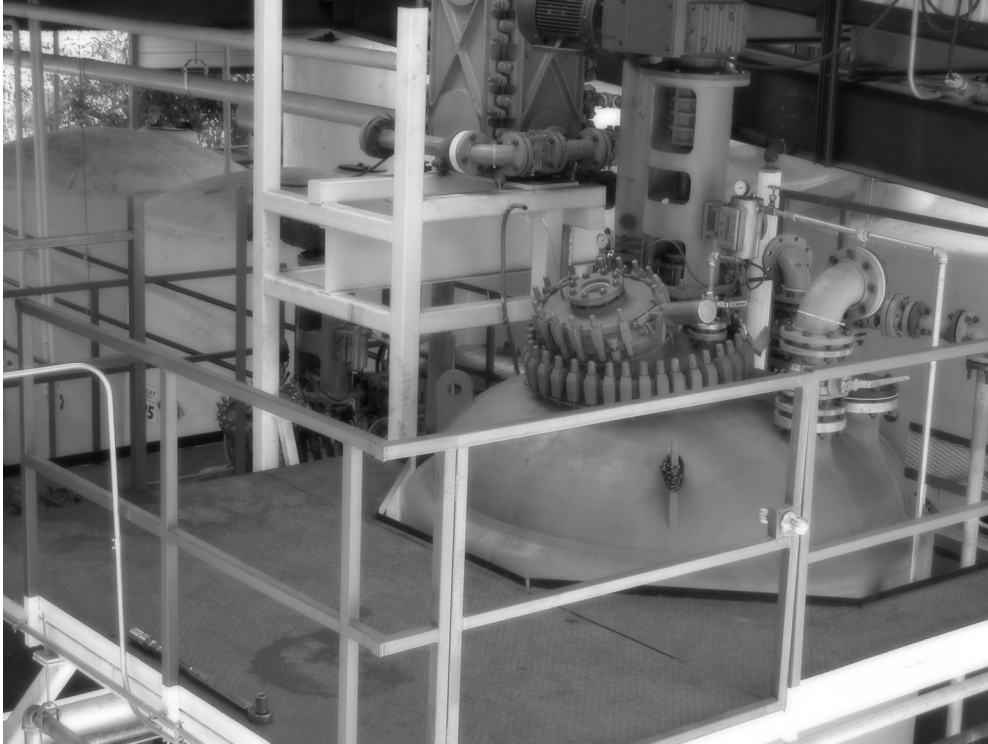




# Conlen Surfactant Technology

Specialty Chemical Manufacturing, Marketing, & Distribution



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Scale Inhibitor Series - Phosphonates



# Conlen Surfactant Technology

Specialty Chemical Manufacturing, Marketing, & Distribution

CST-6220	Scale / Corrosion Inhibitor	Oil soluble amino phosphate ester
CST-6287	Scale Inhibitor Intermediate	TEA phosphate ester (Acid)
CST-6289	Scale Inhibitor Intermediate	TEA phosphate ester (Acid)
CST-6294	Scale Inhibitor Intermediate	Sodium salt of phosphate ester
CST-6701	Scale Inhibitor / Dispersant	Ammonium salt solution
CST-6820	Surface Tension Reducer	Aqueous mixed nonionic surfactants in Cellosolve
CST-68421	Fe Chelant Scale Inhibitor Intermediate	Acid phosphonate (BIS)
CST-68433	Nonionic Micelle Solution	Mixture of glycols, glycol ethers, nonionic surfactants, and esters
CST-68441	Fe Chelant Scale Inhibitor Intermediate	Na salt of CST-68421
CST-68461	Fe Chelant Scale Inhibitor Intermediate	Acid phosphonate (Tetra), ether amine
CST-68481	Fe Chelant Scale Inhibitor Intermediate	Na salt of CST-68461
CST-68521	Fe, Ca, Mg, Sr, Ba, SO <sub>4</sub> , and CO <sub>3</sub> Scale Inhibitor Intermediate	NH <sub>3</sub> salt of CST-68421
CST-68561	Fe, Ca, Mg, Sr, Ba, SO <sub>4</sub> , and CO <sub>3</sub> Scale Inhibitor Intermediate	NH <sub>3</sub> salt of CST-68461
CST-6906	Anionic Surfactant, Scale Dispersant	NP6 Phosphate ester
CST-6909	Anionic Surfactant, Scale Dispersant	NP9 Phosphate ester

Scale Inhibitor Series - Phosphonates



# Conlen Surfactant Technology

Specialty Chemical Manufacturing, Marketing, & Distribution

The CST Phosphonates are highly effective in forming combination corrosion/scale/surfactant products that exhibit extremely high chelating and dispersion effects.

These are highly anionic and are compatible with most fracturing, surfactants, biocides, and cross-linked water systems.

CST's high calcium tolerant free acids (68421, 68461) and their salts of origin (68441, 68521, 68481, 68561) are powerful sequesterants with threshold inhibiting properties.

What separates CST phosphonates from all the rest? Most phosphonic acids and their salts will plateau where precipitation occurs or they act as a descalant rather than a scale protectant.

They also are affected by high levels of iron, especially Fe III, ferric iron.

EDTA is a powerful sequesterant but displays no threshold inhibiting properties.

Each product in this series can be used in their concentrated form or can be diluted with water or water and one of the following: methanol, ethylene glycol, propylene glycol, glycerin, or triethylene glycol.

