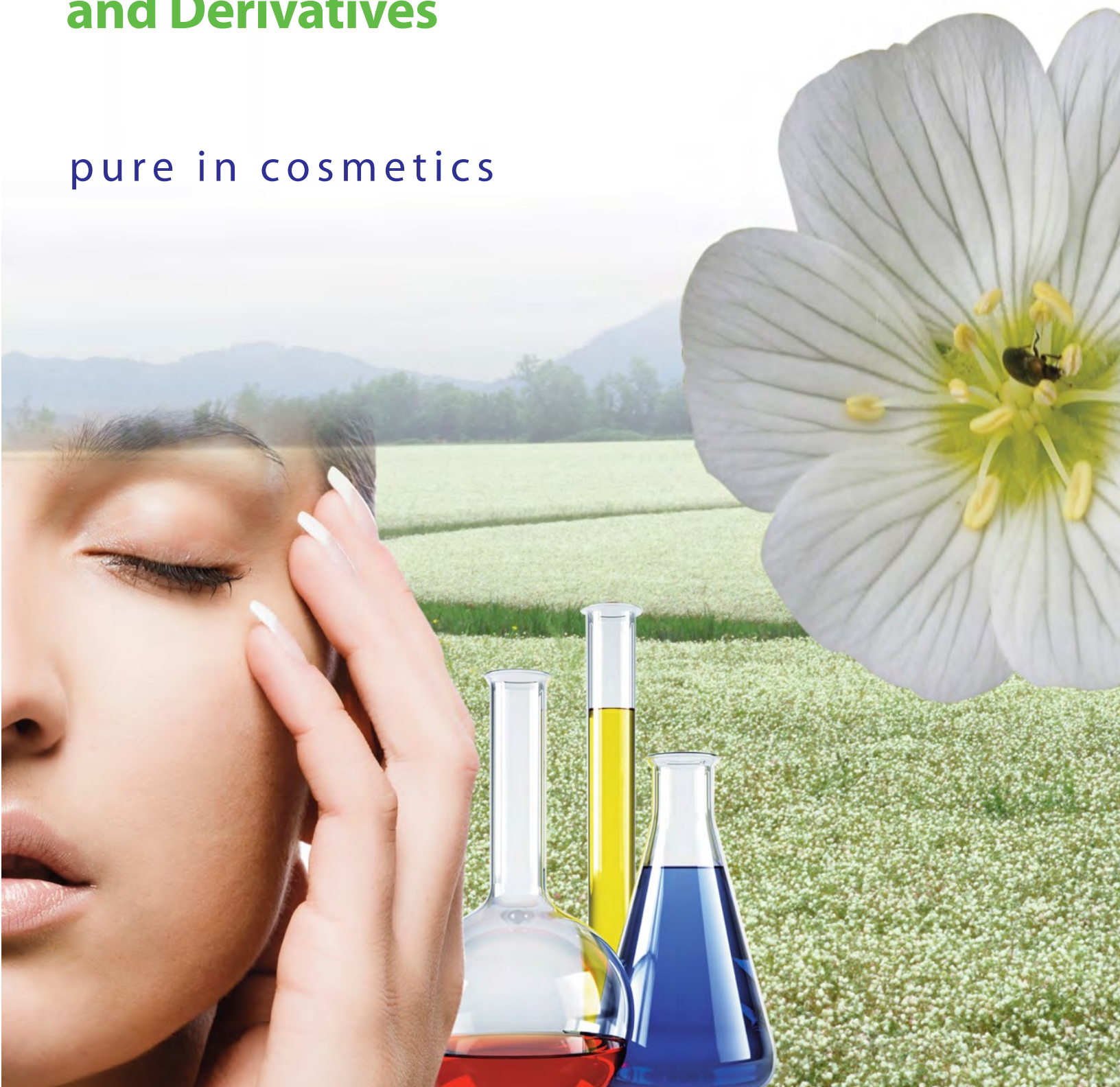


ELEMENTIS

SPECIALTIES

Meadowfoam Seed Oil and Derivatives

pure in cosmetics



Elementis Specialties is a global supplier of natural hectorite clay and provider of natural biofunctional and active ingredients for hair care, skin care, and anti-aging formulations.

Get to know us better.





