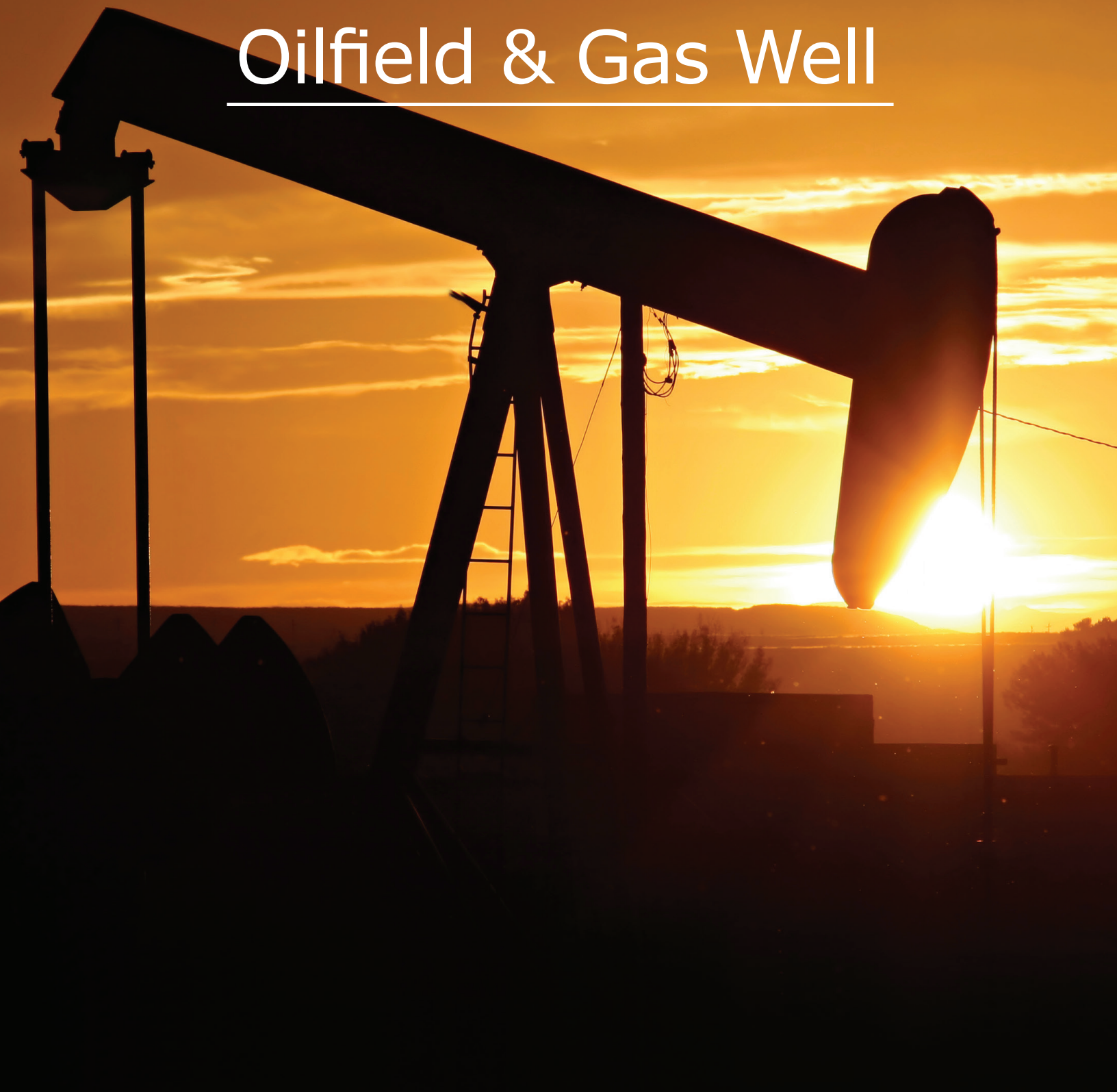
PILOT® CHEMICAL COMPANY

Leadership. Service. Flexibility. Success. **We're going further®.**

Oilfield & Gas Well



PILOT® CHEMICAL COMPANY

Leadership. Service. Flexibility. Success. **We're going further®.**

Charting Your Course with Innovative Chemical Solutions

Pilot Chemical's customized manufacturing solutions have supported our customer's projects around the globe for more than 70 years. Commitment to unique chemical processes and efficient manufacturing are our hallmarks, lending to a storied history of creating the best oilfield surfactants in the industry that maximize your new product development opportunities. Pilot's dedication to unique chemistries and molecular structures provide a breadth of products, offering customers options and flexibility unparalleled by any other chemical company.

