



Conlen Surfactant Technology

Specialty Chemical Manufacturing, Marketing, & Distribution



H₂S Scavenger Series

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CST-2022 Sulfide Scavenger Concentrate	Organic, formaldehyde free hydrogen sulfide scavenger (80%) concentrate
CST-2033 Sulfide Scavenger	Thermally stable methyl amine triazine
CST-2064 Sulfide Scavenger	Blended Ethanolamine formaldehyde condensates
CST-2100 Oil Soluble H₂S Scavenger	Branched alkyl triazine (100%)
CST-2151 H₂S Scavenger	MEA formaldehyde condensate
CST-2301 H₂S Scavenger	EDA / MEA triazine
CST-2411 H₂S Scavenger	MEA balanced triazine
CST-2431 H₂S Scavenger	MEA condensate
CST-2601 Oil Soluble H₂S Scavenger	Schiff base
CST-2835 H₂S Scavenger	Scavenger plus anionic surfactant - OS

H₂S Scavenger Series



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CST H ₂ S Scavenger — Properties								
CST Product #	Active, %	Density #/gal	~ pH	Content water, %	Application			Soluble In
					Gas	Oil	Water	
2022	80	9.6	12	18	X	X	X	water
2033	45	8.3	11	55	X	X	X	water
2064	67	9.3	12	30	X	X	X	water
2100	98	7.5	11	<2	X	X	--	oil
2151	54	9.3	11	42	X	X	X	water
2301	80	9.5	12	20	X	X	X	water
2411	52	9.2	9.6	44	X	X	X	water
2431	54	9.1	12	42	X	X	X	water
2601	81	6.9	12	<1	X	X	--	oil
2835	78	8.5	9.5	8	X	X	--	oil

H₂S Scavenger Series

**HYDROGEN SULFIDE SCAVENGERS FOR:
HYDROCARBON GASES, CRUDE OIL, AND ASSOCIATED WATER SYSTEMS**

AUGUST 13TH 2010

The Hydrogen Sulfide Scavengers (H₂S Scavengers) from CST are primarily those of methylene reacted systems.

These hydrogen sulfides can be removed from the gaseous, hydrocarbon liquid, or water phases by direct treatment into the flow stream.

Also, the flow stream may purge through column known as a scrubber with fluid volume and percolate bubbles for intimate contact.

The chemical molecules can be called Schiff bases, imines, methylene bridged adducts, methylolated amines, triazines, bis-oxazolidines.

H₂S Scavenger Properties

Name	At 20° C Density		Aldehyde to Amine Ratio	active	% by weight				pH
	g/cc	#/gal			free amine	T	water	MEOH	
2022	1.14	9.6	1 to 1.08	80	4.82	74.44	18.35	0	11.5-12.5
2033	1	8.3	1	45	nil	45	55	0	10 -11.5
2064	1.12	9.3	1 to 1.13	67	5.77	67	30.22	1.83	10.5-12.0
2100	0.9	7.5	1:01	98	<1	0	<2	0	10-12
2151	1.09	9.1	1 to 1.09	53	3.56	49.32	43.29	3.38	10-11.5
2301	1.14	9.47	NA	80	NA	64.55	20.73	0	11-12
2411	1.15	9.2	1:01	52	0	52	44	4	9-9.5
2431	1.09	9.09	1 to 1.17	54	6.71	47.51	42.08	3.65	10.5-12.0
2601	0.85	7.08	ND	81	ND	0	9.6	0	10.5-12
2835	1.03	8.58	ND	76	ND	1.9	30	8	10.5-12

Typical treatment rates are 0.16 to 0.45 liters per MMSCF for line injection.

Gals/ day = 0.04 to 0.06 x MMSCFPD gas x ppm H₂S typical for towers.

Typical reaction ratio is 4:1 chemical to H₂S, up to 25 ppm. In some cases % solutions might be required.



CST-2022 Sulfide Scavenger Concentrate

Generic Description

CST-2022 is an 80% organic, formaldehyde free hydrogen sulfide scavenger concentrate. **CST-2022** is an amino triazine.