Typical concentrations will begin as low as 1-5 ppm and can be used up to thousands of ppm.

Free acids 68421 and 68461 are extremely tolerant to calcium, magnesium, strontium, and barium saturation levels. Both contain the remnant chlorides from their hydrochloric acid catalysts.

The 68421 free acid and the neutralized salts of this acid, 68441- Na (pH = 4) and 68521 - NH<sub>4</sub> (pH = 7) are hydroxyl amines, polyethoxylene, methyl phosphonic acids, commonly called bis or di-phosphonate.

The 68461 free acid and the neutralized salts of this acid, 68481- Na (pH = 4) and 68561- NH<sub>4</sub> (pH = 7) are polyamino polyether methylene phosphonates (PAPEMP) which are commonly called tetra methylene phosphonates. Different from other water treatment chemicals, this group can be used in higher concentrations producing better results. These materials are effective in stabilizing silica, zinc, manganese, iron (II) or iron (III).

These phosphonates find application as additives to hydrogen sulfide scavengers (H<sub>2</sub>S Scavengers) in order to aid in preventing severe precipitation of alkaline carbonate scales.

Other applications include capillary coil tubing or gas lift valve injection systems to treat down hole scale in oil and gas wells. Solutions may be at 2.5% water solution to more concentrated forms.

Scale Inhibitor Series - Phosphonates



## Physical Properties

Properties	68421	68441	68521	68461	68481	68561
Type	Acid	Na Salt	NH <sub>4</sub> Salt	Acid	Na Salt	NH <sub>4</sub> Salt
pH	<1	4.0±0.1	7.0±0.05	<1	4.0±0.1	7.0±0.05
Density, 20°C	1.2212	1.2513	1.1568	1.2224	1.2833	1.1834
lbs/gal	10.18	10.47	9.64	10.19	10.69	9.87
Pour Point, °C	-24	-27	-21	-30	-51	-30
Volumetric Activity, %	46	68	58	50	68	74
Microwave Solids, %	48	42	40-50	56	46	48
Calculated Solids, %	47	49	42	54	41	38
Chlorides, %	8.5	6.6	6.1	7.8	5.9	5.5
Activity, %	39	37	36	47	47	42
Calcium Tolerance	clear	clear	clear	clear	clear	clear
Iron Tolerance	clear	clear	clear	clear	clear	clear
PO <sub>4</sub> , %	21.7	16.93	15.63	28.49	22.1	20.6
P, %	7.07	5.52	5.1	9.3	6.99	6.54
Factor as Dequest 2000 = 1, 47.66% PO <sub>4</sub>	2.2	2.82	3.05	1.67	2.16	2.31



## CST-6040 Scale Inhibitor Intermediate

### Generic Description

CST-6040 is an acid mass phosphonate.

### General Information

CST-6040 is a scale inhibitor intermediate designed for use in formulating scale control products for application in brine systems. The product may be formulated alone for squeeze treatment, or neutralized with caustic soda or ammonium hydroxide to meet other application needs. CST-6040 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6040 is highly effective in controlling the formation of both calcium carbonate and calcium sulfate scale. The product functions by crystal growth interruption to prevent the formation of these scales. CST-6040 is thermally stable to 300°F and provides excellent performance at elevated temperatures.

### Suggested Formulation

CST-6040 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6040 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6040 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums

### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.5
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	0.5-2.0
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

Combination corrosion/scale compounds may be formulated using CST-6040 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6040 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Shipping and Handling

CST-6040 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6040.

### UN3265, Corrosive Liquid, Acidic, Organic

TDS-0697

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## CST-6205 Scale Inhibitor Intermediate

### Generic Description

CST-6205 is an acid mass phosphonate.

### General Information

CST-6205 is a scale inhibitor intermediate designed for use in formulating scale control products for application in brine systems. The product may be formulated alone for squeeze treatment, or neutralized with caustic soda or ammonium hydroxide to meet other application needs. CST-6205 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6205 is highly effective in controlling the formation of both calcium carbonate and calcium sulfate scale. The product functions by crystal growth interruption to prevent the formation of these scales. CST-6205 is thermally stable to 300°F and provides excellent performance at elevated temperatures.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6205 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

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### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.9
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	0.5-2.0
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

CST-6205 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6205 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6205 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums.

Combination corrosion/scale compounds may be formulated using CST-6205 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-6205 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6205.

**UN3265, Corrosive Liquid, Acidic, Organic**



## CST-6205 Scale Inhibitor Intermediate

### Generic Description

CST-6205 is an acid mass phosphonate.

### General Information

CST-6205 is a scale inhibitor intermediate designed for use in formulating scale control products for application in brine systems. The product may be formulated alone for squeeze treatment, or neutralized with caustic soda or ammonium hydroxide to meet other application needs. CST-6205 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6205 is highly effective in controlling the formation of both calcium carbonate and calcium sulfate scale. The product functions by crystal growth interruption to prevent the formation of these scales. CST-6205 is thermally stable to 300°F and provides excellent performance at elevated temperatures.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6205 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

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### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.9
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	0.5-2.0
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

CST-6205 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6205 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6205 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums.

Combination corrosion/scale compounds may be formulated using CST-6205 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-6205 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6205.

**UN3265, Corrosive Liquid, Acidic, Organic**



## CST-6215 Scale Inhibitor Intermediate

### Generic Description

CST-6215 is an acid form phosphate ester.

