Cola®Lipid C (ME)

Coconut-Derived Biomimetic Phospholipid

Milder, Softer, and Multifunctional

Naturally-derived, readily biodegradable
Highly substantive to hair and skin
Safe and non-irritating

Cola®Lipid C (ME) belongs to a family of products that are multi-functional, natural triglyceride phospholipids similar to phospholipids that occur naturally in the body.

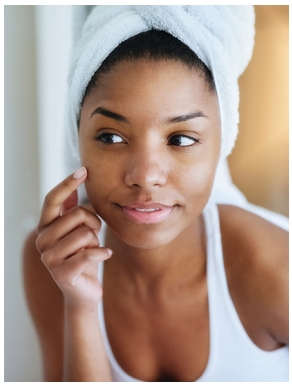
Cola®Lipid C (ME) is a coconut oil derived phospholipid composed predominantly of diester and triester phosphatides with multiple-chain groups. Cola®Lipid C (ME) displays a broad range of functional attributes including gentle cleansing and foaming properties, anti-irritation effects when combined with anionic surfactants, unusually high substantivity, long-lasting skin conditioning, and broad spectrum antimicrobial activity.

Applications

- Creams, lotions, tonics, shower gels, facial washes, other cream-base toiletries
- Conditioners, shampoos, hair tonics, hair creams, cream rinse products
- Pre- and post-sun care creams, lotions, gels
- Foundations, lipsticks, other cosmetics
- Health care products
- Baby care products
- Moist wipes for personal hygiene
- Antiperspirants and deodorants
- Acne washes

Benefits

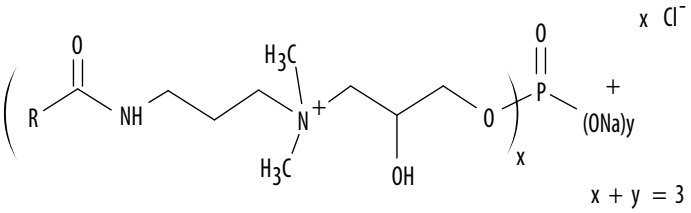
- Naturally-derived, readily biodegradable
- From sustainable raw materials
- Highly substantive to hair and skin
- Broad spectrum antimicrobial activity
- Multi-functional ingredients
- Non-irritating to skin and eyes
- Excellent foamer and cleanser
- Broad global approval
- Consumer-perceivable silky feel
- Utmost in safety



INCI Cocamidopropyl PG-Dimonium Chloride Phosphate

TYPICAL PROPERTIES / STRUCTURE

Form at 25˚C	Clear Liquid
Actives/Solids %	46.5
pH (10% aqueous)	7.0
% NaCl	6.0
Color, Gardner '98	3 Max.



How Cola®Lipid C (ME) Works

Cola®Lipid C (ME) is one of many phospholipids developed in which the arrangement of the phosphate and quaternary groupings are reversed in order to overcome the disadvantages of the natural phospholipids in topical applications.

The term *biomimetic* has been used to indicate that these materials closely simulate, through topical application to the skin, the function of the natural stratum corneum lipids. A broad range of functional properties are achieved with these phospholipids through the careful selection of specific oils as raw materials. Rather than interfering with preservative systems as occurs with other commercial phospholipids, the biomimetic phospholipids actually display potent antimicrobial activity without showing significant mammalian toxicity or skin irritation effects. Briefly, here are some of the advantages of biomimetics:

- Gently cleanses
- Reduces anionic formulation irritation
- Deposits essential fatty acids on skin
- Mimics natural phospholipids
- Keeps formulations fresh

Safer for end-users and the environment

Cola®Lipid C (ME) is a safe ingredient for formulations, providing high performance with minimal or no irritation results.

Eye Irritation
MatTek: EpiOcular™ Tissue Model *In Vitro* Toxicity Testing System: Results indicate 'non-irritating' classification.

Skin Irritation
MatTek: *In Vitro* EpiDerm™ Skin Irritation Test (EPI-200-SIT) (OECD 439): Results indicate 'non-irritating' classification.

Acute Skin Irritation
48 Hour Occlusive skin patch test: On human volunteers - 53 Test Subjects: no visible skin reaction, no potential for dermal irritation.

Skin Sensitization
Repeat Insult Patch testing (HRIPT): no potential for dermal irritation or allergic contact sensitization.