General Information

CST-2022 is an organic sulfide scavenger concentrate designed to remove hydrogen sulfide from either aqueous or hydrocarbon systems. Formulations with **CST-2022** effectively remove H₂S to provide effective sweetening of wet gas streams to assure optimum system productivity. The product may be applied in either flowline or bubble tower applications. Unlike many conventional scavengers, **CST-2022** is not adversely affected by the presence of carbon dioxide.

CST-2022 rapidly complexes with hydrogen sulfide to produce a water soluble and dispersible by product that minimizes solids deposition on system equipment. Used **CST-2022** is considered to be non-hazardous and can be injected down disposal wells.

Suggested Formulation

CST-2022 should be blended with water and alcohol to meet the desired application of the formulator. Typical field blends contain 30% **CST-2022** formulated with 10 to 15% methanol in water. Additional methanol can be added to the product to meet specific application needs. This is especially advantageous in wet gas systems where freezing is a problem.

Application Information

The suggested 30% active formulation may be injected on a continuous basis into flowline or separator of a wet gas system to remove hydrogen sulfide from gas. Injection of the formulated product through an atomizer is suggested to improve contact times and efficiency of the scavenger.

TDS-0697

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Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9.6
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	9.5 -11.0
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Soluble
Xylene	Insoluble

As **CST-2022** scavenges through the water phase, continuous injection of this product is not recommended in systems where the water content is less than 5 pounds per MMSCF. Estimated gallon use requirement of the formulated product can be determined by multiplying H₂S ppm X MMCF X 0.0243.

The suggested formulation of **CST-2022** may also be used in bubble tower applications. Typically, the bubble tower should be filled to approximately 50% full to prevent the product from being carried downline.

The efficiency of **CST-2022** will depend on factors such as contact time, pressure, temperature, mass transfer and the quantity of water present. However, as a general rule, each gallon of **CST-2022** blend will scavenge approximately 3.3 pounds of hydrogen sulfide per MMSCF are suggested.

Shipping and Handling

CST-2022 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-2022**.

Non-Regulated / Non-Hazardous



CST-2033 Hydrogen Sulfide Scavenger

Generic Description

CST-2033 is a 44-50% active thermally stable triazine solution designed as a sulfide scavenger for water.

General Information

CST-2033 can also be used as an additive to water-soluble corrosion inhibitors and surfactants to enhance the control of microorganisms. **CST-2033** provides a fast and effective H₂S removal product.

Application Information

Hydrogen Sulfide is a poisonous gas that is deadly at high concentrations and provides serious health threats at moderate concentrations. Operating problems caused by H₂S can include severe corrosion and fouling, and injection well plugging with iron sulfide. **CST-2033** effective in both hot water and gas applications

CST-2033 can be injected continuously into water gathering lines, water tanks, holding pits, and vapor overheads. It can be diluted with methanol or water for application purposes.

CST-2033 solutions containing converted sulfide are water-soluble surfactants that can be injected into water disposal systems.

CST-2033 is excellent for dry gas systems for treating hydrogen sulfide

Typical Physical Properties

Appearance	Pale Yellow Liquid
Density, (lbs/Gal)	7.91-8.75
Specific Gravity	0.95-1.05
Flash Point,	190 F
Activity,	44-50%
pH (neat)	10 to11.5
Solubility, 10% in	
Fresh Water	Soluble
Kerosene	Insoluble
Isopropanol	Soluble
Xylene	Dispersible

Recommended Formulation

The amount of **CST- 2033** required depends upon the level of H₂S in the system and the degree of reduction desired.

For H₂S treating in gas, one gallon of **CST- 2033** removes 1.1 to 1.2 pounds of H₂S. The typical ratio is 10 ppm **CST-2033** per ppm H₂S.

In water systems, the scavenging rate of **CST-2033** is 1.5 to 10 per ppm sulfide.

Shipping and Handling

CST-2033 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-2033**.

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

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CST-2064 Sulfide Scavenger Concentrate

Generic Description

CST-2064 is an organic, hydrogen sulfide scavenger concentrate.

