



Conlen Surfactant Technology

Specialty Chemical Manufacturing, Marketing, & Distribution



Stimulation Series

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Conlen Surfactant Technology

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AR-104	Acid Gelling / Acid Retarder	HCl gelling agent
AS-502	Acid Anti-sludge Agent	Cationic acid anti-sludge preventer
CS-701	Liquid KCl Substitute	Replacement for bagged potassium chloride
CS-702	Permanent Clay Stabilizer	Clay / shale stabilizer
FA-400	Foaming Agent	Water soluble formulation of anionic foaming agents and surfactants
FA-410	Acid Foaming Agent	Non-ionic / Zwitter-ionic foaming agent
MS-800	Micellar Acidizing Solvent	Micellar mutual solvent
NE-149	Oil Soluble Non-Emulsifier	Non-ionic / non-emulsifier
NE-303	Oil Soluble Non-Emulsifier	Broad spectrum, oil soluble non-ionic, non-emulsifier
NE-320	Non-ionic Non-Emulsifier	Non-ionic acid non-emulsifier, water / alcohol
NE-320 E	Non-ionic Non-Emulsifier	Non-ionic acid non-emulsifier, water / alcohol
NE-370	Non-ionic Non-Emulsifier	Non-ionic acid non-emulsifier, Green
NE-380	Non-ionic Non-Emulsifier	Non-ionic acid non-emulsifier, Green
NE-385	Non-ionic Non-Emulsifier	Non-ionic acid non-emulsifier, Green
PC-550	Paraffin Control Product	Broad spectrum paraffin control product
SP-402	Mud Clean out Agent / Surfactant	Liquid mid flush agent . Surfactant tension reducer
SP-901	Emulsion Co-Polymer	High molecular weight anionic emulsion co-polymer
SP-902	Emulsion Co-Polymer	High molecular weight cationic emulsion co-polymer
SP-903	Multi-Purpose Additive	Multifunctional cationic additive
SP-904	Linear Guar Gum	Water dispersible, powdered linear guar gum
SP-905	pH Buffer for Cross Link Frac Fluids	Liquid alkaline buffer
SP-906	liquid Borate Cross Link Agent	Cross linker for guar based gels
SP-907	Liquid Enzyme Breaker	Liquid enzyme breaker concentrate
SP-914	Iron Sequestreant / Chelant	Iron sequestrant / chelant
SP-922	Sulfide Cracking Agent	Highly concentrated, water soluble sulfide cracking agent
SP-947	Immiscible Defoamer / Antifoam	Water immiscible defoamer
SP-950	Iron Sequesterant	Iron control additive
SP-980	Acetic Acid	Winterized acetic acid
SR-400	Hydrocarbon Mitigation Surfactant	Hydrocarbon mitigation surfactant
SR-401	Wetting Agent / Surface Tension Reducer	Non-ionic water soluble surface tension reducer
SR-404	Load Recovery / Foaming Agent	Non-ionic / Zwitter-ionic formulation of foaming agent

Stimulation Series



AR-104 Acid Gelling/Acid Retarder

Product Features

- Highly Effective HCl Gelling Agent
- Provide Stable Acid Gel Up To 150°F
- Retards HCl For Improved Treatment
- Compatible With Acid Corrosion Inhibitors

Description

AR-104 is a highly effective hydrochloric acid gelling agent designed for application in acidizing and fracturing operations. The product effectively gels hydrochloric acid up to 38% and provides stable viscosities at temperatures up to 150°F. In 15% hydrochloric acid viscosities of 50 to 60 centipoise are economically produced using **AR-104**. This gelled acid retards the spending of the acid resulting in increased penetration and treatment effectiveness. Acid systems prepared with **AR-104** provide excellent suspension of fines and enhance formation and near well bore clean up during acid flow back. Due to possible reductions in viscosity, the use of anionic products in systems gelled with **AR-104** are not recommended. The product is totally compatible with all cationic and nonionic acidizing and stimulation additives, including acid corrosion inhibitors.

Recommended Application

It is recommended that the HCl, water and other additives be thoroughly mixed prior to the addition of **AR-104**. After proper mixing **AR-104** is typically added to the acid at a load rate of 10 to 50 gallons per 1,000 gallons, depending upon the concentration of the HCl and other additives being used and the desired viscosity. The gel will form immediately upon the addition of **AR-104**. The system should then be circulated to assure uniform mixing of the **AR-104** to provide a consistent viscosity of the treatment fluid. Pilot testing is recommended with the test fluids to determine optimum usage concentrations for specific treatments.

TDS-0697

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Typical Physical Properties

Form , 70°F	Light Amber Liquid
Density , (lbs/Gal)	7.38
Pour Point , °F	>20
pH , (10% Solution)	6.5-7.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Cationic

Shipping and Handling

AR-104 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN-1993, Flammable Liquid, N.O.S.,



AS-502 Acid Anti-Sludge Agent

Product Features

- Broad Spectrum Acid Anti-Sludge Agent
- For Acidizing Or Acid Tracturing

Description

AS-502 is a cationic acid anti-sludge preventer designed for use in both dump acid treatments and acid fracturing. The product has proven highly effective in a wide variety of crude oils across North America. **AS-502** provides excellent surface tension reduction and water wetting properties in both sandstone and carbonate acidizing operations. The use of **AS-502** greatly enhances well clean up during flow back, while reducing the potential for formation pore throat plugging with acid induced sludges and emulsions. Unlike some non-emulsifiers, **AS-502** will not interfere with the performance of acid corrosion inhibitors and other common acid additives.

Recommended Application

AS-502 is typically applied to the acid during loading operations at rates of 5 to 25 gallons per thousand gallons of acid.

