

**ENCYCLOPEDIA OF
SURFACTANTS**

VOLUME I

Compiled by
Michael and Irene Ash

Chemical Publishing Co.
New York, N.Y.

Encyclopedia of Surfactants

Volume 1

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PREFACE

This comprehensive, modern encyclopedia of surfactant products has been compiled with the cooperation of the major national and international surfactant manufacturers in order to give the user quick and thorough information on each tradename product that is included. Information from thousands of brochures, technical bulletins, and data sheets has been gleaned in order to make a complete profile on each surfactant product available from one source—this three volume compendium. Though sometimes limited by the information provided by the manufacturers, in most instances, the chemical ingredients, properties, form, applications, etc. of each product are discussed in detail.

The use of surfactants pervades almost every chemical industrial concern—including textiles, paints, pesticides, foods, cosmetics, pharmaceuticals, etc. We hope that because of the universality of surfactants, this reference work will be able to serve as a useful tool to the many chemical engineers and salespeople here and abroad.

We want to extend our thanks to Roberta Dakan for her dedication and tireless efforts in helping make this encyclopedia as accurate and consistent as possible.

When the temperature at which properties such as viscosity, density, surface tension, solubilities, etc. is not included, a standard temperature of 25 C is to be assumed. The information in this publication is reliable to the best of our knowledge. We would be glad to be informed of any errors or omissions so that these can be integrated into subsequent editions of this encyclopedia.

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ABBREVIATIONS

aq.	aqueous
BHA	butylated hydroxyanisole
B.P.	boiling point
C	degrees Centigrade
cc	cubic centimeter(s)
CC	Closed cup
cm	centimeter(s)
COC	Cleveland open cup
conc.	concentration, concentrated
cps	centipoise(s)
cs or cst	centistoke(s)
disp.	dispersion, dispersible
dist.	distilled
EO	ethylene oxide
esp.	especially
ETO	ethylene oxide
F	degrees Fahrenheit
FDA	Food & Drug Administration
F.P.	freezing point
g	gram(s)
gal	gallon(s)
HLB	hydrophilic lipophilic balance
ingred.	ingredient(s)
IPA	isopropyl alcohol
IPM	isopropyl myristate
kg	kilogram(s)
l	liter(s)
lb	pound(s)
max.	maximum
MEK	methyl ethyl ketone
min.	minimum
ml	milliliter(s)
mm	millimeter(s)
M.P.	melting point
m.w.	molecular weight
NF	National Formulary

no.	number
O/W	oil in water
PEG	polyethylene glycol
pH	hydrogen ion concentration
PMCC	Pensky-Martens closed cup
POE	polyoxyethylated
pt.	point
PVC	polyvinyl chloride
quat.	quaternary
ref.	refractive
sapon.	saponification
sol.	soluble
solid.	solidification
sol'n.	solution
sp. gr.	specific gravity
SSU	Saybolt Seconds Universal
Stod.	Stoddard
SUS	Saybolt Universal Seconds
TCC	Taggart closed cup
tech.	technical
T/L	tank load
TOC	Taggart open cup
T/T	tank truck
USP	United States Pharmacopeia
uv	ultraviolet
visc.	viscosity
W/O	water in oil
wt	weight
%	percent
≈	approximately
<	less than
>	greater than
≤	less than or equal to
≥	greater than or equal to
≫	much larger than
≪	much smaller than
#	number

The following products, which are included in this volume, are registered with the U.S. Patent Office.

Abex®	Atsurf®
Actiflo®	Bio Soft®
Acto®	Blancol®
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Atlas®	Emulphor®
Atlox®	Ethoduomeen®
Atmer®	Ethofat®
Atmos®	Ethomeen®
Atmul®	Ethoquad®
Atpet®	Flexricin®
Atplus®	Fluorad®

A

A-641. ICI Unites States Inc.

Chemical Description: Noncrystallizing sorbitol sol'n.

Category: Polyhydric alcohol (Polyol)

Form: Clear viscous liquid; Color: Water white to pale yellow; Odor: None; Taste: Pleasantly sweet

Properties: Ref. Index: 1.455-1.465; Sp. gr.: \approx 1.31; Visc.: \approx 140 cps

Composition: 53% sorbitol content

AA-10. Cities Service Co.

