

Stimulation Chemical Product Portfolio



PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
ACID						
Acid-Reach™ 100	Acid-Oil Emulsifier	Acid-oil emulsifier used to create an acidized fracture fluid system in calcareous formations. The emulsifier retards the reaction rate of hydrochloric acid so that the fluid system can extend deeper into the formation, creating a larger acidized fracture network.				✓
StimSafe® Acid Replacement System	Acid Replacement	Environmentally-friendly, biodegradable acid replacement system used as a breakdown acid preceding a fracturing treatment. Product selection is based on previous treatment results. Typical loadings are per frac design.				✓
StimSafe® 50 Acid Replacement System		Environmentally-friendly, 50% active, biodegradable acid replacement system used as a breakdown acid preceding a fracturing treatment. Product selection is based on previous treatment results. Typical loadings are per frac design.				✓
StimSafe® 33 Acid Replacement System		Environmentally-friendly, 33% active, biodegradable acid replacement system used as a breakdown acid preceding a fracturing treatment. Product selection is based on previous treatment results. Typical loadings are per frac design.				✓
15% HCL	15% Hydrochloric Acid	Series of HCL acid formulations specifically used as a break-down fluid and to lower pH in halide-based brine fluids. These products also digest calcium carbonates. Product selection is determined through previous treatment results. Typical loadings are per frac design.				✓
32% HCL	32% Hydrochloric Acid					✓
BIOCIDES						
AQUCAR GA 25	25% Glutaraldehyde	Series of fast-acting biocides highly effective against aerobes, SRBs, APBs. Consumed by FeS; Reduced efficacy at high temperatures and high pH. Can be used for pre-treating frac tanks or added while pumping.	✓	✓	✓	✓
AQUCAR GA 50	50% Glutaraldehyde		✓	✓	✓	✓
AQUCAR™ DB 20	20% DBNPA	Fast-acting broad spectrum biocide that provides control of bacteria. This product has outstanding environmental properties. Because it possesses rapid decomposition, it is non-persistent and degrades to naturally-occurring products. This product can also be used for pre-treating frac tanks or added while pumping. Loading is determined by laboratory testing.	✓	✓	✓	✓
AQUCAR™DB 100	100% DBNPA	Fast-acting, non-oxidizing biocide that has outstanding environmental properties because it is non-persistent and degrades to naturally-occurring products. DBNPA offers efficient, cost-effective biocidal control at low concentrations. It provides broad-spectrum control of bacteria. Rapid decomposition. Loading is determined by laboratory testing.	✓	✓	✓	✓
AQUCAR™ PS 20	20% THPS	Broad-spectrum biocide developed to inhibit the growth of bacteria. Effective in both acid and alkaline environments. Especially effective against sulfate-reducing bacteria (SRB) that can cause H ₂ S souring. Completely miscible with water and easily dispersed. This product is normally added during pumping. Loading is determined by laboratory testing.	✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
BIOCIDE CONTINUED						
AQUCAR™ THPS 75	75% THPS	Broad-spectrum biocide based on tetrakis (hydroxymethyl) phosphonium sulfate developed to inhibit the growth of bacteria in process waters used in various applications. This product is added during pumping. Loading is determined by laboratory testing.	✓	✓	✓	✓
AMA 324	24% Dazomet	Cost-effective, caustic-based, broad-spectrum biocide used for long-term bacteria control in the reservoir. The combination of this biocide and an anionic friction reducer will drop treating pressure. Typical loading: 0.4 to 0.75 gpt.	✓	✓	✓	✓
AQUCAR™ 714	14:2.5 Glut/Quat Blend	Broad-based fast-acting biocide used to control most bacteria including APB's and SRB's. Completely miscible with water and easily dispersed. Typical loadings range from 0.3 to 0.5 gpt.	✓	✓	✓	✓
B 1203	12:3 Glut/Quat Blend	Broad-based fast-acting biocide used to control most bacteria including APB's and SRB's. Completely miscible with water and easily dispersed. Typical loadings range from 0.323 to 0.5 gpt.	✓	✓	✓	✓
MAQUAT 25:12	25:12 Glut/Quat Blend	Broad-based fast-acting biocide used to control most bacteria including APB's and SRB's. Completely miscible with water and easily dispersed. Typical loadings range from 0.3 to 0.5 gpt.	✓	✓	✓	✓
PeraClean™ 5	Peracetic Acid/ Hydrogen Peroxide Solution	A 5% peracetic acid / 26.5% hydrogen peroxide solution used as a quick kill biocide to control all bacteria. Product can be added to the frac tanks prior to fracturing or metered into frac tanks while pumping. The product should not be added to the blender during pumping. Residual content should be checked as treated water is pulled from the frac tanks. The biocide is compatible when the residual peracetic acid is less to 10 ppm.	✓	✓	✓	✓
PeraClean™ 15		A 15% peracetic acid / 22% hydrogen peroxide solution used as a quick kill biocide to control all bacteria. The product can be added to frac tanks prior to fracturing or metered into the frac tanks while pumping. Product should not be added to the blender during pumping. Residual content should be checked as treated water is pulled from frac tanks. The biocide is compatible when the residual peracetic acid is less to 10 ppm.	✓	✓	✓	✓
BREAKERS						
GelBrake™ Series	Live and Encapsulated Oxidizing Breakers	Series of live and encapsulated oxidizing breakers for use in hydraulic fracturing applications, end of jobs, during flush. Effective temperature ranges from 130 to 220°F.				