Specific load rates vary greatly according to the type of treatment being performed, emulsifying and sludging characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form , 70°F	Amber Liquid
Density , (lbs/Gal)	7.27
Pour Point , °F	>30
pH , (10% Solution)	6.5-7.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Cationic

Shipping and Handling

AS-502 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN-1993, Flammable Liquid, N.O.S.,

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CS-701 Liquid KCl Substitute

Product Features

- Highly Effective Liquid KCl Substitute
- Can Be Mixed On-The-Fly
- Soluble in Water, Brine and Acid Systems
- Non Surface Active

Description

CS-701 is a liquid KCl substitute designed for use as a direct replacement for bagged potassium chloride in providing temporary protection of shale and clay laden formations during acidizing, fracturing and remedial well treatments. The product is non-foaming and is compatible with all gels, crosslinkers and breaker systems typically utilized in well stimulation and work over operations. **CS-701** will not affect fluid pH and does not adversely affect formation wettability. The product may be used in fresh water, acid or brine systems and will not hinder the performance of acid corrosion inhibitors. **CS-701** may be easily utilized in "on the fly" systems to eliminate pre-mixing of bagged KCl and leftover brine disposal problems.

Recommended Application

CS-701 is typically applied to treating fluids at a concentration of 0.5 to 10 gallons per 1,000 gallons of fluid (gpt) depending on the percent KCl being replaced, shale and clay quantities present in the well bore and the type of treatment being performed. Where a 2% potassium chloride functional equivalent is desired, **CS-701** is added to fresh water at a concentration of 1 gallon per 1,000 gallons of water.

Fresh water treated with **CS-701** functions as potassium chloride to inhibit shale and clay hydration. However, **CS-701** does not impart increased fluid density nor lower fluid freezing points. Pilot testing is recommended to assure compatibility with specific systems.

Typical Physical Properties

Form, 70°F	Light Yellow Liquid
Density, (lbs/Gal)	8.50
Pour Point, °F	-20
pH, (10% Solution)	6.5-7.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Mildly Cationic

Shipping and Handling

CS-701 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
UN-1993, Flammable Liquid, N.O.S.,**

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CS-702 Permanent Clay Stabilizer

Product Features

- Highly Effective Clay/Shale Stabilizer
- Can Be Mixed On-The-Fly
- Compatible With Acidizing Additives
- Prevents Clay Swelling & Migration

Description

CS-702 is a highly effective permanent clay stabilizer designed for application in work over, acidizing and stimulation treatments. The product contains highly effective amine derivatives that stabilize water sensitive clays during aqueous treatments to prevent swelling and migration problems. The use of **CS-702** in stimulation treatments protects the water sensitive formation to assure maximum well productivity, while maintaining formation integrity and permeability. The product is soluble in fresh water, KCl water, high TDS brine and acids. **CS-702** may be mixed on the fly to prevent excess fluid on location.

Recommended Application

CS-702 clay stabilizer may be applied to aqueous pre-flush fluids, acidizing fluids and fracturing fluids. Treatment concentrations will vary according to the individual application and the severity of the clay swelling potential of a particular formation. Typical load rates range from 1 to 5 gallons of **CS-702** per 1,000 gallons of fluid. Due to the complexity of stimulation fluids, pilot testing is recommended with individual systems to assure compatibility. This is particularly important when utilizing **CS-702** with cross linked gel system.

Typical Physical Properties

Form, 70°F	Amber Liquid
Density, (lbs/Gal)	7.80
Pour Point, °F	-20
pH, (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Cationic

Shipping and Handling

CS-702 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:
UN-1993, Flammable Liquid, N.O.S.,

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FA-400 Foaming Agent

Product Features

- For Fresh Water, Brines, Acid & Cross Links
- Hydrocarbon Tolerant
- Excellent For Use As Acid Diverting Agent
- Produces Stable, High Quality Foam

Description

FA-400 is a highly water soluble formulation of anionic foaming agents and surfactants designed to produce maximum stable foam and interfacial tension reduction under a wide variety of field conditions.

The product is recommended for use in foam fracturing, foam acidizing, acid diverting, water wetting and removal of formation fines during well cleanouts.

FA-400 displays excellent tolerance to salt and hydrocarbon influx, and is thermally stable to 350°F.

FA-400 may be used in fresh water, brines or acid systems and is compatible with anionic gelling agents and friction reducers. Systems containing **FA-400** typically produce foam quantities in excess of 80% with liquid volume fractions below 0.20.

The use of **FA-400** reduces swabbing time considerably and often eliminates it altogether. **FA-400** has also proven effective in providing a temporary xylene/hydrochloric acid emulsion. The emulsion will break within 30 minutes after being parked.

Typical Physical Properties

Form , 70°F	Light Yellow Liquid
Density , (lbs/Gal)	8.25
Pour Point , °F	-40
pH , (10% Solution)	8.5-9.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Anionic

Recommended Application

FA-400 may be applied by either batch treatment into the treating system, or mixed "on the fly". Typical load rates range from 2 to 10 gallons per thousand gallons of fluid depending on the fluid to be foamed, the treatment type and the desired foam quality.

When used to emulsify xylene and acid typical load rates for **FA-400** range from 5 to 10 gallons per 1,000 gallons of treating fluid. Pilot testing is recommended to determine the optimum product load rate for the desired foam quality in the specific system being utilized.

Shipping and Handling

FA-400 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Drums & Pails
Not D.O.T. Regulated

Totes & Bulk
NA1993, Combustible Liquid, N.O.S.,

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FA-410 Acid Foaming Agent

Product Features

- For Fresh Water, Brines, Acid & Cross Links
- Thermally Stable to 475°F
- Excellent For Use As Acid Diverting Agent
- Produces Stable, High Quality Foam

Description

FA-410 is a high performance nonionic/Zwitterionic foaming agent designed to produce high quality foaming and wetting characteristics in a wide range of applications. The product is designed for use in foaming common organic acids as well as hydrochloric, hydrofluoric, mud acid and dilute sulfuric acid solutions. **FA-410** also finds application in foaming guar gel and cross linked gel solutions. The product produces a high quality, stable foam in all applications and is thermally stable up to 475°F. **FA-410** provides excellent compatibility with other additives and typically produces foam qualities in excess of 80% with liquid volume fractions below 0.20. The use of **FA-410** reduces swabbing time considerable and often eliminates it altogether.

Recommended Application

FA-410 may be applied by either batch treatment into the treating system, or mixed "on the fly". Typical load rates range from 2 to 10 gallons per thousand gallons of fluid depending on the fluid to be foamed, the treatment type and the desired foam quality.