We are a dynamic, market-focused and environmentally conscious company that sets the standard for comprehensive chemical dexterity. Between easy access to knowledgeable and reliable assistance from our industry experts through all stages of production, and our well-established distributor network with a record of consistent, efficient delivery, you can depend on Pilot to help lead you to success.

Oilfield & Gas Production

Pilot offers chemical expertise across a broad range of Oil & Gas production applications. From high quality surfactants, to Biocidal Quats and specialty products, our team is ready to work with you to enhance your recovery and production operations.

PILOT® CHEMICAL COMPANY

Oilfield and Gas Well Products

Pilot offers a large range of products which find application in the oilfield industry as additives for corrosion inhibition, drilling fluids, oil treatments, stimulating, cementing, and foaming. Pilot also has the capability to manufacture custom products for unique and special oilfield, gas well and production applications, and handle a range of feedstocks that expand your options.

Oilfield Biocides

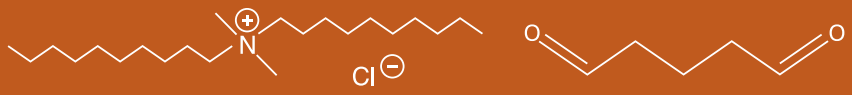
Didecyl Dimethyl Ammonium Chloride (DDAC)

Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® 4450-CT	10324-70	Maquat® 4450-E	50	Didecyl dimethyl ammonium chloride. Approved for use in ALL 50 states and Canada.
Maquat® 4450-CTI (Winterized)	10324-70	Maquat® 4480-E	50	Didecyl dimethyl ammonium chloride - Isopropanol (IPA) winterized version of Maquat® 4450-CT, manufactured by diluting Maquat® 4480-E with IPA. Approved for use in ALL 50 states and Canada.
Maquat® 4450-CTM (Winterized)	10324-210	Maquat® 4480-E	50	Didecyl dimethyl ammonium chloride - methanol (MeOH) winterized version of Maquat® 4450-CT, manufactured by diluting Maquat® 4480-E with MeOH. Approved for use in 49 states and Canada - **No** California registration.
Maquat® 4450-10% -S&W	10324-88	Maquat® 4450-E or Maquat® 4480-E	10	EPA registered, 10% active, naturally plant derived didecyldimethyl ammonium chloride "end-use" product, manufactured by diluting Maquat® 4450-E or Maquat® 4480-E. Approved for use in ALL 50 states- **No** Canada registration.

Dialkyl Dimethyl Ammonium Chloride (DDAC) & Alkyl Dimethyl Benzyl Ammonium Chloride (ADBAC) Blends

Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® 7.5M	10324-81	Maquat® MQ 615M or Maquat® MQ 624M	7.5	3.000% n-Alkyl dimethyl benzyl ammonium chloride (50% C14, 40% C12, 10% C16) 1.125% Didecyl dimethyl ammonium chloride 2.250% Octyldecyl dimethyl ammonium chloride 1.125% Dioctyl dimethyl ammonium chloride
Maquat® 710M	10324-117	Maquat® MQ 615M or Maquat® MQ 624M	10	4.000% n-Alkyl dimethyl benzyl ammonium chloride (50% C14, 40% C12, 10% C16) 1.500% Didecyl dimethyl ammonium chloride 3.000% Octyldecyl dimethyl ammonium chloride 1.500% Dioctyl dimethyl ammonium chloride
Maquat® 750M	10324-115	Maquat® MQ 615M or Maquat® MQ 624M	50	20.000% n-Alkyl dimethyl benzyl ammonium chloride (50% C14, 40% C12, 10% C16) 7.500% Didecyl dimethyl ammonium chloride 15.000% Octyldecyl dimethyl ammonium chloride 7.500v% Dioctyl dimethyl ammonium chloride