GelBrake™ 100	Ammonium Persulfate	Ammonium persulfate-based oxidizing breaker designed for use in applications from 130° to 180°F.	✓	✓	✓	✓
GelBrake™ 110	Sodium Persulfate	Sodium persulfate-based oxidizing breaker designed for use in applications from 130° to 180°F. Is less corrosive than GelBrake 100. At temperatures below 130°F, an activator such as BC-100 will be required. Typical loadings range from 0.25 to 2.0 ppt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 200	Low-temp Encapsulated AP	Low-temperature encapsulated ammonium persulfate oxidizing breaker designed as a solid, slow release that allows delayed break of the fracturing fluid, higher breaker concentrations without compromising fluid rheology, no loss to formation during fluid leak-off, and improved fracture conductivity for temperatures of 140° to 200°F. Typical loadings range from 0.25 to 2.0 ppt, but should be tested to optimize the break schedule.	✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
BREAKERS CONTINUED						
GelBrake™ 250	High-temp encapsulated AP	High-temperature encapsulated ammonium persulfate oxidizing breaker designed as a slow release that allows a delayed or increased breaker concentrations and increased break times at temps between 180°-240°F. Since it is a solid, breaker will not be lost in the formation during fluid leak-off. Typical loadings range from 0.25 to 2.0 ppt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 275	Encapsulated Sodium bromate	Encapsulated oxidizing breaker designed for controlled release rates at temperatures from 240° to 300°F. Used as a delayed breaker, allowing for higher concentrations for a complete break while also allowing the fluid to have improved proppant transport. Higher breaker concentrations will improve the clean-up of the proppant pack, enhance fracture conductivity, and incur no loss of breaker to the formation during leak off. Typical loadings range from 0.25 to 2.0 ppt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 305	5% T-butyl Hydroperoxide	Series of liquid high-temperature oxidizing breakers specifically designed to break down crosslinked polymers for easy flowback at temperatures from 220° to 275°F. This product provides early fluid stability and slow breaking of gel-based fracturing fluid systems. Typical loadings range from 0.25 to 2.0 gpt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 310	10% T-butyl Hydroperoxide		✓	✓	✓	✓
GelBrake™ 403	2% Sodium Chlorite	Oxidizing breaker with 2% active solution of salts and chlorites. Effective at temperatures above 180°F at neutral pH fluids and above 225°F in fluids having pH above 9.5. The loading ranges from 1.0 to 4.0 gpt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 410	10% Sodium Chlorite	Oxidizing breaker with 10% active solution of salts and chlorites and effective at temperatures above 180°F at neutral pH fluids and above 225°F in fluids having pH above 9.5. The loading ranges from 1.0 to 4.0 gpt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 500	Calcium peroxide slurry	Delayed breaker slurried in refined oil for water-based fracturing fluids containing guar or guar derivative polymers. Activated as fluid temperature increases, solubilizing to a peroxide and generating oxygen and secondary radicals for gel degradation. Effective at temperatures ranging from 150° to 200°F. Typical loadings range from 0.25 to 2.0 gpt, but should be tested to optimize the break schedule.	✓	✓	✓	✓
GelBrake™ 550G	Magnesium Peroxide Granules	Delayed breaker for water based fracturing fluids with guar or hydroxyl propyl guar polymers, activated as fluid temperature increase. Effective at temperatures from 200°F - 300°F with concentrations from 0.25 lb per 1,000 gal to 2.0 lb per 1,000 gal.	✓	✓	✓	✓
GelBrake™ 600	Biodegradable Enzyme. Low-Temperature	Biodegradable enzyme breaker with better efficiency and cleaner processes in the breaking of a fluid. Effective at temps of 80-220°F and pH range of 5.5 to 10.5. Typical dilutions are 1:50 to 1:200 with the dilution range depending on frac fluid water quality. Dilutions are made to provide loadings of 0.5 to 1.0 gpt		✓	✓	
GelBrake™ 650	Thermo-Stable Enzyme. High-Temperature	High-performance, thermo-stable, enzyme for breaking borate crosslinked fracturing fluids. This product is effective at 240°F and a pH range of 5.5 to 10.5. Typical dilutions are 1:50 to 1:200 with the dilution range depending on the frac fluid water quality. Dilutions are made to provide loadings of 0.5 to 1.0 gpt.		✓	✓	
GelBrake™ 700	Sodium Bromate	Solid oxidizing breaker designed for temperatures from 240° to 300°F. At lower temperatures an activator like BC-200 is required. The breaker is readily water soluble, even in cold water. Typical loadings range from 0.25 to 2.0 ppt, but should be tested to optimize the break schedule.			✓	

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
BREAKERS CONTINUED						
GelBrake™ 708	Breaker for Slickwater Friction Reducers	Liquid oxidizing breaker based on 8% hydrogen peroxide is used to degrade friction reducers used in slickwater fracturing. Typical loadings are two times the loading of friction reducer.			✓	
BC-200	Catalyst Breaker	Liquid breaker catalyst that helps oxidizing breakers such as GelBrake 305, 310, 403 and 410 function in a lower temperature application and still have the same efficacy. Typical loadings range from 0.25 to 1.0 gpt, but laboratory testing should be conducted to optimize the break schedule.			✓	