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FANCOR® Meadowfoam Seed Oil

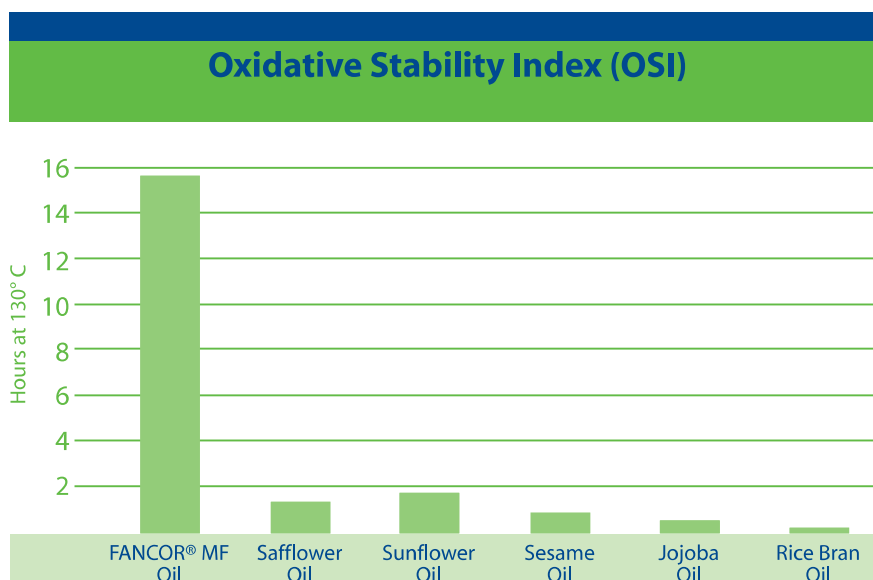
During the month of May in the valleys of the northwestern Pacific coastal regions of the United States, a small plant bearing the botanical name *Limnanthes alba* begins to bloom with such an abundance of delicate, beautiful white flowers that there appears to be a natural foam on the meadow. Meadowfoam is the common name for this plant.

Meadowfoam seed oil is a relatively new raw material. It is unique in that it has both a high concentration of fractions at or above 20 carbons, and it has a unique arrangement of double bonds. Because the double bonds in the doubly unsaturated product are not conjugated, as in linoleic acid, the oil is liquid to very low temperatures—and is stable to oxidation.

Characteristics

- Natural cold-pressed refined oil
- NPA certification
- Superior stability
- Light color
- Low odor
- Natural antioxidant
- Longer chain oil
- Ideal skincare oil to carry benefit agents
- Application ease
- Good skin feel
- Nongreasy
- Softened and lubricious hair
- Economic sustainability
- Social sustainability
- Environmental sustainability
- Adherence to sustainable farming practices
- Sustainable processing technology

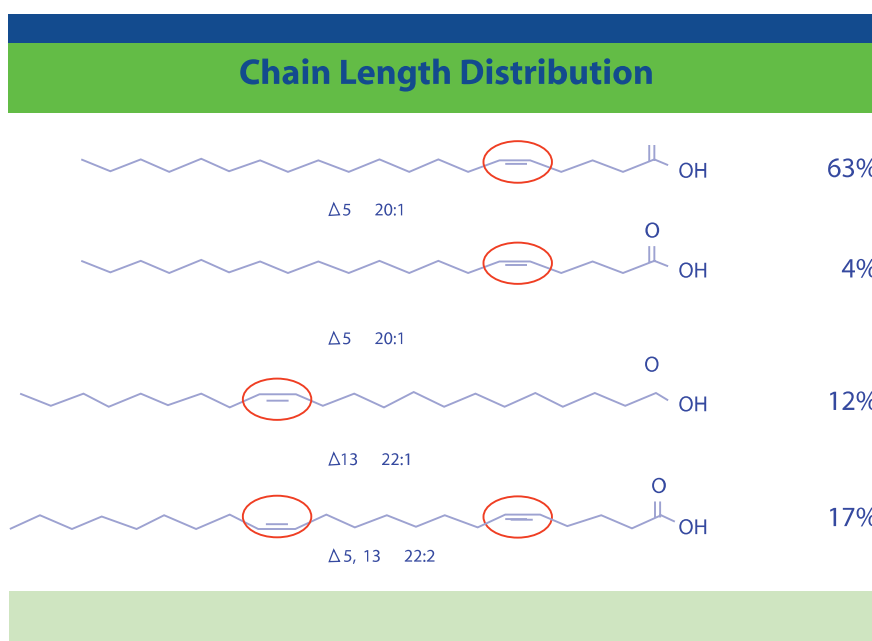
Chemical Properties



Meadowfoam Derivatives

Exceptional Quality and Stability

Meadowfoam triglyceride is unique, owing to a long-chain (C₂₀-C₂₂) fatty-acid profile unlike that observed from any other source. As a result, it provides meaningful advantages that are important to both the cosmetic formulator and consumer. These benefits include exceptionally mild conditioning, significant moisturization, and superior thermal and oxidative stability.