Pilot testing is recommended to determine the optimum product load rate for the desired form quality in the specific system being utilized.

Typical Physical Properties

Form, 70°F	Light Yellow Liquid
Density, (lbs/Gal)	8.98
Pour Point, °F	-30
pH, (10% Solution)	8.0-9.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

FA-410 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Drums & Pails
Not D.O.T. Regulated

Totes & Bulk
NA1993, Combustible Liquid, N.O.S

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MS-800 Micellar Acidizing Solvent

Product Features

- Excellent Micellar Mutual Solvent
- Provides Greater Acid Penetration
- Miscible With All Common Acids
- Removes Emulsion Blocks

Description

MS-800 is a micellar mutual solvent developed for use in well clean outs, acidizing and stimulation operations. The product contains a blend of surfactants and organic solvents that are miscible with all concentrations of hydrochloric acid and common concentrations of HCl/HF mud acids. The product is dispersible in hydrocarbon, fresh water and brine. The use of **MS-800** removes near well bore formation damage, disperses oily solids, removes emulsion and water blocks, increases acid penetration and leaves the formation water wet to assure maximum well productivity. **MS-800** has also proven effective in the treatment of water injection systems where oil wet solids, iron sulfide, paraffin or other solids are causing pressure build up.

Recommended Application

MS-800 is typically applied to treating fluids at a concentration of 5 to 10 percent by volume. Treatment quantity should be sufficient to penetrate approximately 3 feet into the formation, typically 0.5 to 1 barrel of fluid per foot of pay zone. This treatment should be pumped away slowly to prevent fracturing the formation. If the **MS-800** treatment is mixed in acid, the well should be shut in for a period of time to allow the acid to dissolve solids that are plugging the pore throats. Producing wells should then be returned to production, with back flowing of injection wells recommended. If back flowing is not possible, the **MS-800** concentration should be increased to 10 to 15 volume percent of the treating fluid.

Typical Physical Properties

Form, 70°F	Light Yellow Liquid
Density, (lbs/Gal)	8.98
Pour Point, °F	-30
pH, (10% Solution)	8.0-9.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

MS-800 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
UN-1993, Flammable Liquid, N.O.S**

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NE-149 Nonionic Non-Emulsifier

Product Features

- Broad Spectrum Nonionic Non-Emulsifier
- Prevents/Resolves Acid in Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- Water Wets
- Dispenses Waxy Crude Oil

Description

NE-149 is a nonionic and cationic acid non-emulsifier in mutual solvents designed for application in acidizing, and fracturing operations. The product effectively breaks water blocks and prevents or removes crude oil in water or acid emulsions. **NE-149** functions by reducing the interfacial tension between brines or acid and crude oils. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-149** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **NE-149** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-149** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form , 70°F	Liquid, Amber
Density , (lbs/Gal)	8.0 – 8.4
Flash Point , (TCC) °F	> 200
pH , (neat)	2.0 - 3.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible to Soluble
Ionic Charge	Cationic and Nonionic

Shipping and Handling

NE-149 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

Non-Regulated | Non-Hazardous

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MS-800 Micellar Acidizing Solvent

Product Features

- Excellent Micellar Mutual Solvent
- Provides Greater Acid Penetration
- Miscible With All Common Acids
- Removes Emulsion Blocks

Description

MS-800 is a micellar mutual solvent developed for use in well clean outs, acidizing and stimulation operations. The product contains a blend of surfactants and organic solvents that are miscible with all concentrations of hydrochloric acid and common concentrations of HCl/HF mud acids. The product is dispersible in hydrocarbon, fresh water and brine. The use of **MS-800** removes near well bore formation damage, disperses oily solids, removes emulsion and water blocks, increases acid penetration and leaves the formation water wet to assure maximum well productivity. **MS-800** has also proven effective in the treatment of water injection systems where oil wet solids, iron sulfide, paraffin or other solids are causing pressure build up.

Recommended Application

MS-800 is typically applied to treating fluids at a concentration of 5 to 10 percent by volume. Treatment quantity should be sufficient to penetrate approximately 3 feet into the formation, typically 0.5 to 1 barrel of fluid per foot of pay zone. This treatment should be pumped away slowly to prevent fracturing the formation. If the **MS-800** treatment is mixed in acid, the well should be shut in for a period of time to allow the acid to dissolve solids that are plugging the pore throats. Producing wells should then be returned to production, with back flowing of injection wells recommended. If back flowing is not possible, the **MS-800** concentration should be increased to 10 to 15 volume percent of the treating fluid.

Typical Physical Properties

Form, 70°F	Light Yellow Liquid
Density, (lbs/Gal)	8.98
Pour Point, °F	-30
pH, (10% Solution)	8.0-9.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

MS-800 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
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NE-320 Nonionic Non-Emulsifier

Product Features

- Broad Spectrum Nonionic Non-Emulsifier
- Prevents/Resolves Acid in Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- Water Wets

Description

NE-320 is a nonionic acid non-emulsifier designed for application in acidizing, and fracturing operations. The product effectively breaks water blocks and prevents or removes crude oil in water or acid emulsions. **NE-320** functions by reducing the interfacial tension between brines or acid and crude oils. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-320** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **NE-320** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-320** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form , 70°F	Liquid, Water-White
Density , (lbs/Gal)	7.9 – 8.2
Flash Point , °F	80
pH , (neat)	2 - 3
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

NE-320 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

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NE-320E

Nonionic Non-Emulsifier

Product Features

- Broad Spectrum Nonionic Non-Emulsifier
- Prevents/Resolves Acid in Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- "E" is green

Description

NE-320E is a nonionic acid non-emulsifier designed for application in acidizing, and fracturing operations. The product effectively breaks water blocks and prevents or removes crude oil in water or acid emulsions. **NE-320E** functions by reducing the interfacial tension between brines or acid and crude oils. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-320E** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **NE-320E** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-320E** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form , 70°F	Liquid, Amber
Density , (lbs/Gal)	7.9 – 8.3
Flash Point , (TCC) °F	80
pH , (neat)	2.5 – 4.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