BRINES, CLAY CONTROL, BUFFERS						
ClayBrake™ 100	Potassium Chloride	Low toxicity salt based on potassium chloride and designed to prevent clay swelling and migration in sandstone reservoirs and shale formations that could cause flow impairment. Typical loadings range from 0.5% to 7% depending on formation clay sensitivity as determined by CST testing.	✓	✓	✓	✓
ClayBrake™ 110	Sodium Chloride	Low toxicity salt based on sodium chloride and designed to prevent clay swelling and migration in sandstone reservoirs and shale formations that could cause flow impairment. Typical loadings range from 0.5% to 7% depending on formation clay sensitivity as determined by CST testing.	✓	✓	✓	✓
ClayBrake™ 120	Ammonium Chloride	Low toxicity salt based on ammonium chloride, designed to prevent clay swelling and migration in sandstone reservoirs and shale formations that could cause flow impairment. The salt will reduce fluid alkalinity to a pH around 5. Typical loadings range from 0.5% to 7% depending on formation clay sensitivity as determined by CST testing.	✓	✓	✓	✓
ClayBrake™ 200	Choline Chloride 70%	A 70% choline chloride solution as a KCl substitute designed to provide clay stabilization in clay sensitive formations. Typical loadings range from 0.5 to 2.0 gpt, with optimum loadings determined by laboratory CST testing.	✓	✓	✓	✓
ClayBrake™ 220	Proprietary Salt Blend	Bio-degradable solution composed of salts and 35% choline chloride and used as a KCl substitute to provide clay stabilization in clay sensitive formations. Typical loadings range from 0.5 to 2.0 gpt, with optimum loadings determined by laboratory CST testing.	✓	✓	✓	✓
ClayBrake™ 250	Quaternary Ammonium Chloride	Organoammonium quaternary salt composed of a mixture of mono and di quats used as a KCl substitute to provide clay stabilization in clay sensitive formations. Product performance is independent of fluid pH. Typical loadings range from 0.5 to 2.0 gpt, with optimum loadings determined by laboratory CST testing.	✓	✓	✓	✓
ClayBrake™ 300	PolyDADMAC	Polycationic polymer designed as a permanent clay control additive to minimize the expansion of swelling clays and prevent the displacement of migrating clays. The product should be used together with a monovalent salt or KCl substitute and loadings should range from 0.5 to 2.0 gpt, with optimized loadings determined by CST testing.	✓	✓	✓	✓
ClayBrake™ 310	Quaternized Polyamine	Soft polycationic polymer designed as a permanent clay control additive to minimize the expansion of swelling clays and prevent the displacement of migrating clays. The product is compatible with some anionic polymers such as friction reducers. The product should be used together with a monovalent salt or KCl substitute and loadings should range from 0.5 to 2.0 gpt, with optimized loadings determined by CST testing.	✓	✓	✓	✓
ClayBrake™ 320	Quaternary ammonium Chloride	Cationic clay stabilizer, completely soluble in all brines as well as saturated salt water, sea waters, and calcium chloride brines. Designed to prevent swelling and migration problems.	✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
BRINES, CLAY CONTROL, BUFFERS CONTINUED						
GelTrol™ Series	Acetic Acid & Potassium Hydroxide Buffers.	Series of acetate, acetic acid and potassium hydroxide buffers to assist gel hydration in various conditions.				
GelTrol™ 100	Sodium acetate/ Acetic Acid blend	Low pH buffer solution to assist LFC-G4 gel hydration in boron-contaminated frac water or guar derivative polymer hydration in the presence of saline water. The resulting fluid pH is adjusted to pH 6.0 to 6.5, regardless of buffer loading.		✓	✓	✓
GelTrol™ 156	50% Acetic Acid blend	Low pH solution of 50% acetic acid to assist LFC-G4 gel hydration in boron-contaminated frac water or guar derivative polymer hydration in the presence of saline water. The resulting fluid pH is dependent on loading, and the loading should be determined by testing before field use.		✓	✓	✓
GelTrol™ 160	60% Acetic Acid blend	Low pH solution of 60% acetic acid to assist LFC-G4 gel hydration in boron-contaminated frac water or guar derivative polymer hydration in the presence of saline water. The resulting fluid pH is dependent on loading, and the loading should be determined by testing before field use.		✓	✓	✓
GelTrol™ 180	80% Acetic Acid	Low pH solution of 80% acetic acid to assist LFC-G4 gel hydration in boron-contaminated frac water or guar derivative polymer hydration in the presence of saline water. The resulting fluid pH is dependent on loading, and the loading should be determined by testing before field use.		✓	✓	✓
GelTrol™ 200	25% Potassium Hydroxide	Crosslinking buffer composed of 25% potassium hydroxide solution to help optimize the performance of crosslinkers by controlling the pH of the fluid. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
GelTrol™ 225	25% Sodium Hydroxide	Crosslinking buffer composed of 25% sodium hydroxide solution to help optimize the performance of crosslinkers by controlling the pH of the fluid. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
GelTrol™ 245	45% Potassium Hydroxide	Crosslinking buffer composed of 45% potassium hydroxide solution to help optimize the performance of crosslinkers by controlling the pH of the fluid in high bicarbonate waters. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
