Elefac® I-205

U.S. Patent 5,116,604

Bernel.
Your formulations will thank you.

Alzo International, Inc. acquired Bernel Chemical Company, Inc. in September of 2003. Bernel is now a division of Alzo International, Inc.

This merge of Alzo and Bernel combines a wealth of cosmetic expertise and marketing knowledge.

For a comprehensive data sheet on any product in this list or for technical consultation, please contact your Bernel representative, or reach us directly at our facility.

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Introduction

Elefac I-205, Octyldodecyl Neopentanoate. An exclusive, extraordinary emollient that significantly enhances the Sun Protective Factor ("SPF"). A clear, low freezing, liquid. Good color. Good odor. Non-comedogenic. Stable. Safe.

In addition to being an unusual emollient, **Elefac I-205** is also a moisturizer and pigment wetter when used in treatment and/or cosmetic products.

In the sunscreen formulations presented, all vary with regard to SPF, as well as the type and concentration of sunscreen used. However, all owe their unexpected high SPF score to the **Elefac I-205**.

ELEFAC I-205 U.S. Patent 5,116,604

Technical Bulletin

Chemical Name: Octyldodecyl Neopentanoate
CTFA/INCA Name: Octyldodecyl Neopentanoate
CAS Number: 125496-22-2
ELINCS Number: 97-06-0994-00

Specifications:

Appearance @ 25°C	Clear Liquid
Color, APHA	40 Maximum
Odor	Slight, Characteristic
Specific Gravity @ 25°C	0.845 ± 0.01
Refractive Index @ 25°C	1.440 ± 0.01
Acid Value	2.0 Maximum
Saponification Value, mg KOH/gm	130 - 150

Solubilities (5% @ 25°C):

Water	Insoluble
Castor Oil	Soluble
Mineral Oil	Soluble
Safflower Oil	Soluble
Ethyl Alcohol SD-40 (Anhyd.)	Soluble

Suggested Uses (5% Conc. @ 25°C):

Elefac I-205 is recommended as an emollient in sunscreen emulsions. It has actually been shown to increase the "SPF" in high SPF products. Elefac I-205 is also an excellent binder and emollient for pressed powder and has unusual stability in acid pH emulsions.

Preface to the Formulary

In addition to Elefac I-205, eight (8) other Bernel Chemical Company Compounds are used in this formulary. These are: Citmol 316 and 320 (liquid emollients); Cupl PIC (emulsifier and solubilizer); Hetester PCA (emulsifier and emollient), PHA (emulsifier and emollient) and PMA (liquid emollient); Marrix SF (solid emollient); Marrix SF (solid emollient) and Parapel HC (hair conditioner and emulsifier). These raw materials also appear in their own respective presentations which further describe and demonstrate their properties. Additionally, a data sheet for each is incorporated within.

There are eleven (11) formulae in this presentation. Each one is a unique delivery system which brings “actives” and “properties” to skin and/or hair. This uniqueness is due to the cosmetic, physical and surface active properties, as well as the specific combination and concentration of the raw material used.

In this formulary, there are various types of creams, lotions, and an oil. Some emulsions are made at 20°C, some at 40°C, and some at 85°C. Each formulation is a presentation in itself. However, when taken all together, the formulae demonstrate the role of Elefac I-205 in producing uniquely emollient cosmetic products. Equally as important, the type of surface active systems used to incorporate and deliver the Elefac I-205 to the skin or hair is also evident in this formulary.

Sunscreen/Moisturizer SPF 15* F-4-21-2

Formulary

Phase A (30°C)	
Water, Deionized	62.00
Phase B (Dry Blend)	
(1) Veegum	0.80
(1) Keltrol	0.40
Phase C	
Triethanolamine – 99%	0.25
Phase D	
(2) DEA Methoxy Cinnamate	4.00
Phase E (Mix at 30°C until uniform)	
Hetester PCA (30°C)	10.00
(1) Dermoblock OMC	7.50
(1) Dermoblock OS	5.00
Elefac I-205	10.00
Phase F	
(4) Kathon CG	0.05
	100.00% TOTAL

Procedure:

With ample mixing, add Phase B to Phase A. Mix until "smooth."
Next, add Phase C, mix well, then slowly add Phase D, mix to dissolve.
Next add Phase E, mix well, then add Phase F. Mix for 15 - 20 minutes.