Method OECD Test Guideline 442c - Direct Peptide Reactivity Assay (DPRA) and ***Method 442D*** - the KeratinoSens test method: Cola®Lipid C (ME) is classified as a non-sensitizer with no or minimal reactivity (40% active).

Biodegradability

OECD 301 (301D) Ready biodegradability test in an aerobic aqueous medium: Sample exceeds 60% biodegradability requirement in seven days. Cola®Lipid C (ME) is **readily biodegradable**.

80% Biobased
Certified 80% natural carbon via independent testing through the USDA Biobased program, allowing for a wide variety of NGO certifications.

Antimicrobial Properties

Cola®Lipid C (ME) can be used to reduce or eliminate the use of classical preservatives to achieve self-preservation strategies with improved skin health benefits. Its performance is not adversely affected by solution pH, amphoteric or nonionic surfactants, or typical preservative deactivators.

Test Organism	ATCC	Type Number	Minimum Inhibitory Concentration *(active ppm)*
Staphylococcus aureus	6538	Gram +	141
Staphylococcus epidermidis	14409	Gram +	141
Streptococcus faecalis	6569	Gram +	141
Bacillus subtilis	6633	Gram +	71
Bacillus cereus	11778	Gram +	71
Micrococcus luteus	4698	Gram +	141
Escherichia coli	8739	Gram -	24
Proteus mirabilis	9921	Gram -	24
Pseudomonas aeruginosa	15442	Gram -	141
Pseudomonas cepacia	25608	Gram -	71
Pseudomonas stutzeri	17591	Gram -	71
Salmonella choleraesuis	10708	Gram -	588
Enterobacter aerogenes	13048	Gram -	588
Klebsiella pneumoniae	13883	Gram -	588
Aeromonas hydrophila	9071	Gram -	24
Candida albicans	10259	Yeast	376
Aspergillus niger	6275	Mold	294
P. expansum	1117	Mold	36
Aspergillus oryzae	10196	Mold	2350
Cephalosporium species	12285	Mold	71

PRESERVATIVE CHALLENGE TESTING

Test material was diluted to a final test concentration of 1.0% in phosphate buffered saline. Representative aliquots of test preparation were inoculated with separate mixed cultures of bacteria and fungi. Plate counts to determine survivors were performed at 0 time and after 1, 3, 7 and 14 after inoculation. Sample was inoculated at both 0 time and 7 days. Results are presented as the number of surviving organisms present at each time interval per gram of material tested. Inoculum levels were ~10^6 per gm for the mixed bacteria and ~10^5 per gm for the mixed fungi.

SAMPLE

Cola®Lipid C (ME) Lot # 40344H13 1.0 % in PO_4 Buffer

INOCULUM

a) **Mixed Bacteria:** Pseud. aeruginosa (ATCC 15442); B. cepacia (ATCC 25416); E.coli (ATCC 8739 or 11229); S. aureus (ATCC 6538).

b) **Mixed fungi:** A. brasilienis (niger) (ATCC 16404); C. albicans (ATCC 10231); Penicillium luteum (ATCC 9644) or Penicillium levitum (ATCC 10464).

MICROBIAL CHALLENGE TEST RESULTS

	0 Hours	24 Hr.	72 Hrs.	1 Week*	2 Weeks
Bacteria	1,200,000	<10	<10	<10	<10
Fungi	380,000	<10	<10	<10	<10

Sample was reinoculated at day seven (*) for a total of two (2) challenges. Bacterial and fungal counts are presented as organisms recovered. Test day is the number of days after inoculation of the test sample.

CONCLUSION

- Cola®Lipid C (ME) test sample passed the modified Accelerated Double Challenge Preservative Testing protocol.
- At a 1.0% concentration, these material demonstrate an excellent rate of kill and preservative capacity with both bacteria and fungi being eliminated within 24 hours of each inoculation.

Cola®Lipid C (ME) is not EPA registered as an antimicrobial agent.

STORAGE / HANDLING

Cola®Lipid C (ME) should be stored in sealed containers in a cool, dry place. Cola®Lipid C (ME) is shipped in poly drums, net weight 217.7 kg. Typical shelf life is 24 months from date of manufacture. Safety Data Sheets may be found at ***www. colonialchem.me.***

Colonial Chemical M.E. ARABIA