This extraordinary fatty acid profile facilitates the synthesis of important new functionally active cosmetic ingredients. Innovative reactive mechanisms applied to the unique chemical architecture of Meadowfoam have generated a family of derivatives that provide significant recognizable consumer benefits. Meadowfoam derivatives have been developed to provide functional benefits in a variety of personal care applications, including skin care, hair care, and color cosmetics. Benefits include:

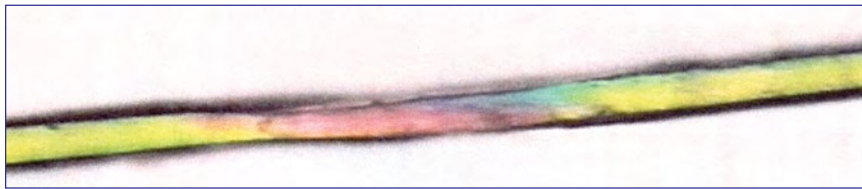
- Meadowfoam derivatives are exceptionally stable and have the capability of retaining their functional activity under extreme conditions, such as relaxers, perms, and developers, where they continue to provide significant benefits.
- FANCORSIL® LIMs and MEADOWQUATS® effectively repair and prevent damage to hair from thermal, chemical, and mechanical stress and assist in the restoration of a physiologically correct oil: water balance in both skin and hair. These products also dramatically improve the deposition and endurance of hair colors.
- MEADOWESTOLIDE® and MEADOWLACTONE® provide visible smoothing of skin by actively participating in tissue rehydration and conditioning.
- Meadowfoam derivatives contribute various benefits to color cosmetics, including pigment dispersion properties and a luxurious feel and shine in lipsticks.

FANCORSIL[®] LIM Family

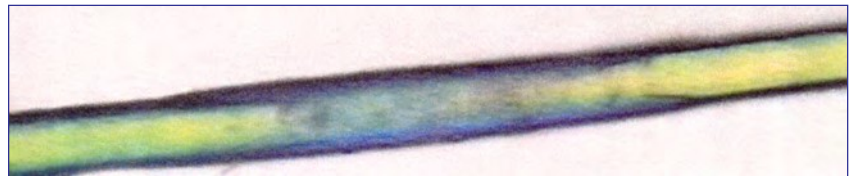
For the formulator's convenience, the LIM family is presented at three levels of water solubility with LIM-1 being water soluble, LIM-2 water insoluble, and LIM-3 water dispersible. These siliconized meadowfoam esters demonstrate the capacity to repair damaged hair. Supportive evidence includes X-ray microanalysis to document penetration, electron microscopy to support structural repair, and polarized light time-lapse photomicrography to substantiate restoration of functional behavior.

Because of its ability to penetrate the hair fiber, LIM is capable of improving the deposition and retention of hair color. After the application of LIM, fiber tensile strength is significantly increased. Salon studies confirm the esthetic benefits.

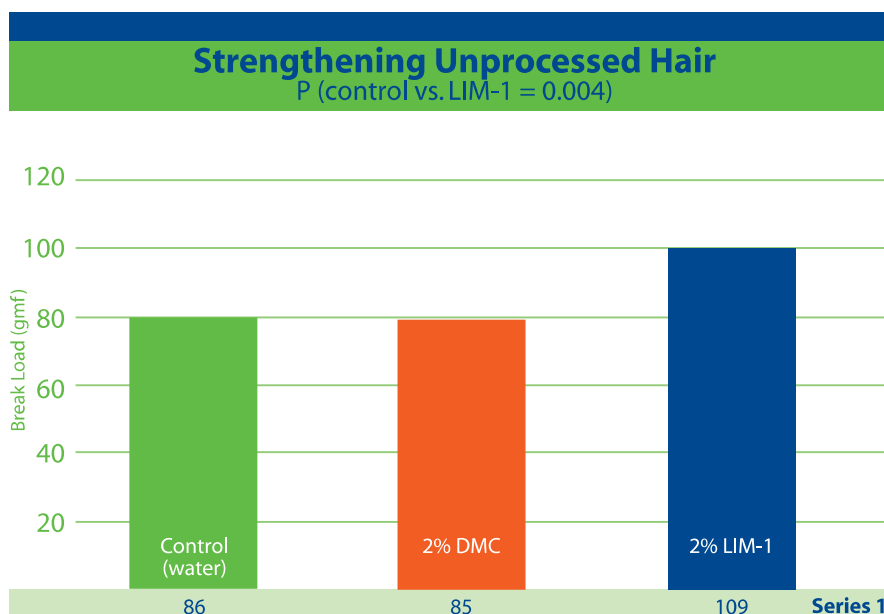
Damaged hair fiber as seen in polarized light microscopy