GelTrol™ 250	50% Sodium Hydroxide	Crosslinking buffer composed of 50% sodium hydroxide solution to help optimize the performance of crosslinkers by controlling the pH of the fluid composed in high bicarbonate waters. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
GelTrol™ 345	45% Potassium Carbonate	Crosslinking buffer composed of 45% potassium carbonate solution to stabilize fluid pH as a true buffer. This product helps optimize the performance of crosslinkers by controlling the pH of the fluid, especially in high temperature applications above 260°F. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
GelTrol™ 400	Potassium Carbonate/ Potassium Hydroxide	Crosslinking buffer composed of a mixture of potassium carbonate and potassium hydroxide solution to stabilize fluid pH as a true buffer. This product's loadings are normally less than GelTrol 345 to improve cost. It also helps optimize the performance of crosslinkers by controlling the pH of the fluid, especially in high temperature applications above 260°F. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
BRINES, CLAY CONTROL, BUFFERS CONTINUED						
GelTrol™ 500	Synthetic Caustic Replacement for NaOH & KOH	Synthetic caustic replacement used as a crosslinking buffer to optimize the performance of crosslinkers by controlling the pH of the fluid, especially in high temperature applications above 260°F. Loadings should be determined based on pre-job testing of the frac fluid rheology properties.	✓	✓	✓	✓
Sodium Bromide	Sodium Bromide	Non-chloride weighting brine used as completion kill fluid or as a higher density fluid. This product can reduce treating pressure due to its higher hydrostatic pressure on the well.		✓	✓	✓
Calcium Bromide	Calcium Bromide	Non-chloride weighting brine used as completion kill fluid or as a higher density fluid than sodium bromide. It can reduce treating pressure due to its higher hydrostatic pressure on the well.		✓	✓	✓
Calcium Chloride	Calcium Chloride	Economical brine used to aid in the prevention of formation damage by inhibiting clay swelling, dispersion, and migration. Also, it can reduce treating pressure due to its higher hydrostatic pressure on the well.		✓	✓	✓
Calcium Hydroxide	Calcium Hydroxide	Calcium hydroxide solution designed to control pH in calcium-based brine fluids.		✓	✓	✓
Zinc Bromide	Zinc Bromide	High density brine used as a kill fluid. It can be blended with Ca and Na brines to obtain high density values to exceed high reservoir pressure. Furthermore, in low surface temperature environments, the brine will not precipitate salt that will reduce fluid density.		✓	✓	✓
CORROSION INHIBITORS						
CorHib™ 5005	Dimer/ Imidazoline	Fracturing additive to prevent well corrosion during flowback after treatment. It is a concentrated water-dispersible inhibitor that exhibits anti-fouling properties with excellent persistency. Used to control CO ₂ and H ₂ S, especially in systems contaminated with oxygen, and treated surfaces resistant to adhesion of solids including iron sulfide, bacteria and carbonate scales.	✓	✓	✓	✓
CorHib™ 5500 Series	Water Soluble Corrosion Inhibitor Formulations	Series of corrosion inhibitors specifically designed to prevent well corrosion during flow-back after treatment. A series of water soluble/oil dispersible corrosion inhibitors for wells with high water cut. Formulations are available for high velocity, high CO₂, sour, and oxygen contaminated applications.				
CorHib™ 5503	Water Soluble Corrosion Inhibitor	Fracturing additive to prevent well corrosion during flowback after treatment. A water soluble, oxygen tolerant corrosion inhibitor that is suitable for sweet and sour service and excellent for drying conditions such as gaslift.	✓	✓	✓	
CorHib™ 5505	Imidazoline	Fracturing additive to prevent well corrosion during flowback after treatment. An effective organic corrosion inhibitor that exhibits a high degree of interfacial activity to reduce plugging of surface filters. This product contains a solids control capability and may be used as an effective surfactant in oil well cleanups and in de-oiling solids.	✓	✓	✓	
CorHib™ 5510			✓	✓	✓	
CorHib™ 5501	Quat Mixture	Fracturing additive to prevent well corrosion during flowback after treatment. A water-soluble corrosion inhibitor that is suitable for high-velocity applications, gas wells, pipeline, and water injection. This product is suitable for sweet CO ₂ corrosion.	✓	✓	✓	
CorHib™ 5504	Quat Mixture	Fracturing additive to prevent well corrosion during flowback after treatment. An excellent film-former corrosion inhibitor designed to penetrate biomass to promote a surface that resists fouling by bacteria, iron sulfide, scale. This product is water/brine soluble and dispersible in oil. It is recommended for high fouling systems.	✓	✓	✓	

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
CORROSION INHIBITORS CONTINUED						
CorHib™ 5508	Quat Mixture	Fracturing additive to prevent well corrosion during flowback after treatment. A filming amine corrosion inhibitor that is primarily used for downhole corrosion inhibition in either sweet or sour environments, or continuous treatment where mild to moderate corrosion is expected. This product provides very high water dispersability and outstanding solids control capabilities.	✓	✓	✓	
