Cola®Lipid C

Coconut-Derived Biomimetic Phospholipid

Milder, Softer, and Multifunctional

Naturally-derived, readily biodegradable
Highly substantive to hair and skin
Mild and non-irritating at typical use levels

Cola®Lipid C belongs to a family of products that are multifunctional, natural triglyceride phospholipids similar to phospholipids that occur naturally in the body.

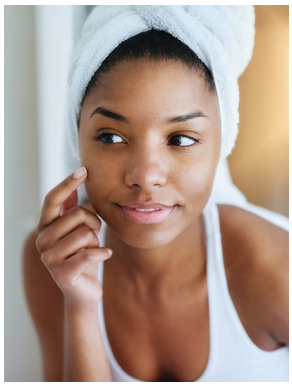
Cola®Lipid C is a coconut oil derived phospholipid composed predominantly of diester and triester phosphatides with multiple-chain groups. Cola®Lipid C displays a broad range of functional attributes including gentle cleansing and foaming properties, anti-irritation effects when combined with anionic 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
- Mild and non-irritating at typical use levels
- Excellent foamer and cleanser
- Broad global approval
- Consumer-perceivable silky feel
- Utmost in safety

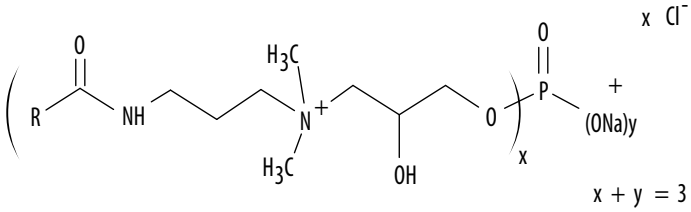


INCI Cocamidopropyl PG-Dimonium Chloride Phosphate
CAS 83682-78-4
LISTINGS Australia (AIIC), Canada (DSL), China (IECSC/ IECIC), EU (REACH), Korea (KECI), New Zealand (NZIoC), Taiwan (TSCI), USA (TSCA - For cosmetic use only)

Readily biodegradable per OECD 301 methods. This product meets the criteria for a surfactant under the EU Detergents Regulation (EC) 648/2004.

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 Works

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

The Right Choice for Milder, Softer and More Efficient Formulations

In contrast to natural phospholipids, which are generally made water-dispersible by the addition of a surfactant, the biomimetic phospholipids are inherently water soluble or dispersible, making the formulation of these materials into water-based systems quite easy.

***Kid's Shampoo** (Betaine-Free)* No. **1030**

Gentle and safe shampoo with natural conditioner. Has almost no irritation, great for babies and their sensitive skin – less irritation than the national brand. *And betaine-free.*

	INGREDIENT / INCI	%
1	Water	qs to 100.00
2	***Suga®Nate 160NC*** / Sodium Laurylglucosides Hydroxypropylsulfonate	19.00
3	***Cola®Teric CBS-HP*** / Cocamidopropyl Hydroxysultaine	4.40
4	***Poly Suga®Glycinate C*** / Sodium Bis-Hydroxyethyl-glycinate Coco-Glucosides Crosspolymer	3.00
5	***Cola®Lipid C*** / Cocamidopropyl PG-Dimonium Chloride Phosphate	2.00
6	Pureact WS Conc / Sodium Methyl Cocoyl Taurate	7.00
7	Sodium Stearoyl Lactylate	0.20
8	Blueberry Fragrance	0.05
9	MicroCare® SB / Sodium Benzoate *and* Potassium Sorbate	1.00

Opaque Liquid, pH: 5.0 – 5.5, Viscosity: 3,000 cP

- Combine ingredients 1-5 with adequate mixing between additions. Heat to 50-60°C. Add ingredients 6-7, mixing until completely dissolved and homogeneous. Cool to 45°C and add remaining ingredients. Adjust to pH 5.0 – 5.5 with citric acid.