NE-320E is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

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NE-370 Oil Soluble Non-Emulsifier

Product Features

- Broad Spectrum Oil Soluble Non-Emulsifier
- Prevents Acid/Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- Oil Wets
- Stable to >400°F

Description

NE-370 is a mutual solvent and broad spectrum, oil soluble nonionic non-emulsifier designed for application in acidizing, fracturing and well clean out operations. The product effectively breaks water blocks and prevents or removes hydrocarbon in water/brine or acid emulsions. **NE-370** functions by reducing the interfacial tension between aqueous and hydrocarbon phases of the treating system. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-370** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

NE-370 is typically applied at load rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-370** is mixed in water, brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form , 70°F	Liquid, Amber
Density , (lbs/Gal)	8.0 – 8.4
Flash Point , (TCC) °F	> 200
pH ,	N/A
Solubility	
Fresh Water	Dispersible
15% HCl	Dispersible
Hydrocarbon	Soluble
Ionic Charge	Nonionic

Shipping and Handling

NE-370 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Non-Hazardous / Non-Regulated

TDS-0697

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NE-380 Nonionic Non-Emulsifier

Product Features

- Broad Spectrum Nonionic Non-Emulsifier
- Prevents/Resolves Acid in Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- Water Wets <300°F

Description

NE-380 is an aqueous mutual solvent solution nonionic acid non-emulsifier designed for application in acidizing, and fracturing operations. The product effectively breaks water blocks and prevents or removes crude oil in water or acid emulsions. **NE-380** functions by reducing the interfacial tension between brines or acid and crude oils. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-380** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **NE-380** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-380** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form, 70°F	Liquid, Amber
Flash Point, °F	>200
Density, (lbs/Gal)	8.44
pH, (neat)	2.5-3.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

NE-380 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Non-Hazardous / Non-Regulated

TDS-0697

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NE-385 Nonionic Non-Emulsifier

Product Features

- Broad Spectrum Nonionic Non-Emulsifier
- Prevents/Resolves Acid in Oil Emulsions
- For Acidizing And Fracturing Treatments
- Compatible with Most Additives
- Water Wets <300°F

Description

NE-385 is an aqueous mutual solvent solution nonionic acid non-emulsifier designed for application in acidizing, and fracturing operations. The product effectively breaks water blocks and prevents or removes crude oil in water or acid emulsions. **NE-385** functions by reducing the interfacial tension between brines or acid and crude oils. The product has proven to have broad spectrum performance in a wide variety of crudes throughout North America. **NE-385** may also be used in the spearhead of acidizing and fracturing treatments to lower the break down pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **NE-385** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **NE-385** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form, 70°F	Liquid, Amber
Flash Point, °F	>200
Density, (lbs/Gal)	8.47
pH, (neat)	2.5-3.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

NE-385 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Non-Hazardous / Non-Regulated

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PC-550 Paraffin Control Product

Product Features

- Broad Spectrum Paraffin Control Product
- Combination Inhibitor/Dispersant/Solvent
- Oil Soluble/Water Dispersible
- Excellent Penetration of Oily Solids

Description

PC-550 is an oil soluble blend of wax crystal modifiers, dispersants and polar solvents designed for application in down hole remedial treatments. The product effectively penetrates deposited paraffinic crystals for effective removal. Once paraffin is removed by the solvents the surface active components disperse the paraffin back into the oil phase. The wax crystal modifiers in **PC-550** then work to distort the wax crystal lattice and prevent re-disposition. **PC-550** may be used in the pre-pad or the body of the fracturing fluid. The product has proven highly effective in a wide variety of paraffinic crude oils across North America.

Recommended Application

PC-550 may be applied by dump treatment for near well bore clean ups, in the pre-pad or in the body of fracturing treatments. In dump type treatments **PC-550** is typically applied at a rate of 1 drum per 5 feet of perforated interval. The product may be applied neat, or diluted in solvent prior to application.

When applied in the pre-pad of fracturing treatments **PC-550** is typically applied at load rates of 5 to 10 gallons per thousand. The product is applied to the body of fracturing treatments at load rates of 1 to 20 gallons per thousand gallons of treatment. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form, 70°F	Amber Liquid
Density, (lbs/Gal)	7.24
Pour Point, °F	-35
pH, (10% Solution)	6.5-8.5
Solubility	
Fresh Water	Dispersible
15% HCl	Dispersible
Hydrocarbon	Soluble
Ionic Charge	Nonionic

Shipping and Handling

PC-550 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN-1993, Flammable Liquid, N.O.S.,

TDS-0697

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SP-402 Mud Clean Out Agent/Surfactant

Product Features

- Excellent Dispersing/Cleaning Properties
- Excellent For Hole Conditioning Before Cementing
- Soluble in Water, Brine and Acid Systems
- Water Wets and Disperses Solids

Description

SP-402 is a liquid mud flush agent/surface tension reducer developed for use in cementing, acidizing and stimulation applications. The product is highly effective when used as a hole conditioning agent in well bore pre-flush prior to cementing. **SP-402** effectively water wets and disperses oil coated, acid insoluble solids, such as drilling muds, to provide a clean formation face for cement bonding. When applied in acidizing and stimulation systems these water wetting properties enhance fluid penetration and reduce required pumping horsepower. **SP-402** may also be used in the spearhead of acidizing and fracturing treatments to lower the breakdown pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

SP-402 is typically applied to treating fluids at load rates ranging from 2 to 5 gallons per 1,000 gallons of fluid. The product may be pre-mixed into the treatment fluid prior to use, or mixed on the fly as the fluid is being pumped down hole. Pilot testing is recommended to determine optimum treating concentrations for the specific treatment system.