General Information

CST-2064 is an organic sulfide scavenger concentrate designed to remove hydrogen sulfide from either aqueous or hydrocarbon systems. Formulations with **CST-2064** effectively remove H₂S to provide effective sweetening of wet gas streams to assure optimum system productivity. The product may be applied in either flowline or bubble tower applications. Unlike many conventional scavengers, **CST-2064** is not adversely affected by the presence of carbon dioxide.

CST-2064 rapidly complexes with hydrogen sulfide to produce a water soluble and dispersible by product that minimizes solids deposition on system equipment. Used **CST-2064** is considered to be non-hazardous and can be injected down disposal wells.

Suggested Formulation

CST-2064 can be blended with water or alcohol for the desired application. Mehtanol is especially advantageous in wet gas systems where freezing is a problem.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9.3-9.5
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	10.0 -12.0
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Soluble
Xylene	Insoluble

Application Information

CST-2064 may be injected on a continuous basis into flowline or separator of a wet gas system to remove hydrogen sulfide from gas. Injection of the formulated product through an atomizer is suggested to improve contact times and efficiency of the scavenger.

As **CST-2064** scavenges through the water phase, continuous injection of this product is not recommended in systems where the water content is less than 5 pounds per MMSCF. Estimated gallon use requirement of the formulated product can be determined by multiplying H₂S ppm X MMCF X 0.04.

The suggested formulation of **CST-2064** may also be used in bubble tower applications. Typically, the bubble tower should be filled to approximately 50% full to prevent the product from being carried downline.

The efficiency of **CST-2064** will depend on factors such as contact time, pressure, temperature, mass transfer and the quantity of water present. However, as a general rule, each gallon of **CST-2064** blend will scavenge approximately 2.2 pounds of hydrogen sulfide per MMSCF are suggested.

Shipping and Handling

CST-2064 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-2064**.

Non-Regulated / Non-Hazardous

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CST-2100 Hydrogen Sulfide Scavenger

Generic Description

CST-2100 is a 90 to 100% active alkyl triazine designed as a sulfide scavenger for gas, oil, and oil/gas.

Generic Description

CST-2100 can also be used as an additive to water-soluble corrosion inhibitors and surfactants to enhance the control of microorganisms. **CST-2100** provides a fast and effective H₂S removal product.

Application Information

Hydrogen Sulfide is a poisonous gas that is deadly at high concentrations and provides serious health threats at moderate concentrations. Operating problems caused by H₂S can include severe corrosion and fouling, and injection well plugging with iron sulfide.

CST-2100 can be injected continuously into gas gathering lines, oil tanks, holding pits, and vapor overheads. It can be diluted with methanol or isopropanol and xylene for application purposes. **CST-2100** solutions containing converted sulfide are oil-soluble surfactants that can become part of the oil system or separate.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	7.33-7.75
Specific Gravity	0.88-0.93
Flash Point, Activity,	105 °F nominal 98%
Solubility, 10% in	
Fresh Water	Insoluble
Kerosene	Soluble
Isopropanol	Soluble
Xylene	Soluble
Methanol	Soluble

Recommended Formulation

The amount of **CST-2100** required depends upon the level of H₂S in the system and the degree of reduction desired. For H₂S treating in gas, one gallon of **CST-2100** removes 1.40 pounds of H₂S. The typical ratio is 8.0 ppm **CST-2100** per 0.9 to 1.5 ppm sulfide.

CST-2100 can remove 1 weight parts of H₂S from oil with 5-6 ppm of **CST-2100**.

Blend 35% **CST-2100** with 65 % Xylene.

Shipping and Handling

CST-2100 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-2100**.

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

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CST-2151 Sulfide Scavenger Concentrate

Generic Description

CST-2151 is a 54% active triazine solution in water and methanol.

General Information

CST-2151 can be used to scavenge hydrogen sulfide, mercaptans, sulfides, and sulfur compounds from gas systems or liquid hydrocarbons.

Suggested Formulation

CST-2151 can be diluted with water, methanol, or glycols for ease of application. Spent solutions of **CST-2151** are considered water dispersible polymers.