Suppliers:

(1) Alzo International, Inc.
(2) NIPA Labs
(3) Givaudan-Roure

*Free of Benzophenone-3 and "PABA" derivative.

AMA LABORATORIES, INC.
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FAX: (914) 638-4872

SUMMARY SHEET

EVALUATION OF SUN PROTECTION BY SPF DETERMINATION (WATERPROOF)

REF.:	WPCL891/SPF3598BCC.WP/S
DATE:	September 18, 1989
AMA LAB NO.:	A-3598
CLIENT:	F-4-21-2
CLIENT:	BERNEL CHEMICAL COMPANY, INC. 174 Grand Avenue Englewood, New Jersey 07631
TEST:	SPF Determination of Sun Protection Products
REFERENCE:	Federal Register, August 25, 1978, Sunscreen Drug Products For Over-The-Counter Human Drugs.
CONCLUSIONS:	The static SPF of Sample F-4-21-2 was 17.93. The waterproof SPF of Sample F-4-21-2 was 8.30.

Shyla Cantor, Ph.D.
Study Director

9/18/89
Date

Water Proof* Suntan Lotion SPF 17/17 F-4-38-1

Formulary

Phase A (Melt and Mix 85 - 90°C)	
(2) Isostearic Acid	4.00
(2) Cetyl Alcohol	1.00
(1) Amphisol	2.00
(1) D.C. Silicone Fluid 200 (100cs)	0.50
(2) Dermoblock OMC	7.50
Elefac I-205	10.00
(2) Dermoblock OS	4.00
(2) Benzophenone-3	2.00
Phase B (Heat to 85°C)	
Water, deionized	63.00
(2) Glycerine	4.00
Phase C (Dry Blend)	
(2) Veegum	0.75
(2) Keltrol	0.25
Phase D	
(2) Germaben II E	1.00
	100.00% TOTAL

Suppliers:

(1) Givuadan-Roure

(2) Alzo International, Inc.

Procedure:

Preparation Of The Phases:

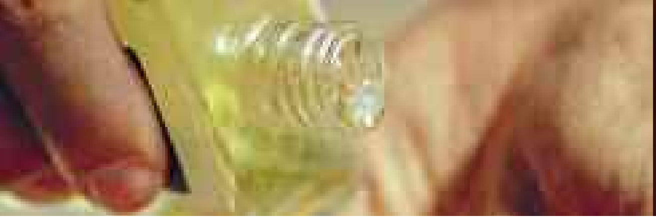
Step A) In a suitable vessel, large enough to contain the entire batch, add Phase B. Then, slowly add Phase C to Phase B, mix until uniform, and hold at 85°C.

Step B) In another suitable vessel, large enough to contain the entire oil phase, add Phase A, heat to 85°C and mix to disperse evenly. Hold at 85°C.

Forming the Emulsion:

To form the emulsion, add Step B (Phase A) to Step A (Phase B and Phase C). Mix well at 85°C, and add Phase D. Continue to mix until all is uniform and begin cooling down (and continue to mix) to 35°C. Avoid aeration.

*Polymer Free



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SUMMARY SHEET

EVALUATION OF SUN PROTECTION BY SPF DETERMINATION (WATERPROOF)

REF.: WPCL90-23/SPF4538BCC.W20/5

DATE: May 9, 1990

AMA LAB NO.: A-4538

CLIENT: F-4-38-1

CLIENT: BERNEL CHEMICAL COMPANY, INC.
174 Grand Avenue
Englewood, New Jersey 07631

TEST: SPF Determination of Sun Protection Products

REFERENCE: Federal Register, August 25, 1978, Sunscreen Drug Products For Over-The-Counter Human Drugs.