### General Information

CST-6215 is a scale inhibitor intermediate designed for use in formulating products for the control of scale deposition in brine systems. The product may be formulated alone or neutralized with caustic soda or ammonium hydroxide to meet individual application requirements. CST-6215 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6215 controls the formation of both calcium carbonate and calcium sulfate scale by crystal growth interruption. The product provides good thermal stability, with effective temperatures up to 300°F.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6215 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	11.93
Flash Point, °F (TCC)	>200
Pour Point, °F	-10
pH, (10% Solution)	0.5-2.5
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

CST-6215 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6215 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6215 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums

Combination corrosion/scale compounds may be formulated using CST-6215 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-6215 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6215.

### UN3265, Corrosive Liquid, Acidic, Organic

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## CST-6220 Scale Inhibitor Concentrate

### Generic Description

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**CST-6220** is an oil soluble salt of a phosphate ester.

### General Information

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**CST-6220** is an oil soluble scale inhibitor concentrate designed for use in blending products for moderate scale control in oil fields producing systems. The product may be easily blended with aromatic naphtha or other hydrocarbon solvent to provide a field strength product. **CST-6220** is often blended with oil soluble corrosion / scale inhibitors to provide a combination corrosion / scale inhibitor for use in systems where light to moderate scale control is needed in systems producing 20% or less water.

**CST-6220** is effective in the control of calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate and mixed scales.

Formulations with **CST-6220** are not recommended for squeeze application, or in systems where temperatures exceed 195°F.

### Suggested Formulation

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**CST-6220** is typically blended with aromatic naphtha to provide a finished product. A typical blend for general purpose scale inhibitor is to blend 25 % **CST-6220** into 75% solvent. In combination corrosion/scale products **CST-6220** is added to imidazolines and other amine salts at a typical concentration of 10 to 15% by volume. The use of isopropyl alcohol is not recommended in formulations containing **CST-6220**.

Combinations corrosion / scale inhibitor formulations with **CST-6220** are especially well suited for use in producing wells producing 20% or less of water by volume. In these applications the blended product provides scale control in either continuous injection or batch treatment.

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### Typical Physical Properties

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<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	7.9
<b>Flash Point, °F (TCC)</b>	130
<b>Pour Point, °F</b>	0
<b>pH, (10% Solution)</b>	N/A
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Dispersible
High TDS Brine	Dispersible
Isopropanol	Insoluble
Xylene	Soluble

### Application Information

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For maximum effectiveness, formulations containing **CST-6220** should be continuously injected at a typical rate of 10 to 25 ppm.

Combination corrosion/inhibitor formulations with **CST-6220** are especially well suited for use in producing wells producing 20% or less of water by volume. In these applications the blended product provides scale control in either continuous injection or batch treatments.

### Shipping and Handling

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**CST-6220** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6220**.

**Bulk: NA1993, Combustible Liquid, N.O.S.**



## CST-6230 Scale Inhibitor Concentrate

### Generic Description

**CST-6230** is a sodium salt of low molecular weight polyacrylate.

### General Information

**CST-6230** is a partially neutralized scale inhibitor concentrate designed for use in blending scale inhibitors for use in oil field producing and water handling systems. The product is easily blended with water and ethylene glycol to provide a highly effective field strength product, used for squeeze treatment or continuous injection. **CST-6230** may also be blended with water soluble corrosion inhibitors to provide combination corrosion / inhibitor products. **CST-6230** provides excellent solubility in heavy brines, including high calcium and high TDS fluids. The product effectively controls the formation of calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate and mixed scales at concentrations as low as 2.0 ppm. The product is especially well suited for applications in water supply, water handling and water injection systems. **CST-6230** is the product of choice when system mechanics dictate the commingling of incompatible waters. In these applications **CST-6230** should be continuously injected into the water containing the cation of the scale formation problem. Formulations with **CST-6230** are not recommended for squeeze application, or in systems where temperatures exceed 195°F.

### Application Information

For maximum effectiveness formulations containing **CST-6230** should be continuously injected at a typical rate of 10 to 25 ppm. Formulations with **CST-6230** are especially well suited for use in water handling and injection systems or other systems or other systems where incompatible waters are commingled. Injection points should be selected to assure maximum mixing of the product into the fluid stream before commingling with other waters.

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### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	12.2
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °F</b>	0
<b>pH, (10% Solution)</b>	4.0-5.0
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

**CST-6230** is typically blended with water and ethylene glycol to provide a finished product. A typical blend for a general purpose scale inhibitor is to blend 25 % solution of **CST-6230** into 75% water and ethylene glycol. The concentration of ethylene glycol used will vary depending upon the freeze point required, but typically ranges from 10 to 20 percent per drum.

Combination corrosion / scale compounds may be formulated using 5 to 15 gallons of **CST-6230** and similar quantities of a water soluble corrosion inhibitors. Blend ratios should be will vary depending upon the severity of the individual corrosion and scale deposition problems.

### Shipping and Handling

**CST-6230** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6230**.

### Non-Regulated / Non-Hazardous



## CST-6235 Scale Inhibitor Concentrate

### Generic Description

**CST-6235** is a sodium salt of low molecular weight polyacrylate.

### General Information

**CST-6235** is a partially neutralized scale inhibitor concentrate designed for use in blending scale inhibitors for use in oil field producing and water handling systems. The product is easily blended with water and ethylene glycol to provide a highly effective field strength product without the problems associated with acid / base neutralizations. **CST-6235** may also be blended with water soluble corrosion inhibitors to provide combination corrosion / inhibitor products.