Typical Physical Properties

Form , 70°F	Red Liquid
Density , (lbs/Gal)	7.50
Pour Point , °F	-30
pH , (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Nonionic

Shipping and Handling

SP-402 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN-1993, Flammable Liquid, N.O.S.,

TDS-0697

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SP-901 Emulsion Co-Polymer

Product Features

- Anionic Emulsion Co-Polymer
- Friction Reducer/Viscosifier/Clay Stabilizer
- Rapid Hydration & Yield
- Excellent Mud Flush Agent

Description

SP-901 is a high molecular weight anionic emulsion copolymer of polyacrylate and polyacrylamide. The product finds application in acidizing and well stimulation as a mud flush agent, friction reducer, clay stabilization agent and fresh water viscosifier. When properly applied under agitation **SP-901** provides rapid hydration and yield with a minimum tendency for polymer balling and encapsulation.

Recommended Application

SP-901 should be slowly added to the system at a point that assures maximum agitation and mixing. The product may be utilized alone, or as a component of a more complex anionic system. Care should be taken in mixing or over treatment can result in excessive viscosity, polymer balling and encapsulation. **SP-901** is typically applied to aqueous based fluids at a rate of 1 to 2 gallons per thousand gallons of fluid. Maximum yield will be obtained after 15 to 30 minutes of mixing. The use of soda ash and/or caustic soda are recommended to control pH and calcium content. When added to fresh water this recommended loading rate will provide a fluid with a marsh funnel viscosity range of 45 to 75. Pilot testing is recommended to determine the optimum concentration of **SP-901** to meet specific application needs.

Typical Physical Properties

Form, 70°F	White Liquid
Density, (lbs/Gal)	8.59
Pour Point, °F	+10
pH, (10% Solution)	7.0-8.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Anionic

Shipping and Handling

SP-901 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN1993, Flammable Liquid, N.O.S.,

TDS-0697

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SP-902 Emulsion Co-Polymer

Product Features

- Cationic Emulsion Co-Polymer
- Friction Reducer/Clay Stabilizer
- Rapid Hydration & Yield
- Excellent Selective Flocculant

Description

SP-902 is a high molecular weight cationic emulsion copolymer of polyacrylate and polyacrylamide. The product finds application in acidizing and well stimulation as a mud flush agent, friction reducer, clay stabilization agent and fresh water viscosifier. When properly applied under agitation **SP-902** provides rapid hydration and yield with a minimum tendency for polymer balling and encapsulation.

Recommended Application

SP-902 should be slowly added to the system at a point that assures maximum agitation and mixing. The product may be utilized alone, or as a component of a more complex anionic system. Care should be taken in mixing as rapid addition, insufficient mixing or over treatment can result in excessive viscosity, polymer balling and encapsulation. **SP-902** is typically applied to aqueous based fluids at a rate of 1 to 2 gallons per thousand gallons of fluid. Maximum yield will be obtained after 15 to 30 minutes of mixing. The use of soda ash and/or caustic soda are recommended to control pH and calcium content. When added to fresh water this recommended loading rate will provide a fluid with a marsh funnel viscosity range of 35 to 50. Pilot testing is recommended to determine the optimum concentration of **SP-902** to meet specific application needs.

Typical Physical Properties

Form, 70°F	White Liquid
Density, (lbs/Gal)	8.45
Pour Point, °F	+10
pH, (10% Solution)	7.0-8.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Cationic

Shipping and Handling

SP-902 is available in 5 gallon pails, 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. CAUTION: When this product contacts water it becomes extremely slick, which may result in accidents. If spilled, soak up spill with suitable material. Do not use water to clean spills. Keep from freezing. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

Not D.O.T. Regulated

TDS-0697

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SP-903 Multipurpose Additive

Product Features

- Highly Effective Cationic Additive
- Soluble in Water, Acid & Brine
- Excellent H₂S & CO₂ Corrosion Inhibitor
- Reduces Surface and Interfacial Tension
- Effective Cationic Non-Emulsifier
- Excellent Foaming Properties

Description

SP-903 is a multifunctional cationic additive designed for use in hydraulic fracturing, acidizing and squeeze operations. The product is compatible in water, acid, brine and guar gum based systems. **SP-903** finds application as a friction reducer, non-emulsifier, wetting agent, foaming agent and corrosion inhibitor. **SP-903** reduces surface tension into the range of 30 dynes/cm, water/acid wets solids, and relieves water blocks caused by drilling fluids, frac water or water encroachment. This surface tension reduction has also proven effective in dispersing sessile bacteria growth environments. **SP-903** has proven highly effective as a non-emulsifier in a wide variety of crude oils across North America. The foaming and wetting properties of **SP-903** greatly enhances well clean up during flow back, while reducing the potential for formation pore throat plugging with acid induced sludges and emulsions. The product is also a proven inhibitor in the control of hydrogen sulfide and carbon dioxide induced corrosion.

Recommended Application

SP-903 is typically applied to load rates of 1 to 3 gallons per thousand gallons of fluid. The product may be added directly to the fluids prior to use, or can be added continuously as the treating fluid is being pumped down hole. Specific load rates vary greatly according to the type of treatment being performed, fluid characteristics and the quantity of solids generated during the treatment. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

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Typical Physical Properties

Form , 70°F	Amber Liquid
Density , (lbs/Gal)	8.20
Pour Point , °F	-30
pH , (10% Solution)	6.5-7.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Cationic

Shipping and Handling

SP-903 is available in 55 gallons drums, tote tanks, and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN1993, Flammable Liquid, N.O.S.,



SP-904 Linear Guar Gum

Product Features

- Water Dispersible, Powdered Linear Guar Gum
- Economical Viscosifying Agent
- Enhances Fracture Width & Proppant Loading
- Excellent Compatibility with Most Additives

Description

SP-904 is a granular linear guar gum designed to increase the viscosity of water. The product is a free flowing powder that provides rapid hydration and yield for ease of application in the field. Water gelled with **SP-904** maximizes formation fracture width and allows the placement of higher proppant loads with lower pump rates. The product provides as much viscosity per pound as any of the commonly used thickeners with few compatibility problems. **SP-904** contains approximately 10% of an insoluble constituent that functions to minimize fluid loss from the hydrated frac fluid during treatment. These fluid properties assure optimum formation permeability following the fracturing treatment to provide maximum well productivity.