CONCLUSIONS: The static SPF of Sample F-4-38-1 was 17.69. The waterproof SPF of Sample F-4-38-1 was 17.69. The percentage of waterproof data demonstrating equivalence to static results was 100%.

Shyla Cantor, Ph.D.
Study Director

Date

Suntan Oil SPF 19 F-5-43-1A

Formulary

(1) Dow Corning Volatile Silicone 334	27.50
Hetester PMA	14.00
(2) Isocetyl Alcohol	1.00
Elefac I-205	15.00
(2) Dermoblock OS	5.00
(2) Dermblock OMC	7.50
SD 40 Anhydrous Ethanol	25.00
(2) Benzophenone-3	5.00
	100.00% TOTAL

Procedure:

In a covered vessel, large enough to contain the entire batch, add each ingredient in the order written above – dissolving each before adding the next. After all are added, heat the entire batch to 50°C, and stir until all dissolves.

Suppliers:

(1) Dow Corning Corporation
(2) Alzo International, Inc.

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SUMMARY SHEET

EVALUATION OF SUN PROTECTION BY SPF DETERMINATION (STATIC)

AMA REF. NO.:	WPCL91-92/SPF7194SCC.S20/S
DATE:	June 21, 1991
AMA LAB NO.:	A-7194
CLIENT NO.:	F-5-43-1A
CLIENT:	BERNEL CHEMICAL COMPANY, INC. 174 Grand Avenue Englewood, New Jersey 07631
TEST:	SPF Determination of Sun Protection Products
REFERENCE:	Federal Register, August 25, 1978, Sunscreen Drug Products For Over-The-Counter Human Drugs.
CONCLUSIONS:	The static SPF of Sample F-5-43-1A was 19.64.

Shyla Cantory 6/21/91

Shyla Cantory Ph.D. Date
Study Director

U.V. Absorber Free Lotion SPF 22* F-6-24-1

Formulary

Phase A 15°C - 25°C (room temp.); Mix until "smooth"	
Hetester PHA	10.00
Elefac I-205	10.00
(1) Ti02 - (LA - 20)	10.00
Phase B (room temp.)	
Water, deionized	68.95
Phase C (Dry Blend)	
(2) Veegum	0.70
(2) Keltrol	0.30
Phase D	
(3) Kathon CG	0.05
	100.00% TOTAL

Procedure:

Add Phase C to Phase B and mix until "smooth." Then, with proper mixing (propeller causing a vortex), add Phase A. Mix until uniform and add Phase D. Mix until uniform.

Suppliers:

(1) Grant Industries
(2) Alzo International, Inc.
(3) Rohm & Haas, Inc.

*After 6 months storage, scored an SPF 22 when retested on twenty people.

Table

SPONSOR: Bernel Chemical Company, Inc.
AMA LAB. NO.: A-8601
CLIENT NO.: Sample No. F-6-24-1

Subject ID#	Sex	MED/HR	I (Amps)	Skin Type	Med (Sec)	STD (8% HMS)	SPF Value
56 9617	F	26.1	5.8	II	11	4.09	19.55
58 1660	F	28.1	7.0	II	8	4.50	17.25
48 9475	F	25.0	7.8	I	6	4.83	23.00
44 7027	M	26.3	7.0	II	14	4.00	24.00
64 9641	F	26.7	4.8	II	11	5.09	24.46
84 9790	F	27.1	4.6	II	11	4.09	19.55
68 0839	F	26.4	5.6	II	8	4.50	21.50
60 6370	M	25.3	5.8	I	6	3.83	23.00
52 4878	F	26.7	7.2	II	6	4.83	23.00
54 5098	F	25.3	5.6	II	8	5.63	21.50
62 6052	F	25.9	5.8	II	8	4.50	21.50
64 6264	F	25.9	7.8	II	11	4.09	15.64
36 7992	F	25.6	4.9	II	6	4.83	23.00
38 3924	F	25.6	7.8	I	6	4.83	23.00
58 4464	F	24.8	5.7	II	8	3.63	21.50
74 6231	F	25.6	5.6	II	6	4.83	28.67
66 4839	F	24.6	8.1	II	11	4.09	24.46
44 4995	F	26.4	7.8	II	8	4.50	26.88
60 8677	F	24.7	7.8	II	8	4.50	26.88
46 0882	F	24.6	7.2	II	6	3.83	23.00