**CST-6235** effectively controls the formation of calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate and mixed scales. The product provides good solubility in most brines, but, like all polyacrylates, solubility should be confirmed in high calcium and high TDS fluids. In these applications, **CST-6235** may be blended with **CST-6205** or **CST-6225** to increase solubility.

Formulations with **CST-6235** may be applied by either continuous or squeeze applications. Blends of **CST-6235** with either **CST-6205** or **CST-6225** have proven to be highly effective, broad spectrum products for use in the control of all common oil field scale types.

### Application Information

Formulations containing **CST-6235** should be continuously injected at a typical rate of 10 to 25 ppm or squeezed into the formation.

In squeeze applications, 1 to 3 drums of formulated **CST-6235** is typically pre-mixed in 5 to 15 barrels of lease water, pumped down hole and displaced with 50 to 200 barrels of clean lease water.

TDS-0697

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### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	10.8
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °F</b>	40
<b>pH, (10% Solution)</b>	4.5-5.5
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

**CST-6235** is typically blended with water and ethylene glycol to provide a finished product. A typical blend for a general purpose scale inhibitor is to blend 25 % solution of **CST-6235** into 75% water and ethylene glycol. The concentration of ethylene glycol used will vary depending upon the freeze point required, but typically ranges from 10 to 20 percent per drum.

When **CST-6235** is blended with other scale inhibitors, the ratios vary according to the individual needs of the formulator. Additional neutralization can be provided with liquid caustic soda. All blends with **CST-6235** should be stored in either lines steel or plastic drums.

### Shipping and Handling

**CST-6235** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6235**.

### Non-Regulated / Non-Hazardous



## CST-6287 Scale Inhibitor Intermediate

### Generic Description

CST-6287 is an acid form phosphate ester.

### General Information

CST-6287 is a scale inhibitor intermediate designed for use in formulating products for the control of scale deposition in brine systems. The product may be formulated alone or neutralized with caustic soda or ammonium hydroxide to meet individual application requirements. CST-6287 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6287 controls the formation of both calcium carbonate and calcium sulfate scale by crystal growth interruption. The product provides good thermal stability, with effective temperatures up to 300°F.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6287 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

TDS-0697

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### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.0 – 12.0
Flash Point, °F (TCC)	>200
Pour Point, °F	-10
pH, (10% Solution)	0.5-2.5
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

CST-6287 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6287 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6287 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums

Combination corrosion/scale compounds may be formulated using CST-6287 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-6287 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6287.

**UN3265, Corrosive Liquid, Acidic, Organic**



## CST-6289 Scale Inhibitor Intermediate

### Generic Description

**CST-6289** is an acid form phosphate ester.

### General Information

**CST-6289** is a partially neutralized sodium salt triethanolamine phosphate ester inhibitor, produced from a reaction between triethanolamine and polyphosphoric acid.

### Suggested Formulation

**CST-6289** may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% **CST-6289** in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of **CST-6289** should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums

Combination corrosion/scale compounds may be formulated using **CST-6289** and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	10.0 – 11.6
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °F</b>	-10
<b>pH, (10% H<sub>2</sub>O)</b>	3.5-5.5
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Application Information

**CST-6289** is used to prepare water soluble scale inhibitors for control of calcium, barium, strontium or iron scales for cooling tower, boiler, waterfloods or drilling system applications. **CST-6289** finds use as a dispersing agent and hydrotrope in hard surface, solution and clean-in-place cleaning formulations, and as an emulsifier in personal care formulations. **CST-6289** is a concentrate that can be diluted in water/alcohol or water/glycol mixtures for low temperature stability.

### Shipping and Handling

**CST-6289** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6289**.

**UN3265, Corrosive Liquid, Acidic, Organic**

TDS-0697

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## CST-6294 Scale Inhibitor Intermediate

### Generic Description

CST-6294 is an acid form phosphate ester.

### General Information

CST-6294 is a scale inhibitor intermediate designed for use in formulating products for the control of scale deposition in brine systems. The product may be formulated alone or neutralized with caustic soda or ammonium hydroxide to meet individual application requirements. CST-6294 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-6294 controls the formation of both calcium carbonate and calcium sulfate scale by crystal growth interruption. The product provides good thermal stability, with effective temperatures up to 300°F.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-6294 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	12.90
Flash Point, °F (TCC)	>200
Pour Point, °F	-30
pH, (10% Solution)	4.5-5.0
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
Isopropanol	Insoluble
Heavy Aromatic Solvents	Insoluble

### Suggested Formulation

CST-6294 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-6294 in 75% water is recommended. This product should be stored in a plastic drum.

For general purpose product for continuous application, 10 to 12 gallons of CST-6294 should be blended in water and ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums

Combination corrosion/scale compounds may be formulated using CST-6294 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-6294 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-6294.

### Non-Regulated / Non-Hazardous

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## CST-6701 Salt Inhibitor

### General Description

**CST-6701** is an aqueous solution of a tri nitro ammonium salt used to prevent precipitation of sodium chloride crystals from high chloride brines. **CST-6701** eliminates salt buildup on tubular goods, meter runs, chokes, and additional equipment.