CI-600	Acid Corrosion Inhibitor	Series of highly effective acid corrosion inhibitors designed for use in well acidizing, acid fracturing, and break-down acids in hydraulic fracturing. For use in hydrochloric acid, hydrofluoric acid, HCl/HF mud acids, and organic acids. These inhibitors provide excellent corrosion protection of surface and downhole tubular goods and associated equipment. Effective at temperatures up to 350° F.				✓
CI-601E						✓
CI-610						✓
CROSSLINKERS						
XLW-B2	Borate Crosslinker	Lower borate content surface crosslinker or crosslinking accelerator that provides immediate viscosity for pre-buffered LFC-G4 base gel-based fracturing fluids. Loadings are determined by laboratory testing. When used together with delayed crosslinkers such as XLW-U2, the loading will depend on the desired crosslink time, but will normally range from 0.25 to 0.75 gpt.			✓	
XLW-B2B		Lower borate content surface crosslinker or crosslinking accelerator that also contains a buffer to self-adjust the fluid pH to provide immediate viscosity for LFC-G4 base gel-based fracturing fluids. Loadings are determined by laboratory testing. When used together with delayed crosslinkers such as XLW-U2, the loading will depend on the desired crosslink time but will normally range from 0.25 to 0.75 gpt.			✓	
XLW-B5		Higher borate content surface crosslinker or crosslinking accelerator that provides immediate viscosity for LFC-G4 base gel-based fracturing fluids. Loadings are determined by laboratory testing. When used together with delayed crosslinkers such as XLW-U2, the loading will depend on the desired crosslink time but will normally range from 0.25 to 0.75 gpt.			✓	
XLW-B5B		Higher borate content surface crosslinker or crosslinking accelerator that also contains a buffer to self-adjust the fluid pH to provide immediate viscosity for LFC-G4 base gel-based fracturing fluids. Loadings are determined by laboratory testing. When used together with delayed crosslinkers such as XLW-U2, the loading will depend on the desired crosslink time but will normally range from 0.25 to 0.75 gpt.			✓	
XLW-B6/ VisLink™ 100		Delayed or primary borate crosslinker that can effectively crosslink ultra-low loadings of guar base gels. Typical gel loadings used for the VisLink system range from 8 to 15 ppt. The resulting crosslinked fluid is specifically designed to complement slick-water fracturing, providing friction reduction in high-rate applications, and enhanced fracture growth and proppant transport while decreasing polymer damage.			✓	
XLW-U1		Ulexite Crosslinker	Delayed or primary borate crosslinker designed to slowly release borate crosslinking ions to minimize friction pressure in the well and maintain high fluid viscosity in the fracture, especially in higher temperature applications ranging from 180° to 300°F. The product is an ulexite (borate ore) dispersion in refined mineral oil. Typical loadings range from 0.75 to 2.0 gpt, but the loading should be determined by laboratory evaluation prior to pumping the treatment.			✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH pH CROSSLINKED	OTHER
CROSSLINKERS CONTINUED						
XLW-U2	Ulexite Crosslinker	Delayed or primary borate crosslinker designed to slowly release borate crosslinking ions to minimize friction pressure in the well and maintain high fluid viscosity in the fracture, especially in higher temperature applications ranging from 180° to 300°F. The product is an ulexite (borate ore) dispersion in a water-based formate solution. Typical loadings range from 0.75 to 2.0 gpt, but the loading should be determined by laboratory evaluation prior to pumping the treatment.			✓	
XLW-U2W	Ulexite Crosslinker; Winterized	Delayed or primary borate crosslinker designed to slowly release borate crosslinking ions to minimize friction pressure in the well and maintain high fluid viscosity in the fracture, especially in higher temperature applications ranging from 180° to 300°F. The product is the winterized version of XLW-U2, an ulexite (borate ore) dispersion in a water-based formate solution. Typical loadings range from 0.75 to 2.0 gpt, but the loading should be determined by laboratory evaluation prior to pumping the treatment.			✓	
XLW-Z12	Zirconium Crosslinker	Zirconium-based crosslinker used to crosslink guar derivatives such as hydroxypropyl guar, carboxymethyl guar or CMHPG. It can also crosslink carboxylated cellulose derivatives. The alcohol-based crosslinker can be used for both high pH and low pH frac fluids, especially for CO ₂ foams and assists. It is also applicable for ultra-high temperature applications from 275° to 350°F. Typical loadings range from 0.5 to 1.25 gpt, but product selection and loading should be determined by laboratory testing.			✓	
XLW-Z15		Zirconium-based crosslinker used to crosslink guar derivatives such as hydroxypropyl guar, carboxymethyl guar or CMHPG. It can also crosslink carboxylated cellulose derivatives. The alcohol-based crosslinker can be used for both high pH and low pH frac fluids, especially for CO ₂ foams and assists. It is also applicable for ultra-high temperature applications from 275° to 350°F. Typical loadings range from 0.5 to 1.25 gpt, but product selection and loading should be determined by laboratory testing.			✓	
XLW-Z27		Zirconium-based crosslinker used to crosslink guar derivatives such as hydroxypropyl guar, carboxymethyl guar or CMHPG. It can also crosslink carboxylated cellulose derivatives. The water-based crosslinker can be used for both high pH and low pH frac fluids, especially for CO ₂ foams and assists. Typical loadings range from 0.5 to 1.25 gpt, but product selection and loading should be determined by laboratory testing.			✓	
