Sunscreen Technical Bulletin

Formulation Base

PROTAPHOS CES-P

Cetearyl Alcohol (and) Dicetyl Phosphate (and) Ceteth-10 Phosphate

Formulation Enhancements

PROTACHEM ISP

(Isostearyl Palmitate)

PROTACHEM ISL

(Isostearearyl Linoleate)

PRO-AQUA ISL

(Isosteareth-200 Linoleate)

PROTAMEEN

375 MINNISINK ROAD TOTOWA NJ 07511 USA
TEL: 973.256.4374 FAX: 973.256.6764
INFO@PROTAMEEN.COM WWW.PROTAMEEN.COM

After Sun Mist

Featuring ProAqua ISL

Phase	Trade Name	INCI Name	% WT.
1	DI Water	Water/EAU/Aqua	81.53
1	Protacide Na3 EDTA	Trisodium EDTA	0.10
1	Glycerine 99.5% USP	Glycerine	2.50
2	DL-Panthenol 50%	Panthenol	1.00
2	Protacide PSP Blend	Phenoxyethanol (and) Potassium Sorbate (and) Sodium Benzoate	1.00
3	Protamer LG-1	Acrylates Copolymer	1.00
3	NaOH (20% sln.)	Sodium Hydroxide	1.50
4	Aloe Vera Gel 10X (AG014)	Aloe Barbadensis Leaf Juice	1.00
5	Pro-Aqua ISL (25% sln.) adjust pH to <6.5	Isoseareth-200 Linoleate	10.10
5	Citric Acid (20% sln.)	Citric Acid	0.25
6	Blue #1 (1% sln.)	FD&C Blue #1	0.02
			100.00 %

Manufacturing Procedure

Phase 1 Add DI Water to Manufacturing Vessel while mixing slowly add Protacide Na3 EDTA. Then add glycerin 99.5%, mix well.

Phase 2 Slowly add DL-Panthenol 50% while mixing add Protacide PSP Blend. Mix until uniform.

Phase 3 Slowly add Protamer LG-1 mix until uniform. Add NaOh (20% solution). Mix until uniform.

Phase 4 Slowly add Aloe Vera Gel AG014 mix until uniform.
Slowly add Pro-Aqua ISL (25% Solution) adjust Ph to <6.5 with Citric Acid (20% Solution).

Phase 5 Add FDC color Blue #1.

Phase 6 Pour the product into desired package.

Protameen Chemicals Inc. 375 Minnisink Road Totowa, N.J. 07512 973-256-4374

After Sun Moisturizing Body Lotion

Featuring ProAqua ISL, Protachem ISP & Proatchem ISL

Phase	Trade Name	INCI Name	% WT.
1	DI Water	Water/EAU/Aqua	695.00
1	Protacide NA3 EDTA	Trisodium EDTA	2.00
1	Glycerine 99.5% USP	Glycerine	25.00
1	DL-Panthenol	Panthenol	10.00
1	ProAqua ISL	Isosteareth-200 Linoleate	10.00
1	Protacide PSP Blend	Preservative	10.00
1	Protamer Z-10	Carbomer	8.00
2	Cocoa Butter(Deodorized)	Theobroma Cacao (Cocoa) Seed Butter	85.00
2	Protachem ISL	Isostearyl Linoleate	40.00
2	Protachem ISP	Isostearyl Palmitate	30.00
2	Protaphos CES-P	Cetearyl Alcohol (and) Dicetyl Phosphate (and) Ceteth 10 Phosphate	75.00
3	Vitamin E USP	Tocopheryl Acetate	5.00
3	Tea 99%	Triethylamine	5.00
			1000g

Manufacturing Procedure

Phase 1 Add DI Water into Manufacturing Vessel heat to 65-70 degrees C while mixing add Protacide Na3 EDTA then Glycerin 99.5% USP. Slowly add DL Panthenol. Mix until uniform. Then add Pro Aqua ISL. Mix well add Protacide PSP Blend mix until uniform. Then very Slowly Add Protamer Z-10.

Phase 2 Keeping temp. at 67-70 degree C add Cocoa Butter Deo. Then add Protachem ISL mix well. Then add Protachem ISP mix until uniform. Add Protaphos CES-P slowly.

Phase 3 Add Vitamin E USP mix well and then add Tea 99%. Mix until uniform. Cool down and package into desired units.

Protameen Chemicals Inc. 375 Minnisink Road Totowa, N.J. 07512 973-256-4374

Hydrating SPF Lip Balm

Featuring Protachem ISP & Proatchem CER and Protaphenone 3

Phase	Trade Name	INCI Name	% WT.
1	Coconut Oil	Cocos Nucifera (Coconut) Oil	57.25
1	Protalan Oil	Lanolin Oil	10.00
2	Beeswax White Refined		25.00
3	Protachem CER	Cetyl Ricinoleate	2.00
3	Protachem ISP	Isostearyl Palmitate	2.25
4	Protaphenone- 3	Benzophenone-3/Oxybenzone	2.25
5	Vitamin E Acetate USP	Tocopheryl Acetate	0.25
5	Flavor Fragrance		1.0
			100.00%

Manufacturing Procedure

Phase 1 Combine Coconut Oil and Protalan Oil in the manufacturing vessel and heat to 60°-65°C.