Application Information

CST-2151 is typically applied at a rate of one gallon product per MMSCF of gas per 14 to 25, or ratio of 0.04 to 0.07 ppm of Hydrogen Sulfide.

As a hydrogen sulfide scavenger the typical scavenging rate is 0.45 to 0.90 lb H₂S/gallon of **CST-2151**.

CST-2151 is installed in batch reaction towers or it is injected continuously into gas gathering lines, transmission lines, vapor overheads, or liquid product systems of pipelines.

CST-2151 can be blended with scale inhibitors as 68441 or 68481 to improve tolerance to calcium.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9 – 9.5
Flash Point, °F (TCC)	145
Pour Point, °F	<25
pH, neat	10.0 - 12.5
Solubility	
Water, Hot or Cold	Soluble
Methanol	Soluble
Isopropanol	Soluble
Kerosene	Insoluble

Advantages

- Ease of handling
 - Use as is, neat
 - Non foaming
 - Good calcium tolerance
-

Shipping and Handling

CST-2151 is a combustible liquid that contains methanol and amine so it should be used with adequate ventilation. Avoid contact with skin, eyes, and clothing.

DO NOT TAKE INTERNALLY.

FOR INDUSTRIAL USE ONLY.

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CST-2301 Sulfide Scavenger Concentrate

Generic Description

CST-2301 is an 80% active triazine of mono and diamine hydrogen sulfide scavenger.

General Information

CST-2301 is an organic sulfide scavenger concentrate designed to remove hydrogen sulfide from either aqueous or hydrocarbon systems. Formulations with **CST-2301** effectively remove H₂S to provide effective sweetening of wet gas streams to assure optimum system productivity. The product may be applied in either flowline or bubble tower applications. Unlike many conventional scavengers, **CST-2301** is not adversely affected by the presence of carbon dioxide.

CST-2301 rapidly complexes with hydrogen sulfide to produce a water soluble and dispersible by product that minimizes solids deposition on system equipment. Used **CST-2301** is considered to be non-hazardous and can be injected down disposal wells.

Suggested Formulation

CST-2301 can be blended with water and alcohol to meet the desired application of the formulator. Typical field blends contain 50% **CST-2301** formulated with 10 to 15% methanol in water. Additional methanol can be added to the product to meet specific application needs. This is especially advantageous in wet gas systems where freezing is a problem.

Application Information

The suggested 50% active formulation may be injected on a continuous basis into flowline or separator of a wet gas system to remove hydrogen sulfide from gas. Injection of the formulated product through an atomizer is suggested to improve contact times and efficiency of the scavenger.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9.5
Flash Point, °F (TCC)	>200
Pour Point, °F	-20
pH, (10% Solution)	11.0-12.0
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Soluble
Xylene	Insoluble

As **CST-2301** scavenges through the water or oil phase, continuous injection of this product can be recommended in systems where the water content is less than 5 pounds per MMSCF. Estimated gallon use requirement of the formulated product can be determined by multiplying H₂S ppm X MMCF X 0.0243.

The suggested formulation of **CST-2301** may also be used in bubble tower applications. Typically, the bubble tower should be filled to approximately 50% full to prevent the product from being carried downline.

The efficiency of **CST-2301** will depend on factors such as contact time, pressure, temperature, mass transfer and the quantity of water present. However, as a general rule, each gallon of **CST-2301** blend will scavenge approximately 5.1 pounds of hydrogen sulfide per MMSCF are suggested, if blended with 50% formalin.

Shipping and Handling

CST-2301 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-2301**.

Non-Regulated / Non-Hazardous

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CST-2411 Sulfide Scavenger Concentrate

Generic Description

CST-2411 is a balanced formaldehyde reacted hydrogen sulfide scavenger concentrate.

General Information

CST-2411 is an organic sulfide scavenger concentrate designed to remove hydrogen sulfide from either aqueous or hydrocarbon systems. Formulations with **CST-2411** effectively remove H₂S to provide effective sweetening of wet gas streams to assure optimum system productivity. The product may be applied in either flowline or bubble tower applications. Unlike many conventional scavengers, **CST-2411** is not adversely affected by the presence of carbon dioxide.