Category: Detergent, wetting agent, emulsifier

Applications: Emulsifier

Form: Liquid, flake; Color: White

Properties: Odor: None; Solubility: Highly soluble in water; Density: 2 lb/gal; Sp. gr.: 1/5 H₂O; Stability: Solid

Composition: 98% active ingredient

Reaction: Neutral

Toxicity: Nontoxic

Containers: Fiber drums

Abex 18-S. Alcolac

Category: Emulsifier, anionic

Applications: Polymer emulsion as binders for coated paper and paperboard; in paint and floor coatings; in polymerization of vinyl acetate and acrylics

Form: Liquid; Color: Pale yellow

Properties: Density: 8.5 lb/gal; Visc.: @ 15 C, 200 cps; Stability: Stable for broad range of pH and temperature; Surface Tension: 1.0% sol'n.—48 dynes/cm; 0.1% sol'n.—45-47 dynes/cm

Composition: 35% active ingredient

Abex 22-S. Alcolac

Category: Emulsifier, anionic

Applications: In emulsion polymer latices for floor polish, latex paints, paper coatings, pigment binders and adhesives

Form: Liquid; Color: Pale yellow

Properties: Density: 8.7 lb/gal; Visc.: @ 25 C, 1000 cps; Stability: Good; Surface Tension: 40 dynes/cm at critical micelle concentration

Composition: 25% active ingredient

Abex 26-S. Alcolac

Category: Emulsifier, anionic surfactant

Applications: Emulsifier for acrylics, vinyl acetates and other vinyl monomers

Form: Liquid; Color: Pale yellow

Properties: Density: 8.8 lb/gal; Visc.: @ 25 C, 100 cps; Stability: Good in presence of multivalent salts; Surface Tension: 55 dynes/cm at critical micelle concentration

Composition: 33% active ingredient

Abex JKB. Alcolac

Category: Emulsifier, anionic surfactant

Applications: Emulsifier for highly carboxylated acrylic monomers; latex thickeners, alkali-soluble resins; metalized floor finishes; textile sizing agents and handmodifiers

Form: Liquid; Color: Clear

Composition: 30% active ingredient

Abex VA-40. Alcolac

Category: Emulsifier, anionic surfactant

Applications: Emulsifier for high solids vinyl acetates

Form: Liquid; Color: Pale yellow

Properties: Visc.: @ 25 C, 600 cps

Composition: 40% active ingredient

Abex VA-50. Alcolac

Category: Emulsifier, anionic sur-

factant

Applications: Emulsifier for high solids vinyl acetates

Form: Liquid; Color: Pale yellow

Properties: Visc.: @ 25 C, 400 cps; Surface Tension: 47.4 dynes/cm (0.01% sol'n.)

Composition: 46% active ingredient

Absorption bases. Croda Chem.

Chemical Description: Cholesterol rich extracts of lanolin compounded into inert hydrocarbon bases

Category: Emollient

Applications: Cosmetics, especially emollient skin creams, lotions; baby preparations; make up

Form: Solid, liquid

Accobetaine CL. Armstrong Chem.

Chemical Description: Complex coco betaine

Category: Detergent, wetting agent, emulsifier, high foaming agent, solubilizer

Applications: Household and cosmetics uses (hair shampoos, liquid hand cleaners, dishwashing compounds, rug shampoo, etc.)

Form: Liquid; Color: Yellow; Odor: Pleasant

Properties: Solubility: Good in water; F.P.: 0 C

Composition: 35% active ingredient

Toxicity: Nontoxic

Accomeen C2. Armstrong Chem.

Chemical Description: Ethoxylated coco amine

Category: Emulsifier, antistat, nonionic surfactant

Form: Liquid; *Color:* 4 (Gardner);
Odor: Amine

Properties: Solubility: Organic solvent; insoluble water; *Density:* 7.25 lb/gal; *Sp. gr.:* 0.87

Composition: 99% active ingredient; 2 moles ethylene oxide on primary coco amine

Reaction: Acid

Warnings and Caution: Corrosive

Accomeen C5. Armstrong Chem.

Chemical Description: Ethoxylated coco amine

Category: Emulsifier, nonionic surfactant

Applications: Emulsifier, antistat

Form: Liquid; *Color:* 4 (Gardner);
Odor: Amine

Properties: Solubility: Organic solvents and water; *Density:* 8.15 lb/gal; *Sp. gr.:* 0.98

Composition: 99% active ingredient; 5 moles ethylene oxide on primary coco amine

Reaction: Alkaline

Warnings and Caution: Corrosive

Accomeen C10. Armstrong Chem.

Chemical Description: Ethoxylated coco amine

Category: Emulsifier, nonionic surfactant

Applications: Emulsifier, antistat

Form: Liquid; *Color:* 6 (Gardner);
Odor: Amine

Properties: Solubility: Organic solvents and water; *Density:* 8.3 lb/gal; *Sp. gr.:* 1.0

Composition: 99% active ingredient; 10 moles ethylene oxide on primary coco amine

Reaction: Acid

Warnings and Caution: Corrosive

Accomeen C15. Armstrong Chem.