Phase 2 Add Beeswax and mix until the wax is completely melted and the product is uniform.

Phase 3 Slowly add Protachem CER and Protachem ISP mix until uniform.

Phase 4 Slowly add Protaphenone 3 and mix until uniform.

Phase 5 Slowly add Vitamin E Acetate USP and flavor/fragrance.
Keep heat at 60-65 degrees C. until uniform. Pour into package and cool.

Protameen Chemicals Inc. 375 Minnisink Road Totowa, N.J. 07512 973-256-4374

PROTAMEEN CHEMICALS

PROTAPHOS CES-P

INCI: Cetearyl Alcohol (and) Dicetyl Phosphate (and) Ceteth-10 Phosphate

PROTAPHOS CES-P is a phosphate esters-based O/W complete emulsifying system blended with fatty alcohol, with great synergistic emulsifying and conditioning properties, providing excellent functionality to skin care, baby care and hair care products.

It possesses unique emulsifying properties in comparison to conventional waxy emulsifiers, that allow it to form sophisticated emulsions with natural substantivity, greater oil deposition, and sheer thinning (thixotropy) to promote fast & simultaneous release of oil and water-based actives. PROTAPHOS CES-P based emulsions provide enhanced performance by offering tremendous benefits by releasing and better depositing actives onto skin and hair. It allows great versatility in formulating a wide range of elegant products from very low viscosity liquid lotions to high viscosity creams and butters (with addition of fatty alcohols and other texturizing/bodying agents).

Phosphate esters are believed to be inherently substantive (and mild) to skin because they are similar chemically to phospholipids which occur naturally in the skin as a component of the cell membrane. With such a phospholipid-like character, PROTAPHOS CES-P may be the ideal delivery vehicle for any OTC and skin conditioning products that use liposomes or other phospholipid-based carriers.

The aesthetic attributes of today's sunscreens should be focused on two main objectives: improving the aesthetic properties of formulations as well as the efficacy of their active ingredients - UV filters.

Aesthetic properties of sunscreen formulations can be optimized by using Protaphos CES-P as an emulsifier, conditioner, and delivery system in one product, resulting in desired product that spreads easily with minimized or masked the oily feel during their application, resulting in smooth and velvety after-feel. With organic UV filters, judicious choice of the right functional material helps to optimize both skin feel and efficacy.

In sunscreens, the ability of PROTAPHOS CES-P to provide maximum UV filters and oil deposition and break on application has much better efficacy, higher, more sustained SPFs, and much better wash-off resistance resulting in sunscreen formulations with higher static SPFs and more sustained water resistance. Higher oil deposition and substantivity of the PROTAPHOS CES-P emulsions, result in higher SPF values
Emulsion rheology was found to be a very important factor in the efficacy of sunscreen products.

Whatever the application, PROTAPHOS CES-P offers great versatility in formulating, making it highly desirable as an alternative to using Glyceryl Monostearate (GMS)/stearic soap type systems. PROTAPHOS CES-P is much milder than typical anionic surfactants and has virtually none of the disadvantages of GMS. It is a complete emulsifying system and is compatible with cationic, unlike pure GMS which is non-self-emulsifying, or the self-emulsifying form of GMS which is very alkaline and incompatible with cationic. PROTAPHOS CES-P is highly pH stable and therefore able to withstand both the low pH of AHAs and the high pH of relaxers.

PROTAMEEN CHEMICALS

Other Formulation Attributes:

- Self-bodying
- Thixotropic (sheer thinning) structure promoting combined release of oil and water to leave substantive oil layer on the skin surface.
- Allow greater oil phase incorporation into formulations.
- Promotes higher waterproof SPFs in sunscreens.
- It is compatible with cationic.

Skin Care Benefits:

- Fast release of active ingredients
- Enhanced sunscreens efficacy/performance as well as their water resistance.
- Extreme pH tolerance
- Naturally substantive to skin with conditioning feel.

Hair Care Benefits:

- Quicker penetration of hair conditioning actives.
- Enhances hair conditioning effect of quats and polyquats.
- Great for hair relaxers.
- Improved deposition of hair dyes onto hair.
- Great substantivity to hair, provides sheen.

Applications examples:

1. It is highly recommended for sunscreen products, and has an enhanced delivery system for organic UV filters.
2. AHA products.
3. Self-tanners
4. Treatments and anti-aging products.
5. Protective baby products.
6. Depilatories
7. Cleansers (hair and skin).
8. Hair conditioners and relaxers.
9. Hair dyes.
10. Pigmented emulsions.