CST-2411 rapidly complexes with hydrogen sulfide to produce a water soluble and dispersible by product that minimizes solids deposition on system equipment. Used **CST-2411** is considered to be mildly hazardous and combustible and can be injected down disposal wells.

Application Information

The **CST-2411** may be injected on a continuous basis into flowline or separator of a wet gas system to remove hydrogen sulfide from gas. Injection of the formulated product through an atomizer is suggested to improve contact times and efficiency of the scavenger.

As **CST-2411** scavenges through the water phase, continuous injection of this product is not recommended in systems where the water content is less than 5 pounds per MMSCF. Estimated gallon use requirement of the formulated product can be determined by multiplying H₂S ppm X MMCF X 0.04.

The efficiency of **CST-2411** will depend on factors such as contact time, pressure, temperature, mass transfer and the quantity of water present. However, as a general rule, each gallon of **CST-2411** blend will scavenge approximately 2.2 pounds of hydrogen sulfide per MMSCF are suggested.

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Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9.2
Flash Point, °F (TCC)	145
Pour Point, °F	-20
pH, (10% Solution)	9.6-10.6
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Isopropanol	Soluble
Xylene	Insoluble

Suggested Formulation

CST-2411 can be used neat or diluted with water or alcohol. Additional methanol can be added to the product to meet specific application needs. Methanol is especially advantageous in wet gas systems where freezing is a problem.

Shipping and Handling

CST-2411 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-2411**.

Bulk: NA1993, Combustible Liquids, N.O.S.



CST-2414 Metal Complex for Crosslink Oil Gels

Product Description

CST-2414 is a mixture of ferric inorganic and organic salts with anionic dispersants for crosslinkers when added to organic phosphate esters in oil solutions to form gels.

Suggested Formulation

CST-2414 is used without dilution as are readily combined in maximum salt concentration and density to avoid free water which would inhibit gel formation or break the gel.

Oils that can be used for gels include liquids from packers, gasolines, diesels, jet fuels, kerosenes, and other specialized frac solvents. **CST-2414** is compatible with typical alkaline oxide breakers as magnesium or calcium oxide.

Usage

Oil gels for fracturing are typically prepared on the fly, mixed in fluids while pumping. The oil gallant (phosphate ester) is added 1st order at 0.2 to 2.4% (0.8 to 1.0%), then followed by the breaker typically used at 2 to 15 pounds per thousand gallons, and then add the crosslinker at 0.8 to 2.5%.

CST-2414 is acidic, containing slight concentrations of free sulfuric acid and is very corrosive to carbon steel. At ambient temperatures corrosion to 304 or 316 stainless steel is low. The **CST-2414** is easily removed by rinsing with water.

CST-2414 is an iron source as used by many plants. The product does contain an anionic surfactant which is also biodegradable and nontoxic.

Typical Physical Products

Form, @ 70°F	Liquid
Density, (lbs/gal)	1.3514
Flash Point, °C, (TCC)	>100
Pour Point, °F	< (-) 20
pH (5% in DI),	2.29

Shipping and Handling

CST-2414 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-2414**.

UN3264, Corrosive Liquid, Acidic, Inorganic, N.O.S.

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CST-2431 Sulfide Scavenger Concentrate

Generic Description

CST-2431 is a 54% active triazine solution in water and methanol.

General Information

CST-2431 can be used to scavenge hydrogen sulfide, mercaptans, sulfides, and sulfur compounds from gas systems or liquid hydrocarbons.

Suggested Formulation

CST-2431 can be diluted with water, methanol, or glycols for ease of application. Spent solutions of **CST-2431** are considered water dispersible polymers.

Application Information

CST-2431 is typically applied at rates of 0.04 to 0.20 gallons product per MMSCF of gas per ppm of Hydrogen Sulfide. One gallon of **CST-2431** removes 14 to 25 ppm H₂S/MMSCF.

As a hydrogen sulfide scavenger the typical scavenging rate is 0.45 to 0.90 lb H₂S/gallon of **CST-2431**.