Chemical Description: Ethoxylated coco amine

Category: Emulsifier, nonionic surfactant

Applications: Emulsifier, antistat, textile spinning aid

Form: Liquid; *Color:* 6 max (Gardner); *Odor:* Mild amine

Properties: *Density:* 8.7 lb/gal; *Sp. gr.:* 1.04

Composition: 99% active ingredient; 15 moles ethylene oxide on primary coco amine

Reaction: Acid

Toxicity: Corrosive

Warnings and Caution: Corrosive

Accomeen S2. Armstrong Chem.

Chemical Description: Ethoxylated soya amine

Category: Emulsifier, nonionic surfactant

Applications: Emulsifier, antistat

Form: Liquid; *Color:* 5 (Gardner);
Odor: Amine-type

Properties: Solubility: Organic solvents, insoluble water; *Density:* 7.6 lb/gal; *Sp. gr.:* 0.91; *Surface Tension:* 31.3 @ 0.1% sol'n.

Composition: 99% active ingredient; 2 moles ethylene oxide on primary soya amine

Reaction: Acid

Warnings and Caution: Corrosive

Accomeen S5. Armstrong Chem.

Chemical Description: Ethoxylated soya amine

Category: Emulsifier, nonionic surfactant

Applications: Emulsifier, antistat
Form: Liquid; Color: 10 (Gardner);
Odor: Amine-type
Properties: Solubility: Organic solvents; disp. in water; Density: 7.9 lb/gal; Sp. gr.: 0.95
Composition: 99% active ingredient; 5 moles ethylene oxide on primary soya amine
Reaction: Acid
Warnings and Caution: Corrosive

Accomeen S10. Armstrong Chem.
Chemical Description: Ethoxylated soya amine
Category: Emulsifier, antistat, nonionic surfactant
Form: Liquid; Color: 10 (Gardner);
Odor: Amine
Properties: Solubility: Organic solvents and water; Density: 8.5 lb/gal; Sp. gr.: 1.02; Surface Tension: 43 @ 0.1%
Composition: 99% active ingredient; 10 moles ethylene oxide on primary soya amine
Reaction: Acid
Warnings and Caution: Corrosive

Accomeen T2. Armstrong Chem.
Chemical Description: Ethoxylated tallow amine
Category: Emulsifier, antistat, nonionic surfactant
Form: Paste; Color: 3 (Gardner);
Odor: Amine type
Properties: Organic solvents, insoluble in water; Density: 7.7 lb/gal; Sp. gr.: 0.92
Composition: 99% active ingredient; 2 moles ethylene oxide on primary tallow amine
Reaction: Acid

Warnings and Caution: Corrosive

Accomeen T15. Armstrong Chem.
Chemical Description: Ethoxylated tallow amine
Category: Emulsifier, nonionic surfactant
Applications: Emulsifier dispersant
Form: Liquid; Color: 5 (Gardner);
Odor: Amine type
Properties: Refractive Index: 1; Solubility: Organic solvents, insoluble in water; Density: 8.1 lb/gal; Sp. gr.: 0.97
Composition: 99% active ingredient; 5 moles ethylene oxide on primary tallow amine
Reaction: Acid
Warnings and Caution: Corrosive

Accomid C. Armstrong Chem.
Chemical Description: Coconut oil diethanolamide
Category: Detergent, stabilizer, nonionic surfactant
Applications: Shampoo, bubble baths, diswashing detergent
Form: Liquid; Color: 4 (Gardner);
Odor: Mild
Properties: Solubility: Completely soluble in water at low concentration; Density: 8.3 lb/gal; Sp. gr.: 0.99
Composition: 98% active ingredient

Acconon 300 MO. Armstrong Chem.
Chemical Description: Polyethylene glycol 300 monooleate
Category: Emulsifier, nonionic surfactant
Applications: Surface activity; cosmetics, food, agriculture, plastics

Form: Liquid; Color: 6 (Gardner)
Properties: Solubility: Organic solvents; Density: 8.3 lb/gal; Sp. gr.: 0.99; M.P.: < -5 C
Composition: 99% active ingredient; 6.8 moles ethylene oxide added to oleic acid
Containers: Drums

Acconon 400 MO. Armstrong Chem.