Recommended usage level: 3.5 - 11.0 %

PROTAMEEN CHEMICALS INC.
375 Minnisink Road Totowa, NJ 07512
Telephone: 973-256-4374 facebook.com/protameen INFO@PROTAMEEN.COM WWW.PROTAMEEN.COM

PROTACHEM ISP [TM]

INCI Name: Isostearyl Palmitate

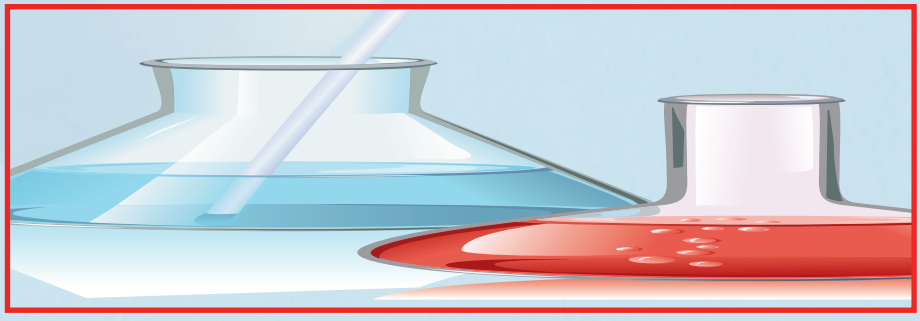
OIL SOLUBLE ESTER

Protachem ISP *(Isostearyl Palmitate)* **is a non-comedogenic, saturated liquid emollient with an extraordinary skin feel and low freezing point. Virtually colorless, odorless, and tasteless, suggests ideal use in lip products.**

In stick formulations, Protachem ISP provides excellent pour and mold-release properties, while imparting remarkable spreadability.

Protachem ISP functions as a co-solubilizer for silicones and waxes in sunscreens, and may be considered to be an "oil-free" ingredient for cosmetics.

When incorporated into creams or lotions at levels as low as 3%, Protachem ISP imparts a light, silky emolliency, eliminating the greasy feel of mineral oil or other heavier esters.



Protachem ISP is derived from renewable, non-animal source raw materials which is a real plus in today's rapidly evolving consumer marketplace.

ELEGANT SILKY FEEL

PROTACHEM ISL

OIL SOLUBLE ESTER

Protachem ISL *(Isostearyl Linoleate)* **is a medium viscosity plant derived ester with bi-functional properties (emolliency and moisturization).**

It is an unusual emollient that combines the non-occlusive lubricity of a branched chain monoester with the full-bodied non-oily characteristics of a fatty acid ester.

Protachem ISL is derived from isostearyl alcohol and linoleic acid. Linoleic acid is required for maintenance of cutaneous barrier function. In insufficient amounts, skin becomes scaly, exhibits hyperproliferation and increased transepidermal water loss (TEWL).

Protachem ISL supplies this essential fatty acid to the skin which assists in repairing the Intercellular Moisture Barrier increasing the intrinsic moisturization of skin and reducing TEWL.

Protachem ISL has excellent pigment dispersing properties and may be used in various types of make-up, lip gloss, lipstick, mascara and blush formulations. It is highly recommended in creams or lotions where it can partially or totally replace mineral or plant oils that tend to be oily or greasy.

In sunscreen products, it can solubilize oil soluble sunscreen actives and helps to reduce the oiliness often associated with these products and provide a non-greasy emollient feel to skin while improving the water-resistant properties of the product.

MOISTURIZING

PRO-AQUA ISL [TM]

INCI Name: (Isostearet 200 Linoleate)

WATER SOLUBLE ESTER!

Pro-aqua ISL ***(Isostearet-200 Linoleate)*** **is the sister product to our ever popular specialty emollient, Protachem ISL** ***(Isostearyl Linoleate)*** **which has been proven to deliver long-term moisturization to dry skin.**

Due to the highly lipophilic nature of the Protachem ISL, this product was limited to use in emulsions and anhydrous systems - until now.

Pro-aqua ISL was developed to offer the same benefits of Protachem ISL in surfactant and water based formulations. Pro-aqua ISL can be used in clear shampoos and styling products to improve shine, in surfactant based bath and body products to impart a pleasant after-feel to the skin and in water based gel products to impart skin conditioning and improve skin moisturization.

Pro-aqua ISL also acts as an emulsifier or co-emulsifier in O/W lotions and creams

Typical Properties

Pro-aqua ISL is available in a pastille form and is readily water soluble.

Appearance:	Off-white colored pastille.
Color (Gardner):	3 Maximum
Melt Point:	50°C
pH (5% Aq. Sol.):	3.0 - 5.0

PROTAMEEN CHEMICALS INC
375 MINNISINK ROAD
TOTOWA NJ 07511 USA
TEL 973.256.4374 FAX
info@protameen.com www.protameen.com facebook.com/protameen