Moisturizing Antibacterial Hand Soap No. **4007**

Soothing antibacterial hand soap that gently cleans with 100% natural moisturizers. DEA-free, Triclosan-free. Ideal for repeated use in health care and other frequent handwashing settings.

	INGREDIENT / INCI	%
1	Water	qs to 100.00
2	***Cola®Teric COAB*** / Cocamidopropyl Betaine	12.00
3	***Cola®Liquid DM*** / Myristamide DIPA	0.30
4	***Cola®Lipid C*** / Cocamidopropyl PG-Dimonium Chloride Phosphate	0.25
5	Glycerin	2.00
6	Zemea® / Propanediol	0.50
7	Lumulse 602-S K / PEG-150 Distearate	2.00
8	White Lily Fragrance	0.25
9	Kathon CG / Methylchloroisothiazolinone *and* Methylisothiazolinone	0.05
10	StepanQuat®50 NF / Benzalkonium Chloride	0.20

Opaque Liquid, pH: 6.0, Viscosity: 2,000 cP

- Combine ingredients 1-6 in order with moderate mixing. Heat to 60°C. Add 7. Mix at temperature until clear and homogenous. Cool below 50°C. Add remaining ingredients. Adjust pH to 6.0 with sodium hydroxide.

Natural BB Cream No. **4018**

All-in-one facial cream to replace moisturizer, primer, foundation and sunblock with broad spectrum mineral based SPF 15 protection. Can be worn alone or under makeup for added coverage.

	INGREDIENT / INCI	%
A	Water	qs to 100.00
A	Natrosol™ Plus 330 CS / Cetyl Hydroxyethylcellulose	0.50
A	Glycerin	3.00
A	***Poly Suga®Mulse D6*** / Sorbitan Oleate Decylglucoside Crosspolymer	4.00
A	***Cola®Lipid C*** / Cocamidopropyl PG-Dimonium Chloride Phosphate	1.50
A	***Colonial Monolaurin*** / Glyceryl Laurate	0.75
B	Xperse® 301 / Zinc Oxide *and* Titanium dioxide *and* Caprylic/capric triglyceride *and* Polyhydroxystearic acid *and* Alumina *and* Stearic acid	15.00
B	Lanette® 16 / Cetyl Alcohol	5.00
B	Dermofeel® Sensolv / Isoamyl Laurate	5.00
B	Cetiol® C 5 / Coco-Caprylate	5.00
B	Titanium Dioxide SWD / Titanium Dioxide	6.00
B	Yellow Iron Oxide SWD / Iron Oxides	1.14
B	Red Iron Oxide SWD / Iron Oxides	0.24
B	Black Iron Oxide SWD / Iron Oxides	0.08
C	Farmal™ CS 3757 / Zea Mays (Corn) Starch	2.00
C	MicroCare® SB / Sodium Benzoate *and* Potassium Sorbate	0.50

Light to Medium Tint Cream, pH: 6.0, Viscosity: 50,000 cP

- In primary vessel, combine Water and Cetyl Hydroxyethylcellulose. Hydrate per manufacturer instructions. Heat to 75-85°C while adding remaining phase A ingredients. In a side vessel, combine phase B ingredients. Heat to 75-85°C. Once both phases are homogeneous and at temperature, increase mixing and add B to A slowly. Homogenize. Cool to 45°C and add remaining ingredients.

ADDITIONAL LISTINGS

USDA CERTIFIED BIOBASED PRODUCT PRODUCT 80%

EWG VERIFIED™

STORAGE / HANDLING

Cola®Lipid C should be stored in sealed containers in a cool, dry place. Cola®Lipid C is shipped in poly 55-gal drums, net weight 480 lbs / 217.7kg. Typical shelf life is 24 months from date of manufacture. Safety Data Sheets may be found at ***www. colonialchem.com.***

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Innovative Specialty Surfactants

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