Recommended Application

SP-904 may be added "on the fly" provided the pump rate and blender tub working capacity provide a minimum of 45 seconds for hydration. When premixing **SP-904** it is recommended that the fluid pH be raised to 9.0 or greater during mixing to prevent the formation of lumps, then lowering the pH into the 7.0 range for rapid gel hydration. Load rates vary according to individual system requirements and desired viscosity. Typical load rates range from 20 to 40 pounds of **SP-904** per 1,000 gallons of water. When increased viscosity is required the **SP-904** gel

Typical Physical Properties

Form, 70°F	Free Flowing Powder
Density, (lbs/Gal)	42-53
pH, (10% Solution)	8.5-9.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble

may be cross linked with SP-905 buffer agent and SP-906 cross linking agent. Optimum cross link viscosity will be provided at a pH of 8.0 to 9.5. Pilot testing is strongly recommended with the individual gel system to determine the optimum load rates to provide the desired fluid viscosity and performance.

Shipping and Handling

SP-904 is packaged in 50 pound bags, 40 bags (2,000 lbs) to the pallet. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Not D.O.T. Regulated

TDS-0697

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SP-905 pH Buffer For Cross Link Frac Fluids

Product Features

- Alkaline Buffer to Adjust pH to 8.0 – 10.0
- Economical Load Rate, 1 gbt = ~ pH 9.0
- Excellent for Borate Cross Linked Gels
- Easy to Apply Liquid

Description

SP-905 is a liquid alkaline buffer designed for application in pH buffering of guar and modified guar cross linked fracturing fluids. The product is recommended for use with borate cross linked gels at temperatures up to 180°F. The product may be used at temperatures in excess of 180°F, but an increased enzyme breaker load rate will be required. **SP-905** load rates can be altered to provide systems with a pH ranging from 8.0 to 10.0 to meet individual treatment requirements. When used in low temperature systems the **SP-905** load rate should be minimized to obtain a good cross link, without adversely affecting the performance of the liquid enzyme breaker system (pH 8.0 to 8.5).

Recommended Application

SP-905 load rates vary according to the type of cross link system being utilized, down hole temperature and the desired system pH. As a general rule, a load rate of 1 gallon of **SP-905** per 1,000 gallons of fresh water will provide a system pH of approximately 9.0. Pilot testing is strongly recommended with the individual cross linked gel system to provide the desired fluid performance and system pH.

Typical Physical Properties

Form , 70°F	Light Yellow Liquid
Density , (lbs/Gal)	8.83
Pour Point , °F	0
pH , (10% Solution)	10.5-11.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Cationic

Shipping and Handling

SP-905 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
UN1760, Corrosive Liquid, N.O.S.,**

TDS-0697

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SP-906 Liquid Borate Cross Link Agent

Product Features

- Excellent Cross Linker for Guar Based Gels
- Economical Load Rate
- Provides High Viscosity Cross Linked Gels
- Easy to Apply Liquid

Description

SP-906 is a liquid borate cross link agent designed for application in guar and modified guar fracturing fluids. The product provides convenience and flexibility in the creation and application of high viscosity cross linked with **SP-906** provide excellent suspension properties to allow maximum proppant loading with a minimal potential for down hole screen offs. This assures optimum formation permeability following the fracturing treatment to provide maximum well productivity.

Recommended Application

SP-906 is typically added "on the fly" using a calibrated liquid additive pump to provide accurate load rates. Load rates for **SP-906** vary according to the degree of cross linking and viscosity desires, but typically range from 1.5 to 2.5 gallons per 1,000 gallons of 30 to 40 lb SP-904 gel solution. Fluid pH should be adjusted to 8.0 to 9.5 prior to the addition of **SP-906**. Pilot testing is strongly recommended with the individual gel system to determine the optimum **SP-906** load rate to provide the desired fluid viscosity and performance.

Typical Physical Properties

Form , 70°F	Light Yellow Liquid
Density , (lbs/Gal)	8.83
Pour Point , °F	0
pH , (10% Solution)	10.5-11.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Cationic

Shipping and Handling

SP-906 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
Not D.O.T. Regulated**

TDS-0697

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SP-907 Liquid Enzyme Breaker

Product Features

- Excellent Enzyme Breaker For Guar Frac Fluids
- ¼ Gallon Equals 1 Pound of Dry Enzyme Breaker
- Easy to Apply Liquid
- Excellent Solubility & Hydration

Description

SP-907 is a liquid enzyme breaker concentrate designed for use in breaking guar and modified guar fracturing fluids. The product functions by enzymatically thinning the viscosity of the gel through degradation. Being a liquid, **SP-907** is much easier to handle and mix on location than dry enzyme breakers. One fourth of a gallon of **SP-907** is equivalent to 1 pound of dry enzyme breaker. The product functions extremely well in near neutral pH ranges and typically requires a higher load rate for systems with a pH in excess of 8.0.

Recommended Application

SP-907 is typically applied to the guar based fracturing fluid on a continuous basis through the blender tub as the frac fluid is being pumped down hole. Pilot testing is recommended to determine optimum usage concentrations for specific guar systems to provide the desired break rate.

The gel break data on the right is presented to provide a starting point for specific treatments. This data was generated in fresh water using 30 lbs per 1,000 gallons of **SP-904** guar gelling agent and 1 gallon per 1,000 gallons **CS-701** KCl substitute. Tests were completed at 80°F and are reported in cps.

Typical Physical Properties

Form, 70°F	Light Yellow Liquid
Density, (lbs/Gal)	8.35
Pour Point, °F	30
pH, (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble

Recommended Application (cont.)