Glutaraldehyde & Didecyl Dimethyl Ammonium Chloride Blends



Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® 1010N-25:12	10324-211	Glutaraldehyde & Didecyl dimethyl ammonium chloride	25.7% 12.5%	Synergistic blend of 25.7% glutaraldehyde and 12.5% didecyl dimethyl ammonium chloride in a water/ethanol solution. It is produced by diluting and combining 50% glutaraldehyde, Maquat® 4450E or Maquat® 4480E with water. Maquat® 1010N-25:12 is approved for use in Canada and in 49 states – **No** California registration

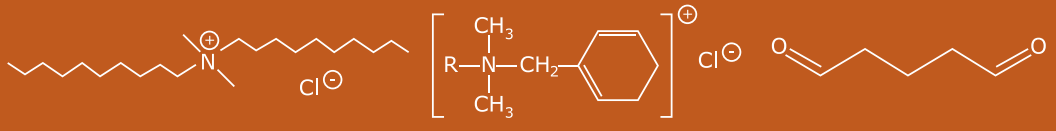
n-Alkyl Dimethyl Benzyl Ammonium Chloride (ADBAC)

Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® MC1412-10%-W	10324-43	Maquat® MC1412-50% or Maquat® MC1412-80%	10.0	n-Alkyl (50% C14, 40% C12, 10% C16) dimethyl benzyl ammonium chloride
Maquat® MC1412-16%-W	10324-46		16.0	
Maquat® MC1412-50%-W	10324-42		50.0	
Maquat® MC1412-20%-S&W	10324-175		20.0	
Maquat® MC1412-40%-S&W	10324-87		40.0	
Maquat® MC1412-PS	10324-122	Maquat® MC1412-80%	80.0	
Maquat® MC1416-FB	10324-97	Maquat® MC1416-50%	50.0	n-Alkyl (60% C14, 30% C16, 5% C12, 5% C18) dimethyl benzyl ammonium chloride
Maquat® MC1416-V	10324-116		50.0	
Maquat® MC1416-10% CTP	10324-130	Maquat® MC1416-50% or Maquat® MC1416-80%	10.0	
Maquat® MC1416-40% CTP	10324-133		40.0	

Peracetic Acid

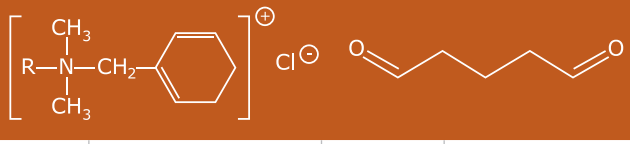
Product	EPA Reg. #	Active Ingredient	% Active	Description
Maguard™ 5626	10324-214	Peroxyacetic Acid & Hydrogen Peroxide	33.2	5.900% Peroxyacetic Acid 27.30% Hydrogen Peroxide

Didecyl Dimethyl Ammonium Chloride / n-Alkyl Dimethyl Benzyl Ammonium Chloride / Glutaraldehyde Blends



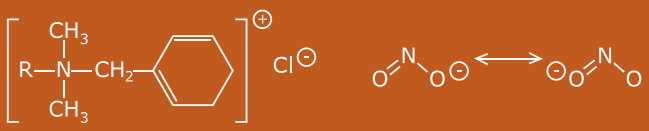
Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® 40:10	10324-188	Glutaraldehyde & Maquat® 2420 (50% / 80%)	50.0	40.0% Glutaraldehyde 4.0% Alkyl dimethyl benzyl ammonium chloride 6.0% Didecyl dimethyl ammonium chloride
Maquat® 25:12	10324-185		38.2	25.7% Glutaraldehyde 5.0% Alkyl dimethyl benzyl ammonium chloride 7.5% Didecyl dimethyl ammonium chloride
Maquat® 25:12A (Winterized version of Maquat 25:12)	10324-221		38.2	25.7% Glutaraldehyde 5.0% Alkyl dimethyl benzyl ammonium chloride 7.5% Didecyl dimethyl ammonium chloride
Maquat® 12:3	10324-209		15.5	12.5% Glutaraldehyde 1.2% Alkyl dimethyl benzyl ammonium chloride 1.8% Didecyl dimethyl ammonium chloride