### Application

**CST-6701** controls salt deposition over the wide temperature and pressure ranges encountered from the bottom of the hole to the surface in producing wells. **CST-6701** changes crystal growth from symmetrical, dendritic type. This prevents salt crystals from accreting to form a mass large enough to precipitate.

**CST-6701** is a unique blend which removes salt deposits by allowing treatment fluids to carry very high salt saturation. That is, salt water can even be used to dissolve more salt. Normally produced waters are saturated with salt for a given pressure and temperature. Where any kind of temperature drop is encountered salt deposits start to form. Fresh water treatments alone are not always effective because a large amount of salt dissolves into the treatment before it reaches the buildup.

**CST-6701** allows brine to carry up to 35-40% salt.

**CST-6701** works with dispersant and scale treatments, such as phosphonates and phosphate esters. It is generally compatible with an anionic chemicals and foamers.

**CST-6701** is excellent in capillary coil tubing blends with foamers, corrosion and scale inhibitor pills.

### Typical Physical Properties

Appearance	Hazy Liquid
Density	9.25 -9.5 lbs/gal
Flash Point, °F	> 200
pH (neat)	4.5 – 7.5
Solubility in Water	Complete

### Usage

In drilling applications, **CST-6701** helps prevent washouts when utilizing high brines. Saturated salt brines in the mud tanks will pick up more salt at higher bottom hole temperatures.

For producing gas wells, a continuous injection of 500 to 2,000 ppm of produced water volume greatly reduces and/or eliminates frequency of salting in the well. This helps to reduce the volume of fresh water injection.

A batch (squeeze treatment can also be performed on producing gas wells by injecting 2-5%, based on volume of produced water, with 10 bbls of fresh water through coiled tubing. A foamer can also be added at 5 gallons/100 gallons fresh water for a combination cleaning and well unloading treatment.

Dosage requirements will vary with brine, temperature changes, solids concentration, pH and equilibrium time.

### Shipping and Handling

**CST-6701** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6701**.

### Non-Regulated / Non-Hazardous

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## CST-6820 Surface Tension Reducer

### Generic Description

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**CST-6820** is an aqueous mixed nonionic surfactants in Cellosolve.

### General Information

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**CST-6820** is a 100% active silicone polyether surfactant that provides exceptional wetting performance on many hydrophobic substrates.

#### Features and Benefits

- Nonionic for maximum compatibility
- Provides extremely low surface tension and rapid water-wetting characteristics
- Very efficient wetting power

### Suggested Use

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**CST-6820** can be used to enhance the spreading and penetrating properties of adjuvants and emulsifiers used in agricultural chemical applications. As little as 0.1% by weight of water is capable of producing a surface tension as low as 22 dynes/cm. The presence of additional surfactants, high or low pH and other components can affect the surface tension and The information presented is correct to the best of our evaluate **CST-6820** prior to commercial use to confirm compatibility, system stability and lack of implied other than the quality of the product phytotoxicity.

### Typical Physical Properties

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<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	8.5 – 10.5
<b>Flash Point, °F (TCC)</b>	>200
<b>pH, (1% in Water)</b>	7.5

### Application Information

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- Pesticidal formulations
- Additive for spray tank adjuvants and crop oils
- Water based solutions where reduced surface tension, improved wetting and spreading characteristics are required

### Shipping and Handling

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**CST-6820** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6820**.

### Non-Regulated / Non-Hazardous

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## CST-68421 Scale Inhibitor Intermediate

### Generic Description

CST-68421 is a hydroxyl amino phosphonic acid.

### General Information

CST-68421 is a scale inhibitor intermediate designed for use in formulating scale control products for application in brine systems. The product may be formulated alone for squeeze treatment, or neutralized with caustic soda or ammonium hydroxide to meet other application needs.

CST-68421 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor.

CST-68421 is highly effective in controlling the formation of both calcium carbonate and calcium sulfate scale. The product functions by crystal growth interruption to prevent the formation of these scales. CST-68421 is thermally stable to 300°F and provides excellent performance at elevated temperatures. CST-68421 is effective against iron scales, barium, and strontium sulfates.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-68421 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

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### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.18
Flash Point, °F (TCC)	>200
Pour Point, °F	-24
pH	0.5-2.0
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble
Frac Fluids	Compatible
High Calcium Brine	Soluble
Fe Solutions	Clear

### Suggested Formulation

CST-68421 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-68421 in 75% water is recommended. This product should be stored in a plastic drum. For general purpose product for continuous application, 10 to 12 gallons of CST-68421 should be blended in water and methanol or ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums. Combination corrosion/scale compounds may be formulated using CST-68421 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-68421 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-68421.

**UN3265, Corrosive Liquid, Acidic, Organic**



## CST-68443 Nonionic Micelle Solution

### General Description

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**CST-68443** is a complex blend of glycol ethers, nonionic surfactants, and esters.

### General Information

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**CST-68443** mixture of solvents and surfactants is highly effective at dissolving, emulsifying, and dispersing oily surfaces. This product severely water wets solids by releasing oil from particulates. **CST-68443** is also used to clean oily surfaces from light to heavy oil presence.