Gel Break Data Time In Hrs	SP-904 Load Rate (g/bt)				
	0	0.125	0.25	0.375	0.5
0	20	20	20	20	20
0.5	20	17	15	12	10
1.0	20	14	12	10	8
1.5	19	13	10	8	7
2.0	19	11	8	8	6
2.5	19	9	7	6	5
3.0	19	8	6	5	4
24	19	1.5	1.5	1.5	1.5

Shipping and Handling

SP-907 is available in 1 gallon plastic containers. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

**All Containers:
Not D.O.T. Regulated**

TDS-0697

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SP-914 Iron Sequesterant/Chelant

Product Features

- High Performance Iron Sequesterant/Chelant
- Prevents Iron Precipitation During Flowback
- For Control of both Ferric and Ferrous Iron
- Compatible With All Acidizing Additives

Description

SP-914 is a highly effective iron sequesterant/chelant designed for application in acidizing and fracturing operations. The product is compatible with all commonly used acid types, such as hydrochloric, mud acid and organic acids. **SP-914** rapidly complexes with both ferrous and ferric iron generated during acidizing treatments to prevent the precipitation of iron sludges in the near well bore and well bore areas. The product is especially applicable in acidizing treatments for the removal of down hole depositions of iron sulfide. Application of **SP-914** greatly reduces the potential for acid emulsions resulting from iron sludges during acid flow back. The product is nonionic for excellent compatibility with all commonly used acidizing additives.

Recommended Application

SP-914 may be pre-mixed with the acidizing treatment, or may be mixed on the fly to meet specific treatment needs. Typical load rates for **SP-914** range from 2 to 5 gallons per 1,000 gallons of acid, depending upon the anticipated quantity of dissolved iron encountered.

Typical Physical Properties

Form , 70°F	Liquid
Density , (lbs/Gal)	10.50
Pour Point , °F	-30
pH , (10% Solution)	1.0-2.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Nonionic

Shipping and Handling

SP-914 is available in 30 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN-1760, Corrosive Liquid, N.O.S.,

TDS-0697

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SP-922 Sulfide Cracking Agent

Product Features

- Effective Control of Sulfide Stress Cracking
- Non-Surface Active, Water Soluble
- Rapid Reaction For Optimum Performance
- For HCl, HF, Mud & Organic Acids

Description

SP-922 is a highly concentrated, water soluble sulfide cracking agent designed for application in acidizing treatments. The product rapidly complexes with hydrogen sulfide generated by the acidizing of iron sulfides to control sulfide stress cracking and sulfide corrosion of down hole and surface equipment. **SP-922** is mildly cationic and non-surface active to provide maximum compatibility with acid corrosion inhibitors and other nonionic and cationic treating systems. While designed for use as a sulfide cracking agent during acidizing treatments, **SP-922** will remove hydrogen sulfide from any wet gas or aqueous stream.

Recommended Application

SP-922 is most commonly pre-mixed into the acidizing treatment prior to pumping down hole. Typical load rates range from 1 to 3 gallons of **SP-922** per 1,000 gallons of acidizing treatment. Pilot testing is recommended to assure compatibility with specific treating systems and to optimize load rates for individual treatment needs. When specific hydrogen sulfide concentrations are known the following calculations may be used to determine optimum loading of **SP-922**.

Gallons of SP-922 In Liquid =
Bbls Fluid x H₂S (ppm) x 0.00014

Gallons of SP-922 In Gas Stream =
Gas Volume (MMCF) x H₂S (ppm) x 0.0243

Typical Physical Properties

Form, 70°F	Liquid
Density, (lbs/Gal)	9.59
Pour Point, °F	-20
pH, (10% Solution)	9.5-11.0
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Cationic

Shipping and Handling

SP-922 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

Not D.O.T. Regulated

TDS-0697

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SP-947 Immiscible Defoamer/Antifoam

Product Features

- Broad Spectrum Defoamer/Antifoam
- Highly Effective Antifoam Properties
- For Cementing, Acidizing & Stimulation
- Excellent for Chemical Cleaning Operations

Description

SP-947 is a water immiscible defoamer designed for use in fluid systems where foam prevention or dissipation is needed. The product finds application in acidizing, stimulation, chemical cleaning and cementing operations. In these applications **SP-947** effectively breaks the bubble structure of both polyhedron and sphere foams, allowing the entrained gas to be released from the treating system. Being water immiscible, **SP-947** remains separate from the aqueous based system to function as an antifoam to prevent the gas phase from become re-entrained in the treating fluids.

Recommended Application

Use concentrations of **SP-947** vary depending on the type of application and the severity of the foaming problem. In acidizing, stimulation and chemical cleaning applications **SP-947** is typically applied at a rate of 0.25 to 1.5 gallons per 1,000 gallons of fluid. In cementing operations **SP-947** is typically applied at load rates of 0.1% BWOC. Pilot testing is recommended to determine optimum treating concentrations for the specific treatment system.

Typical Physical Properties

Form, 70°F	Clear Liquid
Density, (lbs/Gal)	7.25
Pour Point, °F	0
pH, (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Immiscible
15% HCl	Immiscible
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

SP-947 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

Not D.O.T. Regulated

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Description

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Recommended Application

Use concentrations of **SP-947** vary depending on the type of application and the severity of the foaming problem. In acidizing, stimulation and chemical cleaning applications **SP-947** is typically applied at a rate of 0.25 to 1.5 gallons per 1,000 gallons of fluid. In cementing operations **SP-947** is typically applied at load rates of 0.1% BWOC. Pilot testing is recommended to determine optimum treating concentrations for the specific treatment system.

Typical Physical Properties

Form , 70°F	Clear Liquid
Density , (lbs/Gal)	7.25
Pour Point , °F	0
pH , (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Immiscible
15% HCl	Immiscible
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

SP-947 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

Not D.O.T. Regulated

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SP-980 Acetic Acid

Product Features

- Winterized Acetic Acid
- May Be Used Alone or With Other Acids
- Easy to Apply Liquid
- Functions as Iron Chelation Agent

Description

SP-980 is a freeze point protected solution of acetic acid designed for application in acidizing and fracturing operations. Organic acids, such as **SP-980** may be used alone or blended with stronger mineral acids such as HCl and HF. When applied alone **SP-980** provides a slower reacting acid treatment that gives extended and deeper penetration into the formation with live acid. **SP-980** is also much less corrosive than mineral acids and will not damage chrome plating. A 10% solution of **SP-980** will dissolve as much limestone as 6% HCl. The product may also be used in combination with HCl or HF to allow deeper penetration and provide unique etching properties with some formations. The acid reaction time with mineral acids blended with **SP-980** may be extended as much as 40 times verses that of straight mineral acid. The addition of **SP-980** also provides iron chelation during acidizing treatments to prevent the precipitation of iron sludges in the near well bore areas.

