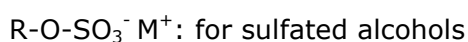
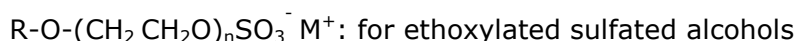




DESCRIPTION

The ALKOPON® product line consists of anionic surfactants derived from the reaction of fatty alcohols or ethoxylated fatty alcohols with SO₃, followed by neutralization with alkali. They are represented by the following general formulas:



where: R = alcohol fatty chain

n = average number of moles of ethylene oxide

M = counterion (Na⁺)

The ALKOPON product line is based on the following products:

Product	Chemical Description	CAS No. ¹	% Renewable Carbon	Biodegradability	RSPO Derivative
ALKOPON N	Sodium Lauryl Ether Sulfate 27%	9004-82-4	76	Completely biodegradable	Yes
ALKOPON CN	Sodium Lauryl Ether Sulfate 70%	9004-82-4	76	Completely biodegradable	Yes
ALKOPON N APH	Sodium Lauryl Ether Sulfate 27%	9004-82-4	76	Completely biodegradable	Yes
ALKOPON 13 3S 30	Sodium Isotridecyl Ether Sulfate 30%	25446-78-0	0	Completely biodegradable	Yes
ALKOPON NS	Sodium Lauryl Sulfate 30%	151-21-3	100	Completely biodegradable	Yes

ALKOPON® N, CN and N APH are based on naturally-derived lauryl alcohol. The average number of moles of ethylene oxide equals 2.

ALKOPON® 13 3S 30 is based on isotridecyl alcohol. The average number of moles of ethylene oxide equals 3.

ALKOPON® NS is based on naturally-derived lauryl alcohol. The intermediate is not ethoxylated and the product can be considered dioxane-free and petrochemical-free.

Important: other fatty distributions and different degrees of ethoxylation (usually between 1 to 3 moles of ethylene oxide) can also be offered for specific needs. Please contact OXITENO with opportunities and requirements.

The naturally-derived lauryl alcohol used to produce ALKOPON® N, ALKOPON® NS, ALKOPON® CN and ALKOPON® N APH is derived from palm kernel oil certified by RSPO (Roundtable on Sustainable Palm Oil), an organization of which OXITENO is an associate, whose aim is to promote sustainable growth of palm oil and palm kernel production.

¹ CAS: Chemical Abstract Society



APPLICATIONS

The products in the ALKOPON[®] line are molecules with a lipophilic part, consisting of lauryl alcohol or isotridecyl alcohol, and a hydrophilic part, made up of sulfate groups (and ethylene oxide in the case of lauryl ether sulfates). This structure gives the ALKOPON[®] line excellent solubility in water, good detergency, fast wetting, high foaming, emulsifying properties and thickening power in the presence of electrolytes (NaCl and NH₄Cl). Such properties make these products the primary surfactants used in shampoos, liquid soaps, bubble baths, toothpastes, hand dishwashing detergents, fine fabric wash, liquid laundry detergents and household hard surface cleaners such as glass cleaners and bathroom cleaners.

The presence of ethylene oxide groups improves the solubility, thus lowering turbidity and Krafft points. Increasing EO content increases hard water tolerance, and reduces skin and eye irritation compared to unethoxylated alcohol sulfates.

ALKOPON[®] NS is the highest foaming product in this line and, in the presence of electrolytes and other thickeners, produces the highest viscosities.

ALKOPON[®] alcohol sulfates and alcohol ether sulfates should be used above pH 3 to prevent hydrolysis of the sulfate group. For the applications cited herein, the dosages of products from the ALKOPON line must be established experimentally in each formula. OXITENO has a technical team that can help define the adequate dosage for specific applications.

Detergents

In detergent formulas, the sulfated products from the ALKOPON[®] line work well with the ALKOLAN[®] PK line (palm kernel oil alkanolamides) and ALKOLAN[®] CP 30 EG (cocamidopropyl betaine), resulting in formulas with low irritation potential, greater foaming power, better thickening and high performance.

ALKOPON[®] N and ALKOPON[®] CN are recommended as components in detergent formulas for manual dishwashing, liquid laundry detergents, hand soaps, and for general hard surface cleaners. ALKOPON[®] CN and ALKOPON[®] N APH are useful in these same applications with the added benefit of being preservative-free. This aspect allows the formulator flexibility in choosing formulation preservatives in order to meet efficacy and marketing requirements.

ALKOPON[®] NS will dry to a friable powder, a key attribute for carpet shampoos and glass cleaners. It is used in cleaning products, e.g. high foaming laundry detergents, multi-surface and general purpose cleaners. It is also peroxide and hypochlorite stable making it applicable for bathroom cleansers. When formulated at concentrations above 5%, ALKOPON[®] NS provides high foaming power. When used in low concentration, its foam stability is reduced, making it ideal for glass cleaners and multi-surface cleaners where stable foam is undesirable during dry-down.

Cosmetics

In cosmetic applications, the products from the ALKOPON[®] line act in synergy with those from the ALKOLAN[®] PK (palm kernel oil alkanolamides), ALKONIX[®] (sulfosuccinates), ALKEST[®] TW (ethoxylated sorbitan esters) and ALKOLAN CP 30 (cocamidopropyl betaine) lines. By balancing these ingredients to meet application needs, formulations can be obtained with high performance, mildness, excellent foam properties and targeted rheology.