### Application Information

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**CST-68443** is used as a concentrate behind water brine or sea water spacer and followed by a THERMAWASH spacer. The higher activity decreases pumping time, water required, and amount of surface equipment required. Oil rises to the surface of the water based carrier for ease of removal. Oil free solids are dropped allowing for the minimum waste disposal.

### Typical Physical Properties

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<b>Appearance</b>	Liquid
<b>Density</b> , lbs/gal	8.5 -9.0
<b>Flash Point</b> , °F	147
<b>Pour Point</b> , °F	- 10

### Shipping and Handling

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**CST-68443** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-68443**

### Non-Regulated / Non-Hazardous

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## CST-68441 Scale Inhibitor Concentrate

### Generic Description

**CST-68441** the sodium salt of a hydroxy amino phosphonic acid.

### General Information

**CST-68441** is a scale inhibitor concentrate designed for use in blending scale control products for application in oil field brine systems. The product may be used for squeeze treatment or continuous injection. **CST-68441** may also be blended with water soluble corrosion inhibitors to provide a combination corrosion / inhibitor. Formulated products made from **CST-68441** are highly effective in controlling the formation of both carbonate, and sulfate scale. The product interrupts the nucleation and crystal growth process to prevent the formation of these scales. **CST-68441** is thermally stable to 300°F and provides excellent performance at elevated temperatures. **CST-68441** provides a broad spectrum scale inhibitor to meet a wide variety of application needs. This blended product provides control of all common oil field scale types, good solubility and excellent thermal stability. **CST-68441** is especially effective against iron scales, barium, and strontium sulfates.

### Suggested Formulation

**CST-68441** is typically blended with water and methanol or ethylene glycol to provide a field strength product. A 25 % solution of **CST-68441** in 75% water and methanol or ethylene glycol is suggested as a starting formulation. The concentration of methanol or ethylene glycol used will vary depending upon the desired finished product freeze point, but typically ranges from 10 to 20 percent per drum. Can be used in neat form. **CST-68441** is a broad spectrum, general purpose scale inhibitor can be provided by blending 15% of **CST-68441** with 15% polyacrylate in water in methanol or ethylene glycol. Additional neutralization can be provided with liquid caustic soda, if required.

### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/gal)</b>	10.35 – 10.5
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °C</b>	-27
<b>pH, neat</b>	4.0
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble
Frac Fluids	Compatible
High Calcium Brine	Soluble
Fe Solutions	Clears

### Application Information

In squeeze applications, 1 to 3 drums of the formulated **CST-68441** are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of clean lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residue can be monitored with a phosphate analysis procedure. In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Shipping and Handling

All blends with **CST-68441** should be stored in either lined steel or plastic drums. **CST-68441** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-68441**.

**US: Non-Regulated / Non-Hazardous**

**Canada: UN1760, Corrosive Liquid, N.O.S.**

TDS-0697

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## CST-68461 Scale Inhibitor Intermediate

### Generic Description

CST-68461 is an ether amino phosphonic acid.

### General Information

CST-68461 is a scale inhibitor intermediate designed for use in formulating scale control products for application in brine systems. The product may be formulated alone for squeeze treatment, or neutralized with caustic soda or ammonium hydroxide to meet other application needs. CST-68461 may also be blended with quaternary ammonium chlorides, ethoxylated amines or other water soluble corrosion inhibitors to provide a combination corrosion/ scale inhibitor. CST-68461 is highly effective in controlling the formation of both calcium carbonate and calcium sulfate scale. The product functions by crystal growth interruption to prevent the formation of these scales. CST-68461 is thermally stable to 300°F and provides excellent performance at elevated temperatures. CST-68461 is effective against some iron scales, barium, and strontium sulfates.

### Application Information

In squeeze applications, 1 to 3 drums of the formulated CST-68461 are typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	10.40 – 10.50
Flash Point, °F (TCC)	>200
Pour Point, °C	-30
pH,	<1
Ionic Charge	Anionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble
Frac Fluids	Compatible
High Calcium Brine	Soluble
Fe Solutions	Clear

### Suggested Formulation

CST-68461 may be formulated in a variety of ways to meet individual application needs. For squeeze treatment a blend of 25% CST-68461 in 75% water is recommended. This product should be stored in a plastic drum. For general purpose product for continuous application, 10 to 12 gallons of CST-68461 should be blended in water and methanol or ethylene glycol. The pH should be adjusted to the desired level, typically 7.5 to 8.0, with either caustic soda or ammonium hydroxide. This neutralization should be performed slowly, as the reaction does produce heat. It should be noted that the higher pH of the finished product, the lower the solubility characteristics in high calcium brines. Formulations with a pH ranges below 5.0 should only be stored in plastic drums. Combination corrosion/scale compounds may be formulated using CST-68461 and water soluble corrosion inhibitors. These finished products should be neutralized with either caustic soda or high molecular weight amines.

### Shipping and Handling

CST-68461 is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 CST-68461.

### UN3265, Corrosive Liquid, Acidic, Organic

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## CST-68481 Scale Inhibitor Concentrate

### Generic Description

**CST-68481** is the sodium salt of an ether amino phosphonic acid.

### General Information

**CST-68481** is a scale inhibitor concentrate designed for use in blending scale control product for application in oil field brine systems. The product may be used for squeeze treatment or continuous injection. **CST-68481** may also be blended with water soluble corrosion inhibitors to provide combination corrosion / inhibitor products. Formulated products made from **CST-68481** are highly effective in controlling the formation of both carbonate, and sulfate scale. The product interrupts the nucleation and crystal growth process to prevent the formation of these scales. **CST-68481** is thermally stable to 300°F and provides excellent performance at elevated thermal stability. **CST-68481** provides a broad spectrum scale inhibitor to meet a wide variety of application needs. This blended product provides control of all common oil field scale types, good solubility and excellent thermal stability. **CST-68481** is effective against iron scales, barium, and strontium sulfates.

