gloss, and other lip products where it can also be useful in modifying melting points. On rub-in, PECOSIL® GTIS leaves the skin with a lubricious and glossy appearance.
Phoenix Chemical  
High Performance Lipstick Products

**PELEMOL® ESTERS**

Pelemols have multifunctional properties desirable in lipsticks. These properties include solvency, pigment wetting, lubricious substantivity, superior cushion, gloss, emolliency, spreadability, and moisturization. Additionally, several of the Pelemol Esters are 100% vegetable-derived.

**PELEMOL® BB** is the ester formed by the reaction of behenic acid with behenyl alcohol. It is completely vegetable-derived and exists as an off-white, 100% active, oil-soluble flake. **PELEMOL® BB**, when introduced into the oil phase of an emulsion, will build viscosity at low solids for a richer feel. It is, therefore, very cost-effective.

**PELEMOL® CR** is a 100% active, lipophyllic, vegetable-derived ester. It is a soft paste in consistency, melting at skin temperatures, and its lubricousness and castor oil compatibility make it an excellent candidate for use in lipstick, make-up products, and powders. **PELEMOL® CR** contains a double bond and hydroxyl functionality. Unlike many esters, it is these electron rich groups that give **PELEMOL® CR** a degree of polarity that broadens its compatibility in cosmetic preparation where emulsifiers or other polar constituents may be employed.

**PELEMOL® D-2000** is an oligomeric ester formed by the reaction of PPG-26 and Dimer Acid, synthetic and vegetable-derived. It is a clear viscous, extremely substantive, hydrophobic, pourable liquid. Substantivity to skin is so intense that repeated washing with warm water and soap does not completely remove the product. **PELEMOL® D-2000** is also tasteless and virtually odorless.

**PELEMOL® DD** is a 100% active, hydrophobic, completely vegetable-derived polyester formed by the reaction of dimer dilinoleyl alcohol and dimer dilinoleic acid. It possesses interesting properties and can be characterized as odorless, tasteless, colorless, and glossy.

**PELEMOL® DISM** is a 100% active liquid diester of an alpha hydroxy acid. This ester exhibits excellent skin feel characterized by cushion and emolliency leaving the skin soft and supple. **PELEMOL® DISM** is oil and silicone soluble and can be formulated with these materials in a variety of cosmetic products. **PELEMOL® DISM** is suitable for lipstick and lip products as well as make-up and skin formulations.

In color cosmetics, the **PECOSIL®** fluorosilicone series would contribute to long wear cosmetics, particularly foundations and blushes, where oil control (sweat proofing) is critical. Use of these products is also dictated in long wear lipstick where their hydrophobic and oleophobic nature produces desired results.

Additionally, **FSL-150** has more elegant, silky and luxurious tactile properties than dimethicone. With the ability to vary the length of the silicone backbone (n and m) and the number of fluorine atoms per molecule (m and x), we are able to produce cosmetic raw materials with a range of viscosities and aesthetics.

**PECOSIL® DCU** is a clear, liquid, 100% active silicone ester. In addition to imparting silicone emolliency and “cushion” in skin formulations, it possesses the special property of being miscible with both water and castor oil. It can also function as a silicone-water coupling agent.

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**While the information herein is believed to be reliable, PHOENIX CHEMICAL, INC. does not guarantee its accuracy. Purchasers are urged to conduct their own tests.**

**PHOENIX CHEMICAL, INC. warrants its materials, as described herein, shall conform to the written specifications for such materials. PHOENIX CHEMICAL, INC. makes no other warranty, either expressed or implied, as to the materials' merchantability or fitness for purpose. In no event shall PHOENIX CHEMICAL, INC.'s liability for breach of this warranty exceed the purchase price of the material for which such breach is claimed. Nothing contained herein is intended as a recommendation to use PHOENIX CHEMICAL, INC. products so as to infringe any patent and no liability for customer's violation of patent or other rights is assumed.**
High Performance

Lipstick Products