DIVERTING AGENTS						
Divert™ 100	Rock Salt	Sodium chloride pellets that are applied during stimulation treatment to temporarily plug high-flow perforations and divert treating fluid to new regions of the reservoir. The product is normally pumped as slugs of the salt in the treating fluid at loadings of 10 to 50 lb per perforation.	✓	✓	✓	✓
Divert™ 200	Benzoic Acid Flakes	Benzoic acid flakes that are applied during stimulation treatment to temporarily plug high-flow perforations and divert treating fluid to new regions of the reservoir. The product is normally pumped as slugs of the salt in the treating fluid at loadings of 10 to 50 lb per perforation.	✓	✓	✓	✓
ParaBlok™	Paraffin Inhibitor/ Diverting Agent	Wax crystal modifier beads that are applied during stimulation treatment to temporarily plug high-flow perforations and divert treating fluid to new regions of the reservoir. The product is normally pumped as slugs of the salt in the treating fluid at loadings of 10 to 50 lb per perforation. After treatment, it dissolves in the crude oil for removal and/or prevention of paraffin deposition in the well.	✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
FLOW BACK AGENTS						
MORFLO™ 100	Non-Emulsifier	Series of multi-functional surfactant blends designed to assist flow-back recovery after stimulation, enhance oil removal from the reservoir rock to increase initial production, and prevent down-hole emulsions between the crude oil and treating fluid. Product selection and loading is determined by various laboratory tests.	✓	✓	✓	✓
MORFLO™ 150			✓	✓	✓	✓
MORFLO™ 200			✓	✓	✓	✓
MORFLO™ 300			✓	✓	✓	✓
MORFLO™ 400	Surfactant	Series of multi-functional aqueous surfactant blends designed to assist flow-back recovery after stimulation, enhance oil removal from the reservoir rock to increase initial production, and prevent down-hole emulsions between the crude oil and treating fluid. All the components in the product are listed on the EPA's chemical Design for the Environment (DfE). Product selection and loading is determined by various laboratory tests.	✓	✓	✓	✓
MORFLO™ 401			✓	✓	✓	✓
FRICTION REDUCERS						
HiRate™-600	Polyacrylamide Copolymer	Anionic polyacrylamide co-polymer emulsion-based friction reducer designed for slick-water applications in fresh water to water salinity equivalent to 2% KCl. Typical loadings range from 0.25 to 1.0 gpt.	✓	✓	✓	✓
HiRate™-610		Anionic, high molecular weight, winterized polyacrylamide co-polymer emulsion friction reducer designed for slick-water applications for higher brine waters equivalent to 2% to 7% KCl. Typical loadings range from 0.5 to 1.25 gpt.	✓	✓	✓	✓
HiRate™-620		Anionic, high molecular weight, polyacrylamide co-polymer emulsion friction reducer designed for slick-water applications for higher brine waters equivalent to 2% to 7% KCl. Typical loadings range from 0.5 to 1.25 gpt.	✓	✓	✓	✓
HiRate™-630		Sulfonated anionic, high molecular weight, polyacrylamide co-polymer emulsion friction reducer designed for slick-water applications in higher brine waters equivalent to 2% to 7% KCl that also contain up to 5,000 ppm hardness ions. Typical loadings range from 0.5 to 1.25 gpt.	✓	✓	✓	✓
HiRate™-650		Cationic high molecular weight, polyacrylamide co-polymer emulsion friction reducer designed for slick-water applications in low pH or acidic treating fluids or higher brine waters containing up to 10,000 ppm hardness ions. Typical loadings range from 0.5 to 1.25 gpt.	✓	✓	✓	✓
HiRate™- 600W		Winterized version of HiRate™ 600, an anionic polyacrylamide co-polymer emulsion-based friction reducer designed for slick-water applications in fresh water to water salinities equivalent to 2% KCl. Typical loadings range from 0.25 to 1.0 gpt.	✓	✓	✓	✓
HiRate™-630W		Winterized version of HiRate™ 630, a sulfonated anionic, high molecular weight, polyacrylamide co-polymer emulsion friction reducer designed for slick-water applications in higher brine waters equivalent to 2% to 7% KCl that also contain up to 5,000 ppm hardness ions. Typical loadings range from 0.5 to 1.25 gpt.	✓	✓	✓	✓
GUAR/GUAR SLURRIES						
LFC-G4	Guar Gum Slurry	Guar gum slurry containing 4.0 ppg 3540 grade, fast hydrating guar gum dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 3-5 min, depending on water temperature and quality. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
GUAR/GUAR SLURRIES CONTINUED						
LFC-G4.5	Guar Gum Slurry	Guar gum slurry containing 4.5 ppg 3540 grade, fast hydrating guar gum dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 3-5 min, depending on water temperature and quality. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-CG4	CMHPG Slurry	CMHPG slurry containing 4.0 ppg high grade CMHPG dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 1 min, but may require water pH adjustment to 6.5 to 7.0 in saline water. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-CG4.5		CMHPG slurry containing 4.5 ppg high grade CMHPG dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 1 min, but may require water pH adjustment to 6.5 to 7.0 in saline water. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-HG4	HPG Slurry	HPG slurry containing 4.0 ppg high grade HPG dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 3 min and is more tolerant of more saline waters and colder temperatures. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-HG4.5		HPG slurry containing 4.5 ppg high grade HPG dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 3 min and is more tolerant of more saline waters and colder temperatures. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-CMC4	CMC Slurry	CMC slurry containing 4.0 ppg high grade CMC dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 1 min and is more tolerant of colder temperatures. The loading is normally provided by the operating company or determined by laboratory testing based on critical well conditions.		✓	✓	