### Application Information

In squeeze applications, 1 to 3 drums of formulated **CST-68481** is typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of clean lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure.

In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

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### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	10.60 – 10.80
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °C</b>	-51
<b>pH,</b>	4.0
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble
Frac Fluids	Compatible
High Calcium Brines	Soluble
Fe Solutions	Clear

### Suggested Formulation

**CST-68481** is typically blended with water and methanol or ethylene glycol to provide a field strength product. A 25 % solution of **CST-68481** into 75% water and methanol or ethylene glycol is suggested as a started formulation. The concentration of methanol or ethylene glycol used will vary depending upon the freeze point required, but typically ranges from 10 to 20 percent per drum. **CST-68481** can be used in neat form. All blends with **CST-68481** should be stored in either lined steel or plastic drums. A combination corrosion/scale compounds may be formulated using **CST-68481** and water soluble corrosion inhibitors. These blend ratios will vary depending upon the severity of the individual corrosion and scale deposition problems.

### Shipping and Handling

**CST-68481** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-68481**.

### Non-Regulated / Non-Hazardous



## CST-68521 Scale Inhibitor Concentrate

### Generic Description

**CST-68521** is the ammonium salt of a hydroxy amino phosphonic acid.

### General Information

**CST-68521** is a scale inhibitor concentrate designed for use in blending scale control product for application in oil field brine systems. The product may be used for squeeze treatment or continuous injection. **CST-68521** may also be blended with water soluble corrosion inhibitors to provide combination corrosion / inhibitor products. Formulated products made from **CST-68521** are highly effective in controlling the formation of both carbonate, and sulfate scale. The product interrupts the nucleation and crystal growth process to prevent the formation of these scales. **CST-68521** is thermally stable to 300°F and provides excellent performance at elevated thermal stability. **CST-68521** provides a broad spectrum scale inhibitor to meet a wide variety of application needs. This blended product provides control of all common oil field scale types, good solubility and excellent thermal stability. **CST-68521** is effective in controlling some iron scales, barium, and strontium sulfates.

### Application Information

In squeeze applications, 1 to 3 drums of formulated **CST-68521** is typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of clean lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure. In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	9.58 – 9.82
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °C</b>	-21
<b>pH, (neat)</b>	6.0 – 7.0
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble
Frac Fluids	Compatible
High Calcium Brine	Soluble
Fe Solutions	Clears

### Suggested Formulation

**CST-68521** is typically blended with water and methanol or ethylene glycol to provide a field strength product. A 25 % solution of **CST-68521** into 75% water and methanol or ethylene glycol is suggested as a started formulation. The concentration of methanol or ethylene glycol used will vary depending upon the freeze point required, but typically ranges from 10 to 20 percent per drum. **CST-68521** can be used in neat form. Additional neutralization can be provided with liquid caustic soda, if required. All blends with **CST-68521** should be stored in either lined steel or plastic drums. Combination corrosion/scale compounds may be formulated using **CST-68521** and water soluble corrosion inhibitors. These blend ratios will vary depending upon the severity of the individual corrosion and scale deposition problems.

### Shipping and Handling

**CST-68521** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-68521**.

### Non-Regulated / Non-Hazardous

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## CST-68561 Scale Inhibitor Concentrate

### Generic Description

**CST-68561** is the ammonium salt of an ether amino phosphonic acid.

### General Information

**CST-68561** is a scale inhibitor concentrate designed for use in blending scale control product for application in oil field brine systems. The product may be used for squeeze treatment or continuous injection. **CST-68561** may also be blended with water soluble corrosion inhibitors to provide combination corrosion / inhibitor products.

Formulated products made from **CST-68561** are highly effective in controlling the formation of both carbonate, and sulfate scale. The product interrupts the nucleation and crystal growth process to prevent the formation of these scales. **CST-68561** is thermally stable to 300°F and provides excellent performance at elevated thermal stability.

**CST-68561** blended product provides control of all common oil field scale types, good solubility and excellent thermal stability. **CST-68561** is effective in controlling some iron scales, barium, and strontium sulfates.

### Application Information

In squeeze applications, 1 to 3 drums of formulated **CST-68561** is typically pre-mixed in 3 to 10 barrels of clean lease water. This chemical pill is pumped down, followed by 50 to 200 barrels of clean lease water. Pump rates should be maintained below formation fracture pressure to prevent the potential for any formation damage. The well should be shut in for 24 to 48 hours prior to returning the well to production. Chemical residuals can be monitored with a phosphate analysis procedure. In continuous injection applications, the formulated product should be injected with a chemical pump at a typical rate of 15 to 25 ppm.