Chemical Description: Polyethylene glycol 400 monooleate
Category: Emulsifier, nonionic surfactant
Applications: Surface activity, lubricant, chemical intermediary; cosmetics, food, agriculture, plastics

Form: Liquid; Color: 6 (Gardner)
Properties: Solubility: Organic solvents; Density: 8.4 lb/gal; Sp. gr.: 1.01; M.P.: < 10 C; Biodegradable
Composition: 99% active ingredient; 9.1 moles ethylene oxide added to oleic acid

Acconon 1300. Armstrong Chem.

Chemical Description: Polyethoxylated-polypropoxylated C₁₂₋₂₀ alcohols
Form: Liquid; Color: Light yellow, 3 max (Gardner)
Properties: Density: 8.35-8.45 lb/gal; Sp. gr.: 1.016-1.019; Cloud Pt.: °F, 135-145

Acconon TGH. Armstrong Chem.

Chemical Description: Complex tallow glyceride ethoxylate
Category: Wetting agent, foaming agent, nonionic surfactant
Applications: personal care and household products

Form: Liquid; Color: Yellow; Odor: Mild

Accoquat 2C-75. Armstrong Chem.

Chemical Description: Dicoco dimethyl ammonium chloride
Category: Emulsifier, coupling agent, cationic
Applications: Car spray waxes, dust control oil, removal of spots
Form: Liquid; Color: Amber; Odor: Mild
Properties: Solubility: Solvent is isopropanol; Density: 7.2 lb/gal; Sp. gr.: 0.86
Composition: 75% active ingred.
Warnings and Caution: Flammable liquid

Accoquat 2C-75-H. Armstrong Chem. Co.

Chemical Description: Dicoco dimethyl ammonium chloride-high flash
Category: Emulsifier, cationic
Applications: Car spray waxes, dust control oils, removal of spots
Form: Liquid; Color: Amber; Odor: Mild
Properties: Solubility: Solvent is hexylene glycol; Flash Pt.: High
Composition: 75% active ingred.

Accosoft 550. Armstrong Chem.

Chemical Description: Tallow amido amine quaternary compound
Category: Cationic surfactant
Applications: Household and industrial fabric softener, dispersion for household fabric softener, fabric antistat agent
Form: Liquid, gel; Color: 6 (Gardner)

Properties: Solubility: Solvent—Isopropanol; Density: 8.0; Sp. gr.: 0.96; Biodegradable
Composition: 75 or 90% active ingredient
Toxicity: Nontoxic
Warnings and Caution: Flammable, supports bacterial growth

Accosoft 620. Armstrong Chem.

Chemical Description: Tallow amido amine quaternary compound
Category: Cationic surfactant
Applications: Household or industrial fabric softener, fabric antistat agent
Form: Liquid; Color: 6 (Gardner)
Properties: Solubility: Solvent—IPA; Density: 8.0; Sp. gr.: 0.96; Biodegradable
Composition: 75 or 90% active ingredient
Toxicity: Nontoxic
Warnings and Caution: Flammable, supports bacterial growth

Accosoft 707. Armstrong Chem.

Chemical Description. Dimethyl dihydrogenated tallow ammonium chloride
Category: Cationic surfactant
Applications: Household or industrial fabric softener, fabric antistat agent
Form: Paste; Color: 3 (Gardner)
Properties: Solubility: Solvent—IPA, water; Density: 7.3; Sp. gr.: 8.7
Composition: 75% active ingredient
Toxicity: Nontoxic
Warnings and Caution: Flammable, supports bacterial growth

Accosoft 748. Armstrong Chem.

Chemical Description. Dimethyl dihydrogenated tallow ammonium metho sulfate
Category: Cationic surfactant
Applications: Household or industrial fabric softener or antistat particularly suited to drier use
Form: Paste, solid; Color: 4 (Gardner)
Properties: Solubility: Solvent—IPA, water, M.P.: 125–135 C; Biodegradable
Composition: 90% active ingredient
Toxicity: Nontoxic
Containers: Tankwagons, RR tank cars and drums
Warnings and Caution: Flammable, supports bacterial growth

Accosoft A-155. Armstrong Chem.

Chemical Description. Tallow amido amine quaternary compound
Category: Cationic surfactant
Applications: Household fabric softener base; dispersions for fabric softener; fabric antistat agent
Form: Gel; Color: 7 (Gardner)
Properties: Biodegradable
Composition: 75 or 90% active ingredient
Toxicity: Nontoxic
Containers: 4000–6000 gal stainless steel tankwagons
Category: Emulsifier, solubilizer
Form: Liquid; Color: Yellow
Properties: Sp. gr.: 1.1; Visc.: 360–400 cps; HLB: 16.7; Sapon. Value: 40–52; Acid No.: 2.0 max.; Hydroxyl No.: 97–113
Composition: 98% active ingred.
Containers: 55 gal lined bung