

PhenoMulse™ 100

(INCI: Polyhydroxystearic acid (and) Isononyl Isononanoate (and) Ethylhexyl Isononanoate (and) Sodium Cocamidopropyl PG-Dimonium Chloride Phosphate)

At Phoenix Chemical application research scientists are developing new ways of harnessing the properties of **PhenoMulse™ 100**, the ultimate emulsion aid for delivering innovative cosmetic and personal care products. **PhenoMulse™ 100** creates highly stable and novel Structured Micelle Aggregate (SMA) external water phase emulsions, using medium shear warm or cold processing.

PhenoMulse™ 100 is not only a new innovative product, but also a new concept to both simplify the formulation and processing of emulsions. Internal phase loading of up to 50% is achievable. The obtainable final formulation viscosity can range from thin sprayable milks to thick rich creams and can be easily formulated at a pH range of 3-6. PhenoMulse 100 provides complete formulation freedom with ease of processing from concept to lab or scale-up to market. Traditional emollients can be formulated with improved performance, while the innovation potential is limited only by imagination.

TECHNOLOGY

PhenoMulse™ 100 is a 21-23% active SMA derived emulsion and consists of a Phoenix Chemical patented complex of **water**, **Pelemol® PHS-8** (INCI: Polyhydroxystearic Acid), **Pelemol® 899** (INCI: Isononyl Isononanoate (and) Ethylhexyl Isononanoate) and **Phenotaine® C-35** (INCI: Sodium Cocamidopropyl PG-Dimonium Chloride Phosphate) combined with a Phoenix Chemical proprietary process. The polymeric nature and hydrogen bonding potential of **Pelemol® PHS-8** combined with the quaternized amphoteric nature of **Phenotaine® C-35** identify the key attributes of this truly unique system. **PELEMOL® 899** functions as a dry emollient significant to spreadability and tactile properties. **PhenoMulse™ 100** does not contain ethylene oxide, soap, nitrosamines, DEA, TEA, MEA or caustics. **PhenoMulse™ 100** has global acceptance.

GLOBAL ACCEPTANCE

Trade Name	PhenoMulse™ 100
INCI	Polyhydroxystearic Acid (and) Isononyl Isononanoate (and) Ethylhexyl Isononanoate (and) Sodium Cocamidopropyl PG-Dimonium Chloride Phosphate

Trade Name	PELEMOL® PHS-8	PELEMOL® 899	PHOENOTAINE® C-35	SODIUM CHLORIDE	WATER
INCI	Polyhydroxystearic Acid	Isononyl Isononanoate/ Ethylhexyl Isononanoate	Sodium Cocamidopropyl PG-Dimonium Chloride Phosphate	Sodium Chloride	Water
CAS #	27924-99-8	42131-25-9, 71566-49-9	83682-78-4	7647-14-5	7732-18-5
EINECS	Polymer Exempt	261-665-2, 275-637-2	280-518-3	231-598-3	231-791-2
Japanese Acceptance	Yes	Yes	Yes	Yes	Yes

PROCESSING

Process from 2° C to 40° C. Simply add internal phase to **PhenoMulse™ 100** with prop mixing then pass through in-line or drop-in high speed dispersion mill for 2-5 minutes. Final viscosity can be adjusted using polymeric thickeners (acrylic, polysaccharide, cellosize) or inorganic clays (silica, bentonite, laponite) or in combination. Concentrations with up to 50% internal loading can be diluted with water or water glycol and ethanol combinations to effective levels. Unadjusted formulations range from sprayable milks to thin lotions.

APPLICATIONS

A Most Versatile System

Emulsions of pleasant feel and appearance can be developed using a broad array of internal phase materials including:

- Fragrances
- Sunscreen (Organic & Inorganic)
- Hydrocarbons (Volatile & Non-Volatile)
- Esters (Di, Tri, Mono, Linear, Branched)
- Silicones (Volatile & Non-Volatile, Low & High Molecular Weight)
- Fluorocompounds such as 3M's Cosmetic Fluid Cosmetic Fluid CF-61 or **PECOSIL® FS** Series Fluorosilicones
- Actives (Polar & Non-Polar)

PhenoMulse™ 100 will also emulsify highly volatile products other than 3M's Cosmetic Fluid CF-61. This has already been indicated by its ability to emulsify fragrances and products such as Dow's 200 fluid (0.65 cts), 3M's Cosmetic Fluid CF-76 and pentane. These examples and others have all been emulsified at ambient temperatures with **PhenoMulse™ 100**.

Fanatical Foam, a **PhenoMulse™ 100** based foaming product, has demonstrated its wetting and deep cleaning properties by its ability to remove spots from garments, rugs, and other fabrics, further extending the application potential for **PhenoMulse™ 100**.

PhenoMulse™ 100's unique SMA technology offers potential solutions to emulsification concerns in many cosmetic and personal care products. Phoenix Chemical has developed prototypes which demonstrate the versatility of this material as exemplified by accompanying formulations:

- **Fanatical Foam**, a gentle deep cleansing conditioning shampoo with demonstrated advanced substantivity to skin and hair.
- **Undoubtedly Unique Moisturizing Lotion**, a face and body moisturizing lotion with superior tactile properties.

This truly functional technology permits one to achieve upscale new product developments. This technology can help create a new niche in the high growth cosmetic, skin and hair treatment markets.

SPECIFICATIONS

Appearance @ 25°C	Thin Opaque Emulsion
Odor	Slight, Characteristic
pH @ 25°C	4.0 – 6.0
Viscosity, cps*	1 – 10

*Brookfield – LV #1 Spindle @ 60 rpm @ 25°C.

PRODUCT STABILITY

Passes Three Freeze Thaw Cycles. Passes Heat Stability @ 45° C over a period of Two Months. Very negligible creaming on top was observed with a very slight thinning at the bottom. Very mild stirring brings the material to uniformity.

SAFETY

* An RIPT study with 50 human subjects has revealed PELEMOL® PHS-8 to be:	NON-IRRITATING
	NON-SENSITIZING
* An RIPT study with 50 human subjects has revealed PHOENOTAINÉ® C-35 to be:	NON-IRRITATING
	NON-SENSITIZING
* An RIPT study with 50 human subjects has revealed PELEMOL® 899 to be:	NON-IRRITATING
	NON-SENSITIZING
* An RIPT study with 50 human subjects has revealed PhenoMulse™ 100 to be:	NON-IRRITATING
	NON-SENSITIZING
^ MUTAGENICITY	NON-MUTAGENIC

* Studies conducted by AMA Labs., 216 Congers Rd. New City, NY 10956

^ Studies conducted by Litron Labs., 1351 Mt. Hope Ave. Rochester, NY 14620

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