Same damaged hair fiber treated with LIM as seen in polarized light microscopy



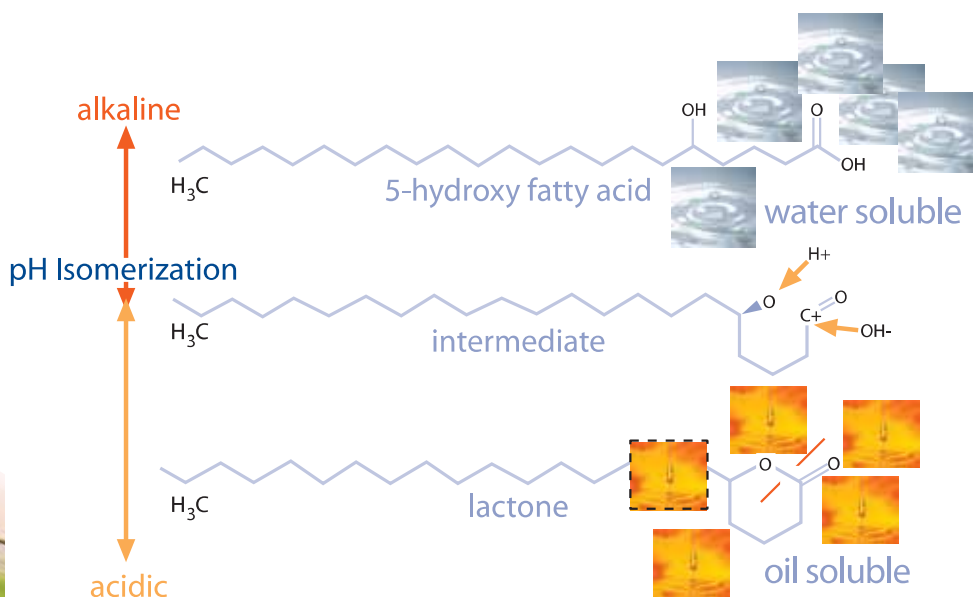
The strength of unprocessed (virgin or normal) hair was increased by 27% after treatment with LIM-1 (2% in water) whereas treatment with PEG-8 dimethicone (DMC = dimethicone copolyol) had no effect, negative or positive, upon hair strength.



MEADOWLACTONE®

MEADOWLACTONE® is an amphoteric compound that can isomerize into water-soluble and oil-soluble forms as a function of pH. The molecular configuration of MEADOWLACTONE® accounts for its ability to actively participate in tissue rehydration and conditioning. Microphotographic images of skin provide clear visualization of improved tone, texture, and overall appearance. MEADOWLACTONE® is indicated in relaxers to reduce incidence and degree of irritation.

MEADOWLACTONE® Bioactivity



MEADOWLACTONE®: Before and After Treatment

The anti-aging activity of this material in terms of tissue toning and skin texture can be seen in the results obtained on the elbows of a 40⁺-year-old female.