LFC-CMC4.5		CMC slurry containing 4.5 ppg high grade CMC dispersed in refined mineral oil. The slurry viscosity ranges from 175 to 300 cP at 511 sec-1 for easy metering into the field water. The hydration rate is expected to achieve 80% in 1 min and is more tolerant of colder temperatures. The loading is normally provided by the operating company or determine by laboratory testing based on critical well conditions.		✓	✓	
ParaFrac® 53	ParaFrac Guar Slurry	Custom formulated fast-hydrating guar slurry with an integrated paraffin inhibitor system. Available in various guar loadings from 4.0 to 4.5 lb/ gal, and in both standard 30-35 cps and high-grade 40-42 cps guar. This guar slurry is a BTEX-free solvent system and includes a high-performance suspension package designed to satisfy the demands of high-rate, continuous-mix hydraulic fracturing operations.		✓	✓	

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
GUAR/GUAR SLURRIES CONTINUED						
FracGel™ CC	Carboxymethyl Cellulose	Series of fast hydrating, non-guar based polyanionic gelling agents designed for continuous mix fracturing processes. These agents support higher pump rates. Product selection and loading is determined through laboratory testing.		✓	✓	
FracGel™ CHC	Carboxymethyl Hydroxyethyl Cellulose			✓	✓	
FracGel™ CG	Carboxymethyl Guar	Anionic gelling agent that is fast hydrating and can be crosslinked with XLW-Z12, -Z15 and -Z27 in either low or high pH environments. The resulting gel is also compatible with CO ₂ foam or assists. Product selection and loading is determined through laboratory testing.		✓	✓	
FracGel™ HG	Hydroxypropyl Guar	Non-ionic gelling agent that is fast hydrating and tolerant to high TDS mix waters. The polymer can also be crosslinked with XLW-U2, XLW B2 for high pH environments or XLW-Z12, -Z15 and -Z27 in either low or high pH environments. The resulting zirconium crosslinked gel is also compatible with CO ₂ for foams or gas-assists. Product selection and loading is determined through laboratory testing.		✓	✓	
FracGel™ CHG	Carboxymethyl hydroxypropyl guar	Anionic fast-hydrating gelling agent that can be crosslinked with XLW-Z12, -Z15, and -Z27 in either low or high pH environments. The resulting gel is also compatible with CO ₂ foam or assists. Product selection and loading is determined through laboratory testing.		✓	✓	
FracGel™ GG1	Guar gum 30-35	Fast-hydrating, high viscosity guar powder, easily crosslinked with borate crosslinker systems, and easily broken with conventional breaker systems. Product selection and loading is determined through laboratory testing.		✓	✓	
FracGel™ GG2	Guar gum 40-45			✓	✓	
Xanthan Gum	Xanthan Gum Slurry	Xanthan gelling agent having a higher yield stress used for sweeps and suspension applications. Product selection and loading is determined through laboratory testing.		✓	✓	
OGA-1	Phosphate Ester Oil Gelling Agent	Oil gelling additive and activator used together to viscosify crude or refined oils for use as fracturing fluid. GelStay 300 or sodium bicarbonate can be used as the breakers.				✓
OGA-2	Activator for OGA-1					✓
AG-100	Acid Gellant Agent	Acid gelling agent for use in 3 to 28% HCl, Formic acid or mixtures. The gelling agent is supplied as a liquid emulsion for rapid inversion and hydration of the acid solution. Typical loadings range from 3 to 10 gpt.				✓
GEL STABILIZER						
FeroCheck	50% Act Citric Acid	Iron control, mild organic acid that is primarily used to control iron generated from break-down acids. Also used to lower high pH levels.				✓
GelStay™ 100	30% Sodium Thiosulfate	Series of gel stabilizers designed to aid in the stabilization of crosslinked gels and other polymers susceptible to oxidative, thermal degradation. Product selection and loading is determined by laboratory testing.		✓	✓	
GelStay™ 200	85% Triethanolamine			✓	✓	
GelStay™ 300	Magnesium Oxide (deadburned)					✓
LUBRICANTS						
HiLube-100	Coil Lubricant	High-performance lubricant designed for use in horizontal drilling fluids and coiled tubing fluid systems. This product is designed to reduce metal on metal friction to allow coil tubing placement in the lateral portion of horizontal wells. Typical loadings range from 2-5 gal per 10 bbl.				✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
LUBRICANTS CONTINUED						
HiLube-101B	Completion Beads/ Friction Reducer	Oil-blend of high spherical beads designed to reduce pipe drag generated from point loading or wall contact during coiled tubing and work-over pipe movement. The product is also good for releasing stuck tools. Standard size is 500 mesh or 20 micron. Loadings are used as needed.				✓
SCALE INHIBITORS						