CST-2431 is installed in batch reaction towers or it is injected continuously into gas gathering lines, transmission lines, vapor overheads, or liquid product systems of pipelines.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9 – 9.5
Flash Point, °F (TCC)	145
Pour Point, °F	<25
pH, neat	10.0 - 12.5
Solubility	
Water, Hot or Cold	Soluble
Methanol	Soluble
Isopropanol	Soluble
Kerosene	Insoluble

Advantages

- **CST-2431** scavenges through the water,
- Available to blend with formalin to boost treatment
- **CST-2431** forms lower solids than most liquid H₂S scavengers

Shipping and Handling

CST-2431 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-2431**.

NA2810, Toxic Liquids, Organic, N.O.S.

TDS-0697

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CST-2446 Metal Complex for Crosslink Oil Gels

Product Description

CST-2446 is a mixture of ferric inorganic and organic salts with anionic dispersants for crosslinkers when added to organic phosphate esters in oil solutions to form gels. .

Suggested Formulation

CST-2446 is used without dilution as are readily combined in maximum salt concentration and density to avoid free water which would inhibit gel formation or break the gel.

Oils that can be used for gels include liquids from packers, gasolines, diesels, jet fuels, kerosenes, and other specialized frac solvents.

The **CST-2446** is compatible with typical alkaline oxide breakers as magnesium or calcium oxide.

Usage

Oil gels for fracturing are typically prepared on the fly, mixed in fluids while pumping. The oil gallant (phosphate ester) is added 1st order at 0.2 to 2.4% (0.8 to 1.0%), then followed by the breaker typically used at 2 to 15 pounds per thousand gallons, and then add the crosslinker at 0.8 to 2.5%.

CST-2446 is acidic, containing slight concentrations of free sulfuric acid and is very corrosive to carbon steel. At ambient temperatures corrosion to 304 or 316 stainless steel is low. The **CST-2446** is easily removed by rinsing with water.

CST-2446 is an iron source as used by many plants. The product does contain an anionic surfactant which is also biodegradable and nontoxic.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/gal)	11.37
Flash Point, °C, (TCC)	>100
Pour Point, °F	< (-) 20
pH (5% in DI),	3.14

Shipping and Handling

CST-2446 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-2446**.

UN3264, Corrosive Liquid, Acidic, Inorganic, N.O.S.

TDS-0697

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CST-2449 Metal Complex for Crosslink Oil Gels

Product Description

CST-2449 is a mixture of ferric inorganic and organic salts with anionic dispersants for crosslinkers when added to organic phosphate esters in oil solutions to form gels.

Suggested Formulation

CST-2449 is used without dilution as are readily combined in maximum salt concentration and density to avoid free water which would inhibit gel formation or break the gel.

Oils that can be used for gels include liquids from packers, gasolines, diesels, jet fuels, kerosenes, and other specialized frac solvents.

The **CST-2449** is compatible with typical alkaline oxide breakers as magnesium or calcium oxide.

Usage

Oil gels for fracturing are typically prepared on the fly, mixed in fluids while pumping. The oil gallant (phosphate ester) is added 1st order at 0.2 to 2.4% (0.8 to 1.0%), then followed by the breaker typically used at 2 to 15 pounds per thousand gallons, and then add the crosslinker at 0.8 to 2.5%.

CST-2449 is acidic, containing slight concentrations of free sulfuric acid and is very corrosive to carbon steel. At ambient temperatures corrosion to 304 or 316 stainless steel is low. The **CST-2449** is easily removed by rinsing with water.

CST-2449 is an iron source as used by many plants. The product does contain an anionic surfactant which is also biodegradable and nontoxic.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/gal)	11.32
Flash Point, °C, (TCC)	>100
Pour Point, °F	< (-) 20
pH (5% in DI),	2.4

Shipping and Handling

CST-2449 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-2449**.

UN3264, Corrosive Liquid, Acidic, Inorganic, N.O.S.