n-Alkyl Dimethyl Benzyl Ammonium Chloride / Glutaraldehyde Blend



Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® 1412-40:10	10324-207	Glutaraldehyde & Maquat® MC1412 (50% / 80%)	50.0	40.0% Glutaraldehyde 10.0% Alkyl dimethyl benzyl ammonium chloride
Maquat® 5:10	10324-222		15.0	5.0% Glutaraldehyde 10.0% Alkyl dimethyl benzyl ammonium chloride
Maquat® 10:15	10324-223		25.0	10.0% Glutaraldehyde 15.0% Alkyl dimethyl benzyl ammonium chloride

n-Alkyl Dimethyl Benzyl Ammonium Chloride / Sodium Nitrite Blend



Product	EPA Reg. #	Active Ingredient	% Active	Description
Maquat® LC12S-NT	10324-186	Maquat® LC12S-50%	30.0	30.0% Alkyl dimethyl benzyl ammonium chloride. Maquat® LC12S-NT is a combination of n-alkyl dimethyl benzyl ammonium chloride and sodium nitrite. Sodium nitrate is a metabolic inhibitor of sulfate reducing bacteria. This product kills as well as inhibit growth of sulfate reducing bacteria whereby it causes a shift in the bacteria population down-hole. It allows the nitrogen fixing bacteria to out compete the sulfate reducing bacteria

Oilfield Foamers

Specialty Foaming Surfactants

Product	Chemical Name	Description	Brine Tolerance	Condensate Tolerance	Flash Foam	Foam Half Life
Caloxamine® LO	Lauramine Oxide	Caloxamine® LO is a 30% active lauryl dimethylamine oxide surfactant solution in water. The product is used as a foam booster, grease cutter and coupler. It's good detergency, tolerance of hypochlorite and compatibility with other surfactants make it an ideal component for multiple applications	Medium	Low	Average	Average
Calsoft® AOS-1245	Sodium Alpha Olefin (C12) Sulfonate	Calsoft® AOS-1245 is a 45% active clear amber aqueous solution of sodium alpha olefin sulfonate with high flash foam in highly electrolytic solutions, & hard/soft water environments. Perfect for oilfield down-hole drilling applications.	Medium	Medium	Average	Great
Macat™ LHS	Lauryl Hydroxysultaine	Macat® LHS is a 42% active, naturally plant derived lauryl (C12) hydroxysultaine in water, optimized for high acid and high alkaline foaming applications. The exceptional quality of Macat® LHS allows for use in a wide range of markets and applications. Stable in acidic systems, LHS exhibits enhanced surface activity.	High	Low	Poor	Poor
Macat™ AO-10	Decyl Dimethylamine Oxide	Macat® AO-10 is a 30% active, naturally plant derived decyl (C10) dimethylamine oxide in water. It is an effective wetting agent, outstanding foam stabilizer and grease cutter that is hypochlorite and acid stable. The exceptional quality allows for a wide range of applications, and is excellent as a foaming agent in brine solution	High	High	Excellent	Excellent

Specialty Foaming Surfactants (cont.)