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### Typical Physical Properties

<b>Form, @ 70°F</b>	Liquid
<b>Density, (lbs/Gal)</b>	9.7 - 9.9
<b>Flash Point, °F (TCC)</b>	>200
<b>Pour Point, °C</b>	-30
<b>pH, (neat)</b>	6.0 – 7.0
<b>Ionic Charge</b>	Anionic
<b>Solubility</b>	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Insoluble
Xylene	Insoluble

### Suggested Formulation

**CST-68561** is typically blended with water and ethylene glycol to provide a field strength product. A 25 % solution of **CST-68561** into 75% water and ethylene glycol is suggested as a started formulation. The concentration of ethylene glycol used will vary depending upon the freeze point required, but typically ranges from 10 to 20 percent per drum. Additional neutralization can be provided with liquid caustic soda, if required. All blends with **CST-68561** should be stored in either lined steel or plastic drums. Combination corrosion/scale compounds may be formulated using **CST-68561** and water soluble corrosion inhibitors. These blend ratios will vary depending upon the severity of the individual corrosion and scale deposition problems.

### Shipping and Handling

**CST-68561** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-68561**.

### Non-Regulated / Non-Hazardous



## CST-6906 Anionic Surfactant Scale Dispersant

### Generic Description

**CST-6906** is a NP6 phosphate ester.

### General Information

**CST-6906** is an alkylaryl complex phosphate in free acid form. This product, which is a clear, light yellow liquid, is soluble in paraffinic and aromatic solvents. **CST-6906** surfactant / scale dispersant can be converted to a salt with the addition of various amines or alkali. **CST-6906** has good electrolyte and alkali solubility and stability as it is also soluble and stable in most acids.

### Application Information

**CST-6906** finds use in the following applications:

- Hydrotrope for nonionic surfactants in high electrolyte liquids
- Coupling agent in dry cleaning solvents
- Prime surfactant in acid cleaners
- Emulsion polymerization emulsifier for acrylates
- Emulsifier, wetting agent and compatibility agent for pesticides and adjuvant formulations
- Stabilizer in pigment dispersions
- Emulsifier for metalworking fluids
- Corrosion Inhibitors

### Typical Physical Properties

<b>Form</b> , @ 70°F	Liquid
<b>Density</b> , (lbs/Gal)	9.1 – 9.5
<b>Flash Point</b> , °F (TCC)	>200
<b>Pour Point</b> , °F	17.6
<b>pH</b> , (5% aqueous)	2.5 max
<b>Solubility</b>	
Aromatic Solvents	Soluble
Most Acids	Soluble

### Shipping and Handling

**CST-6906** may be satisfactorily stored in stainless steel tanks using stainless steel pipes and pumps.. Alternately, plastic tanks and lines may be used. TEFLON elastomer is preferred for gaskets and packings in valves. For longer term stability, it is recommended that the product be stored under an inert atmosphere. Storage temperatures should be controlled to a maximum of 40 C / 104 F, heating may be required to facilitate pumping of this product in cold climates. Low pressure steam coils in storage tanks and steam tracing of transfer lines should be provided in cases where low environmental temperatures may make pumping the product difficult. In heating is necessary, tank low mixing or circulation should be provided to minimize darkening of the product.

**CST-6906** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6906**.

**UN3265, Corrosive Liquid, Acidic, Organic**

TDS-0697

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## CST-6909 Anionic Surfactant Scale Dispersant

### Generic Description

**CST-6909** is a NP9 phosphate ester.

### General Information

**CST-6909** is an alkylaryl complex phosphate in free acid form. This product, which is a clear, light yellow liquid, is soluble in paraffinic and aromatic solvents. **CST-6909** surfactant / scale dispersant can be converted to a salt with the addition of various amines or alkali. **CST-6909** has good electrolyte and alkali solubility and stability as it is also soluble and stable in most acids.

### Application Information

**CST-6909** finds use in the following applications:

- Hydrotrope for nonionic surfactants in high electrolyte liquids
- Coupling agent in dry cleaning solvents
- Prime surfactant in acid cleaners
- Emulsion polymerization emulsifier for acrylates
- Emulsifier, wetting agent and compatibility agent for pesticides and adjuvant formulations
- Stabilizer in pigment dispersions
- Emulsifier for metalworking fluids
- Corrosion Inhibitors

### Typical Physical Properties

<b>Form</b> , @ 70°F	Liquid
<b>Density</b> , (lbs/Gal)	9.1 – 9.5
<b>Flash Point</b> , °F (TCC)	>200
<b>Pour Point</b> , °F	17.6
<b>pH</b> , (5% aqueous)	2.5 max
<b>Solubility</b>	
Aromatic Solvents	Soluble
Most Acids	Soluble

### Shipping and Handling

**CST-6909** may be satisfactorily stored in stainless steel tanks using stainless steel pipes and pumps.. Alternately, plastic tanks and lines may be used. TEFLON elastomer is preferred for gaskets and packings in valves. For longer term stability, it is recommended that the product be stored under an inert atmosphere. Storage temperatures should be controlled to a maximum of 40 C / 104 F, heating may be required to facilitate pumping of this product in cold climates. Low pressure steam coils in storage tanks and steam tracing of transfer lines should be provided in cases where low environmental temperatures may make pumping the product difficult. In heating is necessary, tank low mixing or circulation should be provided to minimize darkening of the product.

**CST-6909** is available in 55 gallon drums and bulk tank wagons. As with any individual chemical, avoid prolonged contact with skin. In case of skin or eye contact, flush 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 **CST-6909**.

**UN3265, Corrosive Liquid, Acidic, Organic**

TDS-0697

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