Mean SPF:	4.45	22.57
Standard Deviation:	0.50	3.11
S.E. Mean (S.E.M.):	0.11	0.70
S.E. % of Mean:	2.47	3.10
N:	20.00	20.00

MED: Minimal Erythemal Dose
I: Intensity of light source

Evaluation Period:
This study was conducted from December 5, 1991 through January 15, 1992.

WPCL92-110/SPF8601BCC.S20 AMA LABORATORIES, INC.

Water Proof Suntan Cream SPF 34* F-4-8-1

Formulary

Phase A (Melt & Mix 85 - 90°C)	
(5) Dermofat 4919	4.00
(5) Cetyl Alcohol	1.00
(1) Amphisol	2.00
(2) Ganex V-220 (Melted)	3.00
(3) D.C. Silicone Fluid 200 (100cs)	0.50
(5) Dermoblock OMC	7.50
(4) Uvinul M-40	6.00
(5) Dermoblock OS	5.00
Elefac I-205	10.00
Phase B (Heat to 85°C and disperse)	
Water, deionized	53.90
(5) Glycerine	5.00
(5) Carbopol 940	0.10
Phase C (Dissolve)	
Water, deionized	0.90
Triethylanolamine 99%	0.10
Phase D	
(5) Germaben II E	1.00
	100.00% TOTAL

Procedure:

Mixing of Phases

A. In a suitable vessel, large enough to contain the entire batch, add Phase C to Phase B, and mix until uniform.

B. In another suitable vessel, large enough to contain the entire oil phase, add ingredients of Phase A, and mix to dissolve evenly. Hold at 85°C.

C. To form the emulsion, add step B to step A. Mix well at 85°C, and add phase D. Mix and cool at 35°C, and package.

Suppliers:

(1) Givaudan Corp.
(2) GAF Corp.
(3) Dow Corning, Inc.
(4) BASF, Inc.
(5) Alzo International, Inc.

*After 18 months storage, scored 31/31 (water proof) when tested on ten people.

AMA LABORATORIES, INC.

SUMMARY SHEET

EVALUATION OF SUN PROTECTION PRODUCTS BY SPF DETERMINATION

REF.: MPCL681/SPF2884BC.ST/S

DATE: December 12, 1988

AMA LAB NO.: A-2884

CLIENT NO.: F-4-8-1

CLIENT: BERNEL CHEMICAL COMPANY, INC.
174 Grand Avenue
Englewood, New Jersey 07631

TEST: SPF Determination of Sun Protection Products.

REFERENCE: Federal Register, August 25, 1978, Sunscreen Drug Products For Over-The-Counter Human Drugs.

CONCLUSIONS: The SPF of Sample F-4-8-1 was 34.23.

Shyla Cantor 12/12/1988

Shyla Cantor, Ph.D. Date
Director
AMA LABORATORIES, INC.

Men's After Shave Splash* F-5-23-1

Formulary

Phase A (35°C)	
Water, deionized	72.45
Phase B (Dry Blend)	
(1) Veegum	0.70
(1) Keltrol	0.30
Phase C (35°C Mix Until Uniform and Clear)	
Hetester PHA	10.00
(2) D.C. Volatile Silicone 344	10.00
Elefac I-205	4.00
CUPL PIC	1.50
(3) Fragrance – Givaudan PA67124	1.00
Phase D	
(4) Kathron CG	0.05
	100.00% TOTAL

Procedure:

Add Phase B to Phase A and mix for 30 minutes or until uniform and smooth. Add Phase C and mix for 15 minutes 30°C. Then add Phase D. Mix until uniform.