ScaleCease™ 7001	BHMT Phosphonate - Concentrate. Neutralized; Non-Winterized	Non-winterized broad range amino phosphonate scale inhibitor designed for treating carbonate and sulfate scales in fracturing treatments. Product selection of the BHMT phosphonates is determined through laboratory testing.	✓	✓	✓	
ScaleCease™ 7003	Hydroxy Amine Phosphonate - Neutralized; Winterized	Partially neutralized phosphonate scale inhibitor that can be added to all fracturing fluids except those crosslinked by XLW-Z12, -Z15 and -Z27. This scale inhibitor has excellent iron tolerant properties for use in high iron waters. Loadings are determined by water water scaling tendency, but typically range from 0.15 to 1.0 gpt	✓	✓	✓	
ScaleCease™ 7006	Tagged Polymeric; Partially Neutralized; Non-Winterized	Series of polyacrylate-based scale inhibitors designed for use in integrated stimulation operations to control scale. The polymer is also tagged to determine residual inhibitors in flowback waters. Product selection is determined in laboratory testing.	✓	✓	✓	
ScaleCease™ 7007	Polymeric Scale Inhibitor; Neutralized; Non-Winterized		✓	✓	✓	
ScaleCease™ 7010T	Tagged Co-Polymer. Neutralized; Winterized	Polyacrylate-based scale inhibitor designed for use in integrated stimulation operations to control scale. The polymer is also tagged to determine residual inhibitor in flowback waters. Product selection is determined in laboratory testing.	✓	✓	✓	
ScaleCease™ 7012	High Calcium Tolerant Phosphonate. Neutralized; Non-Winterized	Phosphonate scale inhibitor than can be added to all fracturing fluids except those crosslinked by XLW-Z12, -Z15 and -Z27. Partially neutralized phosphonate with excellent iron tolerant properties for use in high iron waters. Loadings are determined by water scaling tendency, but typically range from 0.15 to 1.0 gpt	✓	✓	✓	
ScaleCease™ 7013	Ether Amine Phosphonate. Non-Neutralized; Non-Winterized	Series of highly-effective, non-winterized and winterized phosphonate scale inhibitors designed for treating carbonate and sulfate scales. Especially effective against iron scales. This product is thermally stable up to 300°F. The loading is determined by laboratory testing but normally ranges from 0.15 to 1.0 gpt.	✓	✓	✓	
ScaleCease™ 7013W	Ether Amine Phosphonate. Partially-Neutralized; Winterized		✓	✓	✓	
SURFACTANTS						
EcoFlow™ - NE	Non-Emulsifier; Non-Winterized and Winterized	Series of non-winterized and winterized specialty flowback surfactants specifically designed to improve load recovery in hydraulic fracturing applications. In addition, the products are designed to prevent emulsions and to assist in the release of bound oil from reservoir rock. Product selection is determined through laboratory testing, but typical loadings range from 0.25 to 3.0 gpt.	✓	✓	✓	✓
EcoFlow™ - NE-W			✓	✓	✓	✓
EcoFlow™- G			✓	✓	✓	✓
EcoFlow™ -50			✓	✓	✓	✓
EcoFlow™ - 47			✓	✓	✓	✓

STIMULATION CHEMICAL PRODUCT PORTFOLIO

PRODUCT NAME	REFERENCE	DESCRIPTION	SLICKWATER	LINEAR	HIGH PH CROSSLINKED	OTHER
WETTERS AND CLEANERS						
StimSurf™ 9002	Iron Sulfide Scavenger	THPS and surfactant-based formulation designed to control iron sulfide both down hole and in surface equipment.	✓	✓	✓	✓
StimSurf™ 9005	Acid Surfactant	Acid surfactant formulation used to de-oil solids, and formation face, and to dissolve acid soluble scales.				✓
StimSurf™ 9006	Blended Acid Surfactant	Blended glacial acetic thioglycolic acid / surfactant formulation used to de-oil solids, and formation face, and to dissolve acid soluble scales.				✓
StimSurf™ 9010		Blended glacial acetic and thioglycolic acid solution specifically designed to dissolve acid soluble materials.				✓
StimSurf™ 9004	Water Wetting Compound	Water-wetting compound used as an micelle-additive in acidizing applications.				✓
StimSurf™ 9007		Series of water-wetting compounds specifically designed to de-oil solids and formation faces for clean-up or stimulation purposes. Production selection is determined through laboratory testing.	✓	✓	✓	✓
StimSurf™ 9011			✓	✓	✓	✓
StimSurf™ 9015			✓	✓	✓	✓
StimSurf™ 9008			Concentrated water-wetting solution specifically designed to de-oil solids and formation faces for clean-up or stimulation purposes.	✓	✓	✓
StimSurf™ 9014	Micelle Cleaning Agent	Micelle cleaning solution specifically used to de-oil solids and formation faces for clean-up or stimulation purposes. It can be used in acidizing applications.	✓	✓	✓	✓
StimSurf™ 9016	Acid Blend	Blend of 35% HCL and glacial acetic acid specifically designed to dissolve acid soluble materials.				✓
StimSurf™ 9017	Scale Dissolver	Inorganic acid solution specifically designed to remove carbonate, sulfide, and oxide scale accumulations in producing, injection, and disposal wells. This product will not harm chrome or stainless steels. It is proven to increase oil production, and lower injection pressures. Non-Emulsifying.				✓
StimSurf™ 9018	Solids Control/ Iron Dissolver	Blend of THPS nonylphenol surfactant, dispersant, and demulsifier additives designed for use down hole and for surface equipment clean-up of iron sulfide and associated emulsions.	✓	✓	✓	✓
PumpFlush™ 9008	Environmentally Safe Cleaner / Diesel Replacement	Environmentally safe non-BTEX flush fluid designed as a replacement for diesel and used to flush lines and chemical addition pumps after pumping the fracturing chemicals. This product is dyed blue for easy visibility. High flash point with excellent detergency. Will not harm pumps and seals.	✓	✓	✓	✓

Phone: 713.936.4340 | **Email:** sales@independenceoc.com | **Website:** independenceoc.com