Product	Chemical Name	Description	Brine Tolerance	Condensate Tolerance	Flash Foam	Foam Half Life
Macat™ LB	Lauryl Betaine	Macat® Alkyl Betaines are 30% active naturally plant derived lauryl (C12), cetyl (C16), or lauryl/cetyl (C12/16) dimethyl betaines in water. Macat® Alkyl Betaines are classic zwitterion surfactants with good detergency and coupling performance.	Medium	Medium	Average	Average
Macat™ LFB	Capryl/ Capramidopropyl Betaine	Macat® LFB is a 30% active, naturally plant derived caprylic/capric (C8/10) amidopropyl dimethyl glycine (betaine) in water.	High	High	Excellent	Excellent
Macat™ Ultra CDO	Cocamido-propylamine Oxide	Macat® Ultra CDO is a 30% active, naturally plant derived coco (C12) amidopropyl dimethylamine oxide in water.	High	High	Great	Great
Calfax® DB-45	Sodium Diphenyl Oxide Disulfonate	Calfax® DB-45 is a 45% active clear light amber aqueous solution of sodium dodecyl branched diphenyl oxide disulfonate. Outstanding wetting, emulsifying, coupling and stabilizing agent.	Low	Low	Poor	Poor
Macat™ LMAB	Lauryl/Myristyl Amidopropyl-dimethyl Betaine	Macat® LMAB is a 30% active, naturally plant derived lauryl/myristyl (C12/14) amidopropyl dimethyl glycine (betaine) in water.	Low	Medium	Average	Great

Gas Well, Drilling, & Production

Specialized Oilfield Chemistries

Product	Chemical Name	Physical Form/Activity	Features/Benefits	Application
Aristonic® Acids and Aristonate® Products	Alkyl Aryl Sulfonic Acids and Sulfonates	Liquid/50-90%	Aristonic® and Aristonate® products are consistent oil/water emulsifiers, corrosion inhibitors, demulsifiers and lubricity providers for drilling. Low, medium and high molecular weight products are available featuring highly desirable features in a variety of applications. They can easily replace natural sulfonates.	Well drilling and stimulation, water-based drilling mud systems, silt suspension, paraffin control, production, EOR projects
Calamide® Products	Alkanolamides	Liquid and Dry/100%	Calamide® products are a foam booster, viscosity enhancer, lubricity agent, torque reducer and corrosion inhibitor. They also are an effective emulsification aid.	Well drilling and stimulation, torque reduction and corrosion inhibition
Calfax® Products	Linear/Branched Diphenyl Oxide Disulfonates and Disulfonic Acids	Liquid/35-70%	Calfax® products are great wetting agents and foamers used in high temperature applications. They offer great stability over a wide pH range and high tolerance to highly electrolytic systems.	Detergent and dispersing agent for well cleanout operations

Specialized Oilfield Chemistries (cont.)				
Product	**Chemical Name**	**Physical Form/Activity**	**Features/Benefits**	**Application**
Calimulse® EM-99	Branched Alkyl Benzene Sulfonic Acid	Liquid/97%	Calimulse® EM-99 is a high active intermediate to make various salts for demulsifiers and anti-sludge agents.	Anti-sludge agent for well stimulation, primary and secondary production
Calimulse® PR	Isopropylamine Branched Alkyl Benzene Sulfonate	Liquid/93%	Calimulse® PR is a consistent and high active branched emulsifier or wax crystal modifier	Paraffin control and demulsification for primary and secondary production
Calimulse® PRS	Isopropylamine Linear Alkyl Benzene Sulfonate	Liquid/93%	Calimulse® PR is a consistent and high active linear emulsifier or wax crystal modifier	Paraffin control and demulsification for primary and secondary production
Calsoft® AOS-40	Sodium C14-16 Alpha Olefin Sulfonate	Liquid/40%	Calsoft® AOS-40 is a foamer used in high temperature applications. It has extended stability and good flash-foaming characteristics within a wide pH range.	Foam drilling, foam fracturing and well stimulation
Calsoft® F-90	Linear Alkyl Benzene Sulfonate, Sodium Salt	Flake/90%	Calsoft® F-90 is an easy-to-handle sulfonate flake with good anti-caking and wetting properties.	Cementing
Calsoft® LAS-99	Linear Alkyl Benzene Sulfonic Acid	Liquid/97%	Calsoft® LAS-99 is a high active intermediate to make various salts for consistent and predictable demulsifiers. Can also function as a detergent, wetting agent and foaming agent.	Cleaning, lubricity, anti-sludge and penetration agent for well stimulation and production
Caltaine® C-35	Cocamidopropyl Betaine	Liquid/30%	Caltaine® C-35 is a foaming agent, foam booster and foam stabilizer with consistent performance.	Foam drilling and unloading gas wells
Macat™ DOSS	Dioctyl Sodium Sulfosuccinate	Liquid/70%	Macat® DOSS Sulfosuccinates offer compatibility in a wide range of solvent systems for use as a versatile wetting, dispersing, emulsifying, and detergent ingredient.	Drilling fluids, wetting agent, detergent and dispersing agent for well cleanout operations
Pilot® DABSA	Oil Soluble Alkyl Aryl Sulfonic Acid	Liquid/80%	Pilot® DABSA is a high molecular weight intermediate used to make various salts for demulsifiers. It can also inhibit the precipitation of calcium naphthenate	Primary and secondary production, emulsifier for crude. Naphthenate inhibitor.