Suppliers:

(1) Alzo International, Inc.
(2) Dow Corning
(3) Givaudan-Roure
(4) Rohm & Haas, Inc.

* Alcohol Free

Sprayable Moisturizer Milk F-6-8-1

Formulary

Phase A (40°C)	
Water, deionized	55.90
Phase B (40°C) (Disperse first)	
Hetester PHA	10.00
(1) Pemulen TR-2	0.15
Then add remaining ingredients to Phase B:	
Elefac I-205	4.00
Citmol 320	4.00
CUPL PIC (40°C)	2.00
(2) Fragrance 72102	2.00
(3) Dow Corning Volatile Silicone 344	10.00
Phase C (Dissolve)	
Water, deionized	0.88
Triethanolamine – 99%	0.12
Phase D (Disperse)	
Water, Deionized	9.80
(4) Keltrol	0.10
Phase E	
(4) Germaben II E	1.00
Phase F	
Disodium EDTA	0.05
	100.00% TOTAL

Procedure:

Add Phase B to Phase A; mix well; next add Phase C and mix.
Add Phase D,E,F – mixing after each addition. Cool to 30°C.

Suppliers:

(1) B.F. Goodrich
(2) Givaudan
(3) Dow Corning
(4) Alzo International, Inc.

Dry Skin Lotion F-6-26-1

Formulary

Phase A (45°C)	
Water, deionized	58.25
Phase B (45°C) (Disperse first)	
Hetester PHA	9.00
(1) Pemulen TR-2	0.30
Then add remaining ingredients to Phase B:	
Elefac I-205	4.50
Marrix SF	4.50
CUPL PIC (40°C)	2.00
(2) Dow Corning Volatile Silicone 344	9.00
Phase C (Dissolve)	
Water, deionized	1.26
Triethanolamine – 99%	0.24
Phase D (Disperse)	
Water, deionized	9.80
(3) Keltrol	0.10
Phase E	
(3) Germaben II E	1.00
Phase F	
Disodium EDTA	0.05
	100.00% TOTAL

Procedure:

Add entire Phase B to Phase A; mix well; next add Phase C and mix. Add Phases D, E and F – mixing after each addition. Cool to 30°C.

Suppliers:

(1) BF Goodrich
(2) Dow Corning
(3) Alzo International, Inc.

10% Urea Cream F-4-19-1

Formulary

Phase A (Heat to 85°C and mix until smooth)	
(1) Dermofat 4919	5.00
(1) Cetyl Alcohol	1.00
(2) Amphisol	2.00
Elefac I-205	4.00
Citmol 320	4.00
(3) Silicone Fluid 200 (100cs)	0.05
Phase B (Heat to 85°C and Disperse well)	
Water, Deionized	65.65
Glycerine	5.00
(4) Carbopol 940	0.15
Phase C	
Germaben II E	1.00
Phase D (Mix)	
Water, Deionized	1.50
Triethanolamine – 99%	0.15
Phase E	
Urea USP	10.00
Phase F	
(5) Kathon CG	0.05
	100.00% TOTAL

Procedure:

Add Phase D to Phase B, then Phase C, mix well, then add Phase E. Mix well. Then add Phase A and mix well at 85°C. Continue mixing and cool to 50°C and add Phase F. Continue cooling and mixing to 30°C. Preferred pH is 5.0 - 6.0.

Suppliers:

(1) Alzo International, Inc.
(2) Givaudan
(3) Dow Corning
(4) BF Goodrich
(5) Rohm & Haas

Foundation Lotion F-4-18-1

Formulary

Phase A (25°C)	
Water, deionized	59.60
Phase B (Dry Blend)	
(1) Veegum	0.70
(1) Keltrol	0.30
Phase C (25°C and Mix)	
(1) Isostearic Acid	3.00
(1) Isocetyl Alcohol	1.00
Hetester PHA	10.00
Triethanolamine – 99%	1.00
(1) Dermoblock OMC	3.00
Citmol 320	5.00
Elefac I-205	5.00
Phase D (Dry Blend)	
(2) Pulverized Color Blend F-2-121-1 (CS 11926)	10.00
(3) Cab-o-sil M-5	1.30
Phase E	
(4) Kathon CG	0.10
	100.00% TOTAL

Procedure:

With ample mixing, add Phase B slowly to Phase A. Mix until thoroughly dispersed, then add Phase C. Mix until uniform. Next, add Phase D slowly and mix until smooth, then add Phase E. Mix all until uniform, then mix very slowly to deaerate.