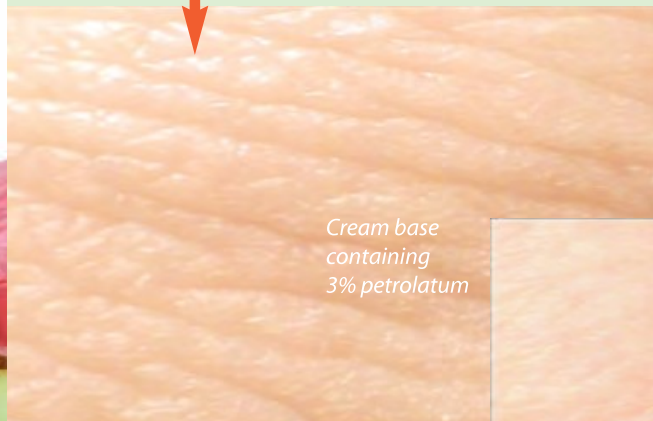
Appearance of Elbows Before Treatment



Appearance of Elbows After Six Treatments (4x per day for 1.5 days)



Images below enlarged 100X

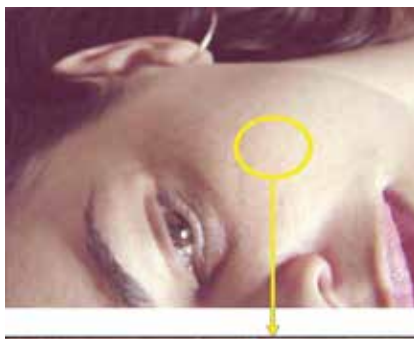


MEADOWESTOLIDE®

MEADOWESTOLIDE® is an oligomeric ester resulting from the reactive self-condensation of Meadowfoam fatty acids. The molecular structure has been characterized by NMR, HPLC, and GO/mass spectrometry. Skin hydration studies (TEWL and NOVA) document effective moisturization. Photomicrography of the skin surface confirms the conditioning and toning benefits. In salon tests, MEADOWESTOLIDE® provided statistically significant hair care benefits, including detangling, improved combability, and measurable improvement in fiber texture suggesting cuticular realignment. This ester also contributes a luxurious feel to color cosmetics.