TDS-0697

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Conlen Surfactant Technology

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E-mail: sales@csttexas.com | Website: www.csttexas.com

CST-2601 Oil Soluble Sulfide Scavenger

Product Features

- * Highly Effective Hydrogen Sulfide Scavenger
- * Rapid Reaction For Optimum Performance
- * Eliminated Solids Deposition
- * Promotes Passage of Copper Strip Test
- * Schiff Base

Product Description

CST-2601 is a concentrated oil soluble organic sulfide scavenger designed to rapidly complex with hydrogen sulfide in gas and hydrocarbon streams. **CST-2601** effectively removes H₂S in batch tank treatments or continuous injection application to provide effective sweetening of hydrocarbon streams to assure optimum system productivity. **CST-2601** is suitable for use in finished product streams such as gasoline, kerosene and diesel fuel to promote compliance with the copper strip test. **CST-2601** is mildly surface active to enhance system performance.

Recommended Application

CST-2601 should be continuously injected into gas streams or batch treated into storage tanks. In continuous application the recommended application rate may be determined using the following equation. **CST-2601** Requirement Gallons per day = Daily Gas Production (MMCF) x H₂S Concentration (ppm) x 0.02 to 0.08.

Batch treatments with **CST-2601** into hydrocarbon streams should be applied at concentration of 1.0 - 1.2 ppm of **CST-2601** for each ppm of hydrogen sulfide present in the product stream. Uptake from 1 mole CST-2601 per 0.25 to 1.0 mole H₂S. Reaction ratio of about 1 to 1, up to 1 to 5ppm CST-2601 per mole H₂S.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/gal)	6.7 to 7.5
Flash Point, °F, (TCC)	120 - 135°F
Pour Point, °F	-40
pH, (10% Solution)	10.5 – 12
Ionic Charge	Cationic
Solubility	
Fresh Water	Insoluble
High TDS Brine	Insoluble
Hydrocarbon	Soluble

Shipping and Handling

CST-2601 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-2601**

UN3286, RQ, Flammable Liquid, Toxic, Corrosive, N.O.S.

TDS-0697

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CST-2800 Liquid KCL Substitute

Generic Description

CST-2800 is the ammonium salt of an organic acid.

General Information

CST-2800 is a specialized liquid product designed specifically for use as a replacement for bagged potassium chloride (KCL). **CST-2800** provided excellent shale and clay control without the logistics, handling and mixing problems associated with large volumes of bagged KCL. **CST-2800** is compatible with all gels, crosslinkers and breaker systems typically utilized in well drilling, stimulation and work over operations. It will not affect fluid pH and being non surface active does not adversely affect formulation wettability or create any type of a foaming problem. **CST-2800** may be used in fresh water, acid or brine systems and will not hinder the performance of acid corrosion inhibitors.

While the product does not contain any potassium, **CST-2800** is composed of a sophisticated, mildly cationic complex that functions as KCL to control shale and clay hydration. Unlike KCL, **CST-2800** may be easily utilized in "on the fly systems" to eliminate pre-mixing and leftover brine disposal problems. If the product is mixed in fresh water and no salts are added, the fluid can be easily disposed of without adverse effect on the environment. A 2% solution of KCL contains only 165 mg/L chloride ion. This significantly reduces the risks associated with the use of KCL fluids.

Suggested Formulation

CST-2800 is a finished product that is ready for field application. It may be utilized as is or diluted 50:50 with fresh water, if desired.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	9.2
Flash Point, °F (TCC)	>200
Pour Point, °F	-40
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Hydrocarbon	Insoluble

Application Information

CST-2800 is typically applied 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 operation being performed. A load rate of 1 gallon of **CST-2800** per 1,000 gallons of water will provide a functional equivalent concentration of 2% KCL.

Shipping and Handling

CST-2800 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-2800**.

Non-Regulated / Non-Hazardous

TDS-0697

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CST-2810 Defoamer Concentrate

Generic Description

CST-2810 is a high molecular weight alcohol based defoamer/antifoam.

General Information

CST-2810 is a high performance defoamer/antifoam designed to control a wide variety of foaming problems encountered in the drilling, production, and