ALKOPON® N and ALKOPON® CN are used as primary surfactants in shampoo, liquid soap, and bubble bath formulations.

ALKOPON® NS is the main surfactant used as a detergent and foaming agent in toothpaste formulas. Due to its higher Krafft point compared to ether sulfates, it is an excellent choice for pearled formulations and cream cleansers

ALKOPON® 13 3S 30 is used in shampoo and liquid soap formulations where very low skin and eye irritation is desired. It is typically found in baby cleansing products and specialty value-added products.

Other Applications

ALKOPON® NS is also used in polymerization of PVC, acrylic resin, vinyl acetates, acrylates, methacrylates, styrene, butadiene, etc.

INFORMATIVE PROPERTIES ⁽¹⁾

	Appearance, 25 °C	Actives (% wt.)	Molecular weight, g/mol	Bacterial / fungi count, cfu/g(max.)	pH, 25°C
ALKOPON N	liquid	26 - 28	384	10	7.0 - 9.0 ⁽²⁾
ALKOPON CN	paste	69 - 71	384	10	6.5 - 8.5 ⁽³⁾
ALKOPON N APH	liquid	26 - 28	384	10	11.0 - 12.0 ⁽⁴⁾
ALKOPON 13 3S 30	liquid	29 - 31	434	10	7.5 - 9.0 ⁽²⁾
ALKOPON NS	liquid	28 - 30	294	10	7.5 - 9.0 ⁽²⁾

Notes:

1. The properties described above are for information purposes only and may be altered without prior notice. Please check of the product and contact OXITENO as needed.
2. Aqueous solution 10% by wt.
3. Aqueous solution 1% by wt.
4. Product as is

Important: levels of contaminants, e.g. 1,4-dioxane and residual ethylene oxide, are kept under strict control. Our products are manufactured to meet the leading market standards

REGULATORY ASPECTS

The products from the ALKOPON line have low toxicity and are considered readily biodegradable.

The products represented in the ALKOPON® sulfated line have been reviewed by the Cosmetic Ingredients Review (CIR) Board. Sodium Laureth Sulfate and Sodium Trideceth Sulfate are considered safe-as-used in U.S. cosmetic products. Sodium Lauryl Sulfate (SLS) is considered safe-as-used in rinse-off products. SLS is limited to 1% max in leave-on products. They can be used in U.S. Personal Care and Cosmetic products under their INCI names as established in the International Cosmetic Ingredient Dictionary and Handbook developed by the Personal Care Products Council (PCPC, formally known as CTFA).



ALKOPON®

Fatty Alcohol Sulfates / Fatty Alcohol Ether Sulfate



Below are the INCI descriptions of the ALKOPON® sulfated product line:

Product	INCI Name
ALKOPON N	Sodium Laureth Sulfate
ALKOPON CN	Sodium Laureth Sulfate
ALKOPON N APH	Sodium Laureth Sulfate
ALKOPON 13 3S 30	Sodium Trideceth Sulfate
ALKOPON NS	Sodium Lauryl Sulfate

HANDLING AND STORAGE

Use proper personal protective equipment (PPE) when handling these products.

In case of accidental contact, proceed as follows:

- eyes: wash immediately with abundant water for at least 15 minutes;
- skin: remove contaminated clothing and wash affected sites with water;
- ingestion: seek urgent medical care.

For additional information, consult the material safety datasheet (MSDS) and the emergency form (FEMERG).

The products should be stored in a covered, dry, well ventilated location away from sources of heat or ignition. Handle in ventilated areas with access to emergency showers and eyewash stations.

The sulfated products listed in this bulletin are considered non-flammable. However, they can burn if enveloped by fire. Acceptable extinguishing agents are water mist, carbon dioxide, dry chemical powder or alcohol-resistant foam. Note: area may become foamy and slippery.

Bulk storage of ALKOPON® N should be in tanks made of 304 or 316 stainless steel, or in carbon steel coated with vinyl ester resin, or in fiberglass-reinforced polyester resin tanks.

ALKOPON® NS in bulk should be stored in tanks made of 304 or 316 stainless steel, or in carbon steel coated with vinyl ester resin or in fiberglass-reinforced polyester resin. The product may become turbidity and separate at temperatures below 20°C, therefore, it is recommended to keep product between 20°C and 40°C with recirculation and hot water heating coils available.

The shelf-life, as of the manufacturing date, is 12 months for the ALKOPON® product line, provided they remain in their original packaging and are stored properly. Further information on the handling of these products is available in the safety datasheets and can be obtained upon request.



ALKOPON®
 Fatty Alcohol Sulfates /
 Fatty Alcohol Ether Sulfate



DISCLAIMER

This bulletin contains information given in good faith, based on Oxiteno’s current knowledge on the subject, and is purely indicative. Any information, including suggestions for using the products, should not preclude experimental testing and verification, which are essential to ensure the suitability of the products to each specific application. All users shall also abide by local laws and obtain all necessary permits. When handling the product, consult the safety data sheet. In case of questions or additional needs, please contact Oxiteno through our customer service channels.

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