Conditioning and Toning Benefits

Application protocol: 1x per day for 5 days



Control cream base
with 2% water

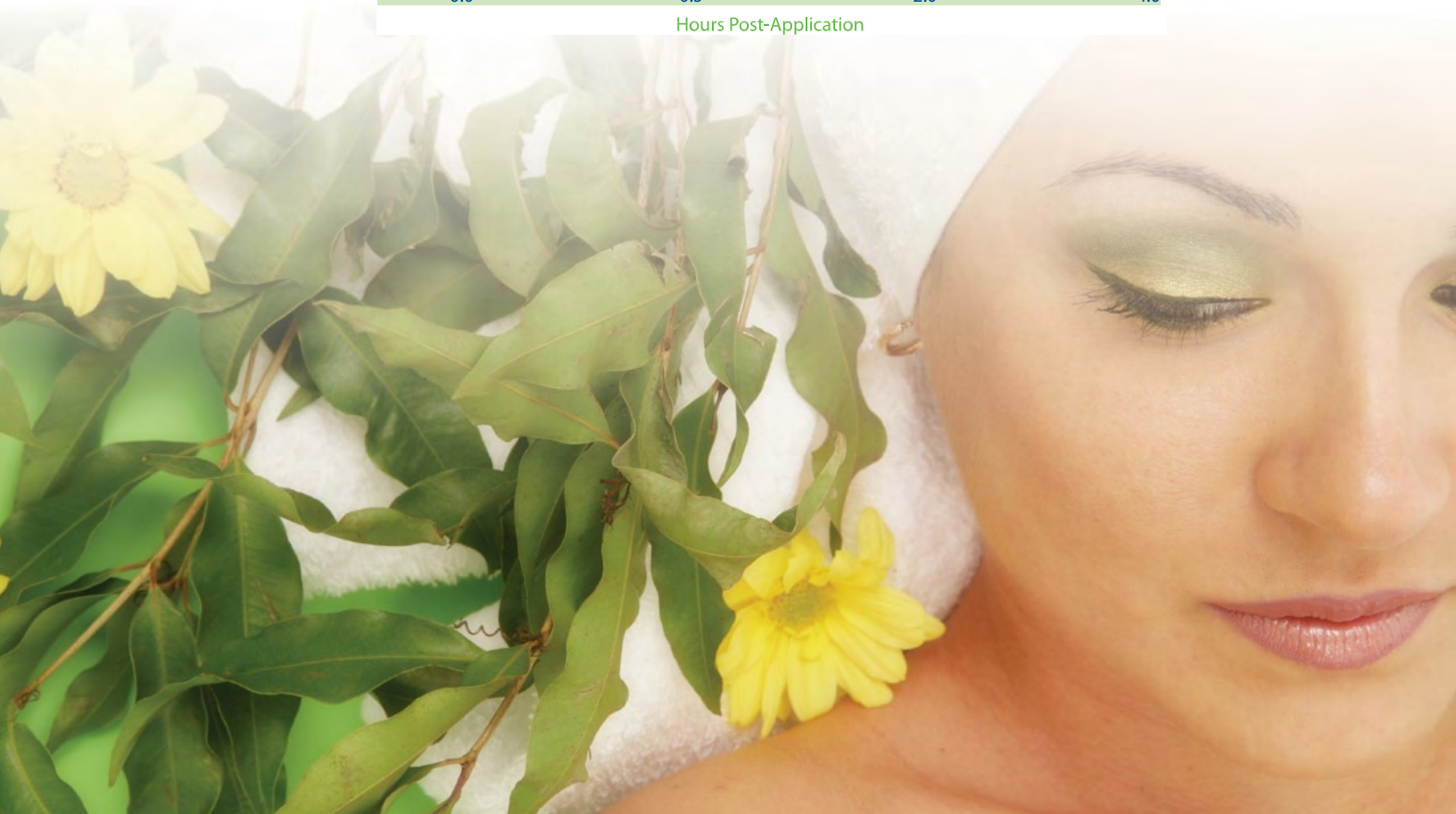
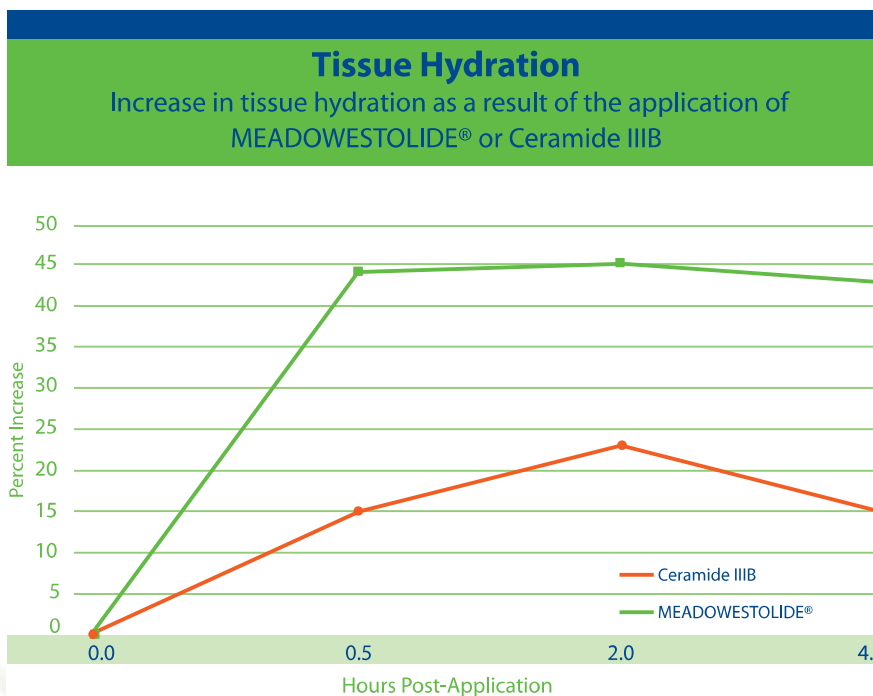


Cream base with 2%
MEADOWESTOLIDE®



In Vivo Tissue Hydration Studies: Comparative Moisture Retention for MEADOWESTOLIDE® and Ceramide III B

There is a significant increase in the hydration of the stratum corneum after application of both MEADOWESTOLIDE® and Ceramide III B. However, the increase appears to be greater in the case of the estolide and is sustained at least until the 4-hour measurement point.