Pigment Blend F-2-121-1	
(3) TiO2 3228	6.80 parts
(3) Yellow Iron Oxide 7055	1.15 parts
(3) Red Iron Oxide 7054	0.40 parts
(3) Talc 141	1.00 parts
(5) Black C33-134	0.15 parts
	9.50 parts TOTAL

Suppliers:

(1) Alzo International, Inc.
(2) Whittaker, Lark & Daniels Inc.
(3) Cabot Inc.
(4) Rohm & Haas, Inc.
(5) Sun Chemical Co., Inc.

After Shampoo Hair Conditioner* F-6-34-1

Formulary

Phase A (Heat to 85°C)	
Hetoxol CS (Cetearyl Alcohol)	3.50
Parapel HC	2.50
(1) Arosuf TA-100	1.00
Elefac I-205	4.00
Phase B (Heat to 85°C mix and disperse well)	
Water, deionized	87.90
(2) Cellosize QP 30,000 Hi	0.50
Phase C	
(3) Kathon CG	0.10
Phase D	
(4) Fragrance PA61487	0.50
	100.00% TOTAL

Procedure:

Add Phase A to Phase B. Mix well at 85°C then cool to 50°C and add Phase C. Mix well and continue mixing and cooling to 30°C. Cool to 40°C and add Phase D.

Suppliers:

(1) Sherex, Inc.
(2) Union Carbide, Inc.
(3) Rohm & Haas, Inc.
(4) Givaudan-Roure Corporation

*Put-On/Rinse-Off

CITMOL 316 Patent Pending

Technical Bulletin

Chemical Name: Triisocetyl Citrate
Suggested CTFA Name: Triisocetyl Citrate
CAS Number: 93385-14-9

Specifications (Tentative):

Appearance @ 25°C	Clear Liquid
Color (Gardner)	1 Maximum
Acid Value	4.0 Maximum
Saponification Value	175 - 195
Moisture	0.2% Maximum
Hydroxyl Value	20 Maximum

Solubilities (5% Conc. @ 25°C):

Water	Insoluble
Propylene Glycol	Insoluble
Castor Oil	Soluble
Mineral Oil	Soluble
Safflower Oil	Soluble
Octyl Palmitate	Soluble
Oleyl Alcohol	Soluble
Ethyl Alcohol-SD 40 95%	Soluble

Suggested Uses:

Citmol 316 is a viscous liquid emollient with a Castor Oil type property and feel. This zero comedogenic oil lends itself to a myriad of cosmetic applications. Its unusual solvency and ability to be solidified with uniformity suggests many uses in stick and pigmented emulsion type products. Its unusual emolliency and pigment dispersing properties suggest its use in special emollient and cleansing creams. Its high viscosity, similar to that of U.S.P. mineral oil, suggests its use in lipsticks.

CITMOL 320 Patent Pending

Technical Bulletin

Chemical Name: Triocetyldodecyl Citrate
Suggested CTFA Name: Triocetyldodecyl Citrate
CAS Number: 125594-44-7

Specifications (Tentative):

Appearance @ 25°C	Clear Liquid
Color (Gardner)	1 Maximum
Acid Value	4.0 Maximum
Saponification Value	135 - 165
Moisture	0.2% Maximum
Hydroxyl Value	20 Maximum

Solubilities (5% Conc. @ 25°C):

Water	Insoluble
Propylene Glycol	Insoluble
Castor Oil	Soluble
Mineral Oil	Soluble
Safflower Oil	Soluble
Octyl Palmitate	Soluble
Oleyl Alcohol	Soluble
Ethyl Alcohol-SD 40 95%	Soluble

Suggested Uses:

Citmol 320 is a viscous liquid emollient with a Castor Oil type property and feel. This zero comedogenic oil lends itself to a myriad of cosmetic applications. Its unusual solvency and ability to be solidified with uniformity suggests many uses in stick and pigmented emulsion type products. Its unusual emolliency and pigment dispersing properties suggest its use in special emollient and cleansing creams. Its unique high viscosity, similar to that of U.S.P. mineral oil, suggests its use in lipsticks.