Corrosion Inhibition

Cationic Surfactants	Pilot offers a very broad array of cationic surfactants utilized within the oil and gas industry. Our Mason® CS and Maquat® cationic surfactants offer many alternatives for oilfield formulators in producing oil soluble and water soluble corrosion inhibitors, anti-sludge additives, non-emulsifiers, KCl replacements, scale inhibitors, water-flood surfactant packages and cleaners, drilling fluid additives, acid inhibitors, emulsifiers, emulsion breakers, and hot oil and water treatment additives.	
Product	**Description**	**Attributes**
Mason® CS-125	Alkyl dimethyl benzyl ammonium chloride	Mason® ADBAC surfactants are excellent products for the formulating of corrosion inhibitors and water treating additives, providing multi-functional properties which include the formation of a uniform protective film as well as outstanding surfactancy and detergency. Mason® ADBAC surfactants are highly surface active and provide superior performance where a fouled system requires a thorough cleanup. The products are effective at removing deposited oil wet solids, such as iron sulfide, as well as certain scales, sand, hydrocarbons, and other foreign matter. This surfactancy performance also assists in establishing an uncontaminated system. Can be formulated with water and methanol for water soluble products, or diluted with HAN for oil soluble applications. The usage of exceptional quality natural raw materials provides for improved performance and lower dosage rates over traditional cocobenzyl ammonium chloride surfactants.
Mason® CS-424		
Mason® CS-425		
Mason® CS-428		
Mason® CS-465		
Mason® CS-468		

Cationic Surfactants (cont.)

Product	Description	Attributes
Mason® CS-445	Didecyl dimethyl ammonium chloride	Mason® DIDAC surfactants provide robust performance for the harshest oilfield environments. Typically more soluble than ADBAC cationic surfactants for improved performance in higher chlorides, for example. They are widely used for pipeline inhibitors, and are excellent additives for multi-functional gas and oil well treatment packages. Mason® DIDAC surfactants are excellent products to incorporate into corrosion inhibitors and water treating additive formulations, providing multi-functional properties which include the formation of a uniform protective film as well as outstanding surfactancy and detergency.
Mason® CS-448		
Mason® CS-050	Dialkyl dimethyl ammonium chloride blends	Mason® Dialkyl Blends offer synergistic corrosion inhibitor properties by combining both ADBAC and DIDAC quaternary surfactants for enhanced performance benefits. The blend ratio of the products have been optimized for maximum effectiveness for the formulation of corrosion inhibitors and water treatment additives, providing outstanding solubility, uniform protective film as well as outstanding surfactancy and detergency.
Mason® CS-15M		
Mason® CS-24M		
Mason® CS-405		
Mason® CS-408		
Mason® CS-EBC 50	n-Alkyl dimethyl benzyl ammonium chloride & n-Alkyl dimethyl ethyl benzyl ammonium chloride	Mason® EBC 50 & EBC 80 are synergistic blends of ADBAC and ADEBAC which provide increased performance over the ADBAC products alone. These are considered 3rd generation quaternary ammonium chlorides and offer a multitude of uses for cationic corrosion inhibitors.
Mason® CS-EBC 80		
Maquat® C-2	Coco bis(2-hydroxyethyl) methyl ammonium chloride	Maquat® C-2 is a 75% active, naturally plant derived coco bis(2-hydroxyethyl)methylammonium chloride in 2-propanol. The modified polar head group provides highly surface active properties and unique functionality with adsorptive capabilities. It provides proven anti-static, dispersing, hydrotrope, and solubilizing properties, C-2 is a unique multifunctional product for use in acidizing as an anti-sludge agent, iron dispersant, non-emulsifier, and an additive for corrosion inhibition and cleaners.
Maquat® C-15	Coco alkyl methyl PEG-15 ammonium chloride	Maquat® C-15 is a 95% active, naturally plant derived cocoalkylmethyl PEG-15 ammonium chloride. It is highly cationic and provides anti-static, dispersing, hydrotrope, and emulsifying properties. It is an excellent cationic surfactant and provides performance synergy to nonionic emulsifiers. It can also be used for applications such as corrosion inhibitors, drag reducers, and organoclay suspensions.
Maquat® CETAC	Hexadecyl trimethyl ammonium chloride	Maquat® CETAC is a 30% active, naturally plant derived hexadecyl trimethyl ammonium chloride in water with excellent substantive and anti-static properties when used as a base for the manufacturing of oilfield corrosion inhibitors. Highly surface active, Maquat® CETAC affords a broad range of uses based on the unique properties of this material. Use CETAC as a cationic emulsifier, as a corrosion inhibitor, and as a surface modifier of organo-modified clays and zeolites.
Maquat® DSC-75PG	Dimethyl dioctadecyl ammonium chloride	Maquat® DSC is a 75% active paste dimethyl dioctadecyl ammonium chloride which is a high quality, alcohol soluble, water dispersible cationic surfactant with excellent substantive properties. It is an outstanding anti-stat, dispersant, and corrosion inhibitor base. It is also uniquely qualified to be used as an effective additive for lubricants, self diverting stimulation fluid systems (viscoelastic diverting aids VDA), organo-modified clays, and even fabric softeners. It is very hydrophobic and non-regulated.