MEADOWQUAT® HG-70

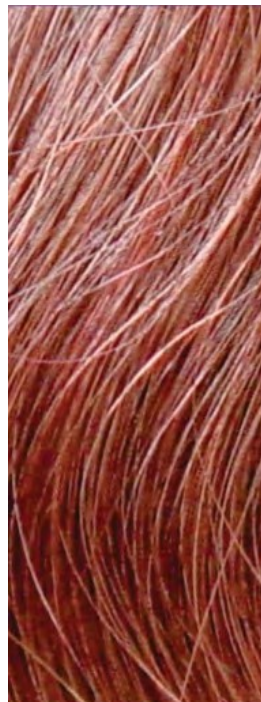
MEADOWQUAT® HG-70, a mild diamido-lipid-rich quaternium nitrogen ingredient for personal care products, is very effective not only in the conditioning process but also in its ability to sustain hair color and prevent wash-out. MEADOWQUAT® HG-70 is derived from a natural source and is functionally substantive, biodegradable, and stable in hydrogen peroxide (hair color developers) and sodium hydroxide (relaxers). When applied to hair at a level as low as 1%, MEADOWQUAT® HG-70 prevents damage and repairs damaged hair. When incorporated into hair color at a level of 2% to 3%, MEADOWQUAT® HG-70 enhances color intensity and significantly improves durability.

With its long-chain fatty acids and unique diamido configuration, MEADOWQUAT® HG-70 has the ability to repair hair that has been severely damaged by extreme heat and harsh chemicals. The operative factors responsible for this product's superior conditioning abilities are the unsaturated fatty acids that form the backbone of this material.

Hair Color Durability After 20 washings



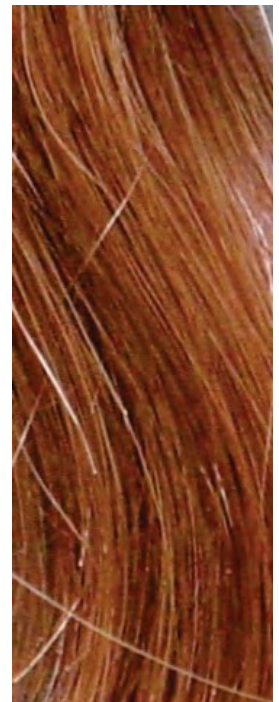
Undyed
Control



Dyed
Control



Shampoo
and Conditioner



Shampoo
and Conditioner with
MEADOWQUAT®
HG-70

Multifunctional Complexes*

FANCOR ANTI-AGING HAIR COMPLEX

FANCOR ANTI-AGING HAIR COMPLEX is designed to strengthen the hair fiber, thereby preventing premature breakage and loss. It helps retain hair color to promote a youthful and healthy hair appearance. Omega-3 and omega-6 fatty acids nourish the hair bulb and promote hair growth. Pure aliphatic hydrocarbons are used to provide a natural shine and lubricity, protecting the hair from mechanical damage. Vitamin E guards against oxidation.

FANCOR ANTI-AGING SKIN COMPLEX

FANCOR ANTI-AGING SKIN COMPLEX is designed for the retention of essential fluids for toning and diminishing wrinkles. It contains omega-3 and omega-6 essential fatty acids to nourish the epidermal tissue. Unsaponifiables contribute emolliency and softness of the upper skin layers. Phytosterols are used for cell membrane integrity to promote youthful tissue tone. The complex contains Vitamin E to protect against oxidation and phospholipids to support youthful metabolic skin functions.

MULTIPLE HYDRATION COMPLEX

All Natural, All Vegetable

The concept of multiple hydration relies upon the ability to deliver active moisturizing ingredients to multiple biological sites to achieve recognizable functional benefits at each level.

Active Components of the System

- **Lipid/Karite Complex** in the form of FANCOL® VB Special to provide a natural oil/botanical butter complex to soften and moisturize skin at the epidermal level
- **Phospholipids** (lecithin) to supplement essential tissue structure and provide a natural emulsifying system capable of maintaining a physiologically healthy balance of oil and water within the interstitial spaces of the stratum corneum
- **Phytosterols** in the form of beta sitosterol derived from olives; sitosterol, a plant sterol, is also an excellent emulsifying agent and assists in regulating hydrophobic and hydrophilic substances at the level of the cell surface
- **Vitamin E** (tocopherol) to provide antioxidant protection against the formation of harmful products arising from the oxidative degradation of essential tissue lipids
- **Base vehicle** blended in a natural oil base of safflower oil rich in linoleic acid; in fact, the fatty acid content of safflower oil is 75% linoleic acid, the highest known content of this fatty acid in any vegetable oil source

**Technically formulated in accord with published and confirmed evidence to document relevant anti-aging claims*

Additional Meadowfoam Products

FANCOR® UNI-EMBASE

FANCOR® UNI-EMBASE is a vegetable-based emulsifying wax containing two MEADOWFOAM® derivatives with documented ability to protect hair from process-induced damage. The formulator can use at least 10% less lye with the same level of straightening. Its smaller particle size generates a more uniform emulsion and avoids the need for sub-zero chillers, in-line shear pumps, versators, and mills. Emulsions are pure white, thixotropic, and remarkably stable irritating.