Cupl PIC U.S. Patent 4,559,226

Technical Bulletin

Chemical Name: Propylene Glycol-2 PEG-20 Isocetyl Acetate
CTFA Name: PPG-2 Isoceteth-20 Acetate
CAS Number: 110332-91-7

Specifications:

Appearance @ 25°C	White to Off White Solid
Appearance @ 50°C	Clear Liquid
Color, Gardner	3 Maximum
Acid Value	3.0 Maximum
Saponification Value	40 - 60
Moisture	0.5% Maximum
Hydroxyl Value	10 Maximum
pH 5% in 50/50 IPA/H_2O @ 25°C	4.5 - 5.5

Solubilities (5% Conc. @ 35°C):

Water	Soluble
95% Ethanol	Soluble
Most Cosmetic Oils	Soluble

Suggested Uses:

Cupl PIC is recommended for use as a fragrance solubilizer and an oil in water emulsifier.

Note: Cupl PIC should be heated to 35°C - 40°C and stirred, for uniformity, before use.

Hetester PCA US Patent 4,559,226

Technical Bulletin

Chemical Name: Propylene Glycol Ceteth-3 Acetate
CTFA Name: Propylene Glycol Ceteth-3 Acetate
CAS Number: 93385-03-6

Specifications:

Appearance @ 25°C	Clear White/Pale Yellow Liquid
Color, APHA	100 Maximum
Acid Value	0.50 Maximum
Saponification Value	110 - 130
Moisture	0.5% Maximum
Hydroxyl Value	10 Maximum
pH 5% in 50/50 IPA/H_2O @ 25°C	3.5 - 7.0
Cloud Point (Neat*)	Approximately 15°C

*If partially or fully solidified, Hetester PCA returns to complete liquidity and homogeneity when allowed to warm to 25°C.

Solubilities (5% Conc. @ 25°C):

Water	Self-emulsifying*
95% Ethanol	Soluble
Most Cosmetic Oils	Soluble

*For Hetester PCA to be completely self-emulsifying, both the ester and water phases should be at 25°C minimum.

Suggested Uses:

Hetester PCA is recommended for use as an anti-chalking agent in anhydrous volatile silicone oil roll-on antiperspirant formulations. When used at 8 - 10% w/w in these systems, Hetester PCA eliminates chalking upon dry-down. Additionally, Hetester PCA is a self-emulsifying emollient when used at 8 - 15% w/w in the preparation of room temperature emulsions.

Because of its “blooming” property, this ester is easily incorporated into all types of oil in water emulsion systems. The material is an emulsifier-emollient in one, and therefore can be used as the main emollient when an oil-free lotion is desired.

Hetester PHA U.S. Patent 4,559,226

Technical Bulletin

Chemical Name: Propylene Glycol Isoceteth-3 Acetate
CTFA Name: Propylene Glycol Isoceteth-3 Acetate
CAS Number: 93385-13-8

Specifications:

Appearance @ 25°C	Clear White/Pale Yellow Liquid
Color, Gardner	3 Maximum
Acid Value	0.05 Maximum
Saponification Value	110 - 130
Moisture	0.5% Maximum
Hydroxyl Value	10 Maximum
pH 5% in 50/50 IPA/H_2O @ 25°C	3.5 - 7.0

Solubilities (5% Conc. @ 25°C):

Water	Self-emulsifying
95% Ethanol	Soluble
Most Cosmetic Oils	Soluble

Suggested Uses:

Hetester PHA is recommended for use as an anti-chalking agent in anhydrous volatile silicone oil roll-on antiperspirant formulations. When used at 8 - 10% w/w in these systems, Hetester PHA eliminates chalking upon dry-down. Additionally, Hetester PHA is a self-emulsifying emollient when used at 8 - 15% w/w in the preparation of room temperature emulsions.