Cationic Surfactants (cont.)

Product	Description	Attributes
Maquat® LATAC	Dodecyl trimethyl ammonium chloride	Maquat® LATAC-30% is a 30% active lauryl trimethyl ammonium chloride in water with excellent substantive and anti-static properties for use in water soluble corrosion inhibitors and emulsion breakers. Maquat® LATAC-30% imparts exceptional wetting, cleaning, suspending and emulsification properties. Emulsion Breaker for EOR applications.
Maquat® OAC	Oleyl dimethyl ammonium chloride	OAC is a 50% active, naturally plant derived oleyl dimethylbenzyl ammonium chloride in ethanol. OAC is derived from natural soybean oil and is water soluble. OAC is a highly substantive cationic surfactant with multiple applications including corrosion inhibitors, lubricants, self-diverting stimulation fluids with viscoelastic properties (viscoelastic diverting acid VDA). Providing very adsorptive properties, it also finds use in organo-modified clays and zeolites. A trimethyl version can be produced if needed.
Maquat® Q-50S	Soy amidopropyl ammonium chloride	Maquat® Q-50S is a 50%, naturally derived soy amidopropyl ammonium chloride in water and isopropanol, for use as a cationic surfactant in a wide range of applications. Its unique surface active properties make it an excellent film forming agent to inhibit corrosion of metal surfaces. Other suggested uses include clay stabilizers and organo-modified clays and zeolites with a wide range of adsorptive capacities.
Maquat® SC18-50	Octyldecyl dimethyl benzyl ammonium chloride (also known as Stearalkonium chloride)	Highly surface active, the Maquat® SC18 is a 50%active C18 dimethyl benzyl ammonium chloride in isopropanol. SC18-50 affords a range of uses based on the unique properties of this material. Suggested uses include corrosion inhibitors, self diverting stimulation fluid systems based on viscoelastic surfactants (viscoelastic diverting acid VDA), organo-modified clays and zeolites with a wide range of adsorptive capacities, effective for many applications. Utilize the unique surface active properties in solids and powders.
Maquat® T-15	Tallow alkyl methyl PEG-15 ammonium chloride	Maquat® T-15 is a 95% active tallowalkylmethyl PEG-15 ammonium chloride. Applications include anti-stats, water soluble corrosion inhibitors, dispersants, emulsifiers, and degreasers.

PILOT® CHEMICAL COMPANY

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