FANCOL® VB

FANCOL® VB is a natural, vegetable-derived absorption base that is an extremely effective moisturizer in creams, lotions, lip care, and ointment-based products. In color cosmetics, FANCOL® VB exhibits excellent pigment wetting properties.

BETAFAN-M

BETAFAN-M is a nonirritating, high molecular-weight amphoteric surfactant that contains a long-chain meadowfoam fatty acid. It imparts a smooth feel on the skin while increasing viscosity and improving odor stability.

MEADOWSOL® 75:75

MEADOWSOL® 75:75 is a nonionic, 75% active water-soluble form of meadowfoam triglyceride. It is particularly useful in cream and liquid emulsions and surfactant systems for skin and hair. Sensitive skin benefits from its exceptional mildness.

BENTONE GEL® MSO V

BENTONE GEL® MSO V is a natural oil-based rheological modifier for color cosmetics and skin care. It is made with FANCOR® Meadowfoam seed oil, a highly stable natural oil, and provides a nongreasy and silky skin feel. It also has excellent pigment suspension, fine consistency, emulsion, and thermal stability.



Meadowfoam Seed Oil and Derivatives

Trade Name	INCI Name	AP/DEO		Skin Care			Hair Care				Cosmetics		
		Aerosol	Stick	Sun Care	Creams O/W	Creams W/O	Shampoo	Conditioners	Styling	Reactive	Lipstick	Makeup	Nail Polish
ANTI-AGING HAIR COMPLEX	Crambe Abyssinica Seed Oil, Hydrogenated Polyisobutene, PEG-2 Dimeadowfoam-amidoethylmonium Methosulfate, Olea Europaea (Olive) Oil Unsaponifiables					■	■	■					
ANTI-AGING SKIN COMPLEX	MEADOWFOAMESTOLIDE®, Meadowfoam Delta-Lactone, Crambe Abyssinica Seed Oil, Carthamus Tinctorius (Safflower) Seed Oil, Olea Europaea (Olive) Oil Unsaponifiables, Beta-Sitosterol			■	■	■						■	■
BENTONE GEL® MSO V	Limnanthes Alba (Meadowfoam) Seed Oil, Distearidimonium Hectorite, Propylene Carbonate			■	■	■				■		■	■
BETAFAN-M	Meadowfoamamidopropyl Betaine						■	■	■				
FANCOL® VB	Limnanthes Alba (Meadowfoam) Seed Oil, Butyrospermum Parkii (Shea Butter) Extract			■	■	■						■	■
FANCOR® MEADOWFOAM SEED OIL	Limnanthes Alba (Meadowfoam) Seed Oil	■		■	■	■		■	■			■	■
FANCOR® UNI-EMBASE	Cetearyl Alcohol, Polysorbate 65, Dimethicone PEG-8 Meadowfoamate, Meadowfoamamidopropyl Betaine				■	■		■		■			
FANCORSIL® LIM-1	Dimethicone PEG-8 Meadowfoamate						■	■	■	■			■
FANCORSIL® LIM-2	Dimethiconol Meadowfoamate				■			■	■				
FANCORSIL® LIM-3	Dimethicone PEG-8 Meadowfoamate						■	■	■	■			
MEADOWESTOLIDE®	Meadowfoam Estolide			■	■	■						■	■
MEADOWLACTONE®	Meadowfoam Delta-Lactone	■		■	■	■		■		■		■	■
MEADOWQUAT® HG-70	PEG-2 Dimeadowfoamamidoethylmonium Methosulfate						■	■	■	■			
MEADOWQUAT® HG	PEG-2 Dimeadowfoamamidoethylmonium Methosulfate						■	■	■	■			
MEADOWSOL® 75:75	PEG-75 Meadowfoam Oil								■				
MULTIPLE HYDRATION COMPLEX	Carthamus Tinctorius (Safflower) Seed Oil, Limnanthes Alba (Meadowfoam) Seed Oil, Olea Europaea (Olive) Oil Unsaponifiables, Lecithin, Butyrospermum Parkii (Shea Butter) Extract			■	■	■		■	■			■	■

Products listed above are available in North America, South America, Europe, and Asia

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