Because of its “blooming” property, this ester is easily incorporated into all types of oil in water emulsion systems. The material is an emulsifier-emollient in one, and therefore can be used as the main emollient when an oil-free lotion is desired.

Hetester PHA is an Excellent Pigment wetter when used in foundation lotions or other types of pigment cosmetic products.

Hetester PMA

Technical Bulletin

Chemical Name: Propylene Glycol Myristyl Ether Acetate
CTFA Name: Propylene Glycol Myristyl Ether Acetate
CAS Number: 93385-02-5

Specifications:

Appearance @ 25°C	Clear White/Pale Yellow Liquid
Color, (APHA)	100 Maximum
Acid Value	1.0 Maximum
Saponification Value	140-160
Hydroxyl Value	10 Maximum
pH 5% in 50/50 IPA/H_2O @ 25°C	3.5 - 7.0

Solubilities (5% Conc. @ 25°C):

Water	Insoluble
Glycols	Insoluble
Most Cosmetic Oils	Soluble
70% Ethanol	Insoluble

Suggested Uses:

Hetester PMA is an excellent emollient, solvent and plasticizer for use in anhydrous oil systems (especially when waxes are present), as well as an all purpose, cost efficient emollient with an elegantly light, dry feel for various types of emulsions.

Marrix SF Patent Pending

Technical Bulletin

Chemical Name: Di-C12-15 Alkyl Fumarate
CTFA Name: Di-C12-15 Alkyl Fumarate
CAS Number: 142104-11-8

Specifications:

Appearance @ 25°C	White solid
Color, Gardner	4 Maximum
Odor	Mild, Characteristic
Acid Value	3.0 Maximum
Saponification Value	205 - 225
Hydroxyl Value	20 Maximum

Solubilities:

Alcohol	Soluble
Mineral Oil	Soluble
Water	Insoluble

Applications:

Marrix SF is an all purpose, extraordinarily safe, oil soluble, emollient which melts at body temperature and leaves a light emollient after feel on the skin. Marrix SF can be used at any concentrations, for any type of hair or skin product, limited only by the requirements of the formulation.

Parapel HC U.S. Patent 4,357,762

Technical Bulletin

Chemical Name: Linoleamido Propyl Dimethyl Ethyl Ammonium Ethyl Sulfate (and) Lauryl Dimethyl Amino Isostearate

CTFA Name: Linoleamidopropyl Ethyl Dimonium Ethosulfate (and) Dimethyl Lauramine Isostearate

CAS Number: 95492-03-08/95492-04-9

Specifications:

Alkaline Value	34 - 51
Acid Value	40 - 50
Color	Match Standard
Odor	Match Standard
Appearance	Clear Viscous Liquid

Solubilities (5% @ 60°C):

Water	Dispersible
Most Cosmetic Oils	Soluble

Application:

Cationic after shampoo conditioner. To be used in concentrations of 0.5 - 3.0% in creme rinse, and in after shampoos put-on rinse-off emulsions. Can be used in put-on leave-on rinses at low concentrations. Gives excellent wet comb, body and anti-static properties. A superior wet comb when compared to existing cationics. Leaves the hair with a silky non-waxy after texture.

Trademarks and Patents

Citmol; CUPL; Elefac; Hetester; Marrix and Parapel are registered trademarks of Bernel Chemical Company, Inc., A Division of Alzo International, Inc.

Elefac I-205 is protected by U.S Patent 5,116,604.

Hetester PCA and Hetester PHA, as well as CUPL PIC are protected by U.S. Patent 4,559,226.

Parapel HC is protected by U.S. Patent 4,537,762.

Citmol 316, Citmol 320 and Marrix SF are patent pending.

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