Recommended Application

SP-980 may be applied at full concentration, or as an additive to mineral acid treatments. When applied as an additive to HCl or HF acid treatments **SP-980** load rates typically range from 5 to 10 gallons per 1,000 gallons of acid to provide acid retardation and iron chelation. Pilot testing is strongly recommended with the individual acid system to determine the optimum **SP-980** load rate to provide the desired performance.

Typical Physical Properties

Form , 70°F	Clear Liquid
Density , (lbs/Gal)	8.68
Pour Point , °F	+10
pH , (10% Solution)	1.0-1.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Insoluble
Ionic Charge	Cationic

Shipping and Handling

SP-980 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN1993, Flammable Liquid, N.O.S.,

TDS-0697

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SR-400 Hydrocarbon Mitigation Surfactant

Product Features

- Highly Effective Mitigation Surfactant
- Non-Flammable
- Non-Corrosive
- Biodegradable

Description

SR-400 is a hydrocarbon mitigation surfactant designed for use in a wide variety of applications. The product performs as a hydrocarbon and paraffin dispersant, emulsifier, degreaser and cleaner. When applied in a water solution **SR-400** disperses spilled or discharged hydrocarbons into extremely small molecules that are emulsified into water external, hydrocarbon internal microscopic particles. This emulsification process not only removes the hydrocarbons from the surface, but encapsulates them to prevent further agglomeration and redeposition. This emulsification process also provides an oxygen rich encapsulation fluid that allows for accelerated biodegradation of the removed hydrocarbons. **SR-400** is effective in the mitigation of gasoline, xylene, toluene, petroleum distillates, kerosene, diesel, motor oil and crude oils. The product finds application in surface and subsurface storage tank cleaning, spill clean ups, soil remediation, bioremediation and a variety of other specialized applications. **SR-400** has been determined to be environmentally friendly and biodegradable.

Recommended Application

SR-400 is typically applied by dilution in water prior to application. Usage rates typically range from 2 to 6% by volume in water. Pilot testing is recommended to determine the optimum treating concentration for specific cleaning operations.

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Typical Physical Properties

Form, 70°F	Liquid
Density, (lbs/Gal)	7.60
Pour Point, °F	-40
pH, (10% Solution)	8.0-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

SR-400 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Drums:

Not D.O.T. Regulated

Totes & Bulk:

NA1993, Combustible Liquid, N.O.S.,



SR-401 Wetting Agent/ Surface Tension Reducer

Product Features

- Water Soluble Nonionic Surface Tension Reducer
- For Acidizing and Stimulation Treatments
- Excellent Compatibility with Most Additives
- Functions as Economical Non-Emulsifier

Description

SR-401 is a nonionic water soluble surface tension reducer designed for a application in acidizing, well stimulation, and fracturing operations. When applied in acidizing applications the product disperses oils and sludge to provide maximum treatment penetration. **SR-401** also functions to effectively break water blocks and prevent or remove crude oil in water or acid emulsions. **SR-401** may also be used in the spearhead of acidizing and fracturing treatments to lower the breakdown pressures and minimize the possibility of forming water or acid/oil emulsions.

Recommended Application

In acidizing treatments **SR-401** is typically applied to the acid during loading operations at rates of 2 to 5 gallons per thousand gallons of acid. When applied in matrix squeeze treatments **SR-401** is mixed in water brine or alcohol at a load rate of 1 to 2 gallons per barrel of fluid.

Specific load rates vary according to the type of treatment being performed, emulsifying characteristics of the oil encountered in the formation, the treating fluid, and the quantity of solids generated during acidizing. Pilot testing is recommended with the test fluids to determine the optimum usage rates for specific treatments.

Typical Physical Properties

Form, 70°F	Clear Liquid
Density, (lbs/Gal)	8.30
Pour Point, °F	-30
pH, (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

SR-401 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

All Containers:

UN1993, Flammable Liquid, N.O.S.

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SR-404 Load Recovery/Foaming Agent

Product Features

- Broad Spectrum Nonionic Load Recovery/Foaming Agent
- For Fresh Water, Brines, Acids & Cross Link Systems
- Produces Stable, High Quality Foam

Description

SR-404 is a nonionic/Zwitterionic formulation of foaming agents and surfactants designed to produce high quality, stable foam and interfacial tension reduction under a wide variety of field conditions. The product is recommended for use in foam fracturing, foam acidizing, acid diverting, loan recovery, water wetting and removal of formation fines during well clean outs. **SR-404** provides excellent performance in fresh water, KCl water, field brines, hydrochloric acids and sulfuric acids. The product provides excellent performance at temperatures up to 475°F. Systems containing **SR-404** typically produce foam qualities in excess of 80% with liquid volume fractions below 0.20. The use of **SR-404** greatly enhances treatment flow back, reduces swabbing time considerably and often eliminates it altogether.

Recommended Application

SR-404 may be applied by either batch treatment into the treating system, or mixed "on the fly". Typical load rates range from 2 to 10 gallons per thousand gallons of fluid depending on the treatment type and the desired surface tension reduction. Pilot testing is recommended to determine the optimum product load rate for the desired performance.

Typical Physical Properties

Form , 70°F	Light Yellow Liquid
Density , (lbs/Gal)	8.92
Pour Point , °F	-20
pH , (10% Solution)	7.5-8.5
Solubility	
Fresh Water	Soluble
15% HCl	Soluble
Hydrocarbon	Dispersible
Ionic Charge	Nonionic

Shipping and Handling

SR-404 is available in 55 gallon drums, tote tanks and bulk tank wagons. As with any industrial chemical, keep out of reach of children and avoid prolonged contact with skin and eyes. In case of skin or eye contact, flush the exposed area with copious amounts of water. A material safety data sheet outlining proper handling of this product is available upon request, or will be forwarded upon the purchase of the product.

Drums & Pails

Not D.O.T. Regulated

Totes & Bulk

NA1993, Combustible Liquid, N.O.S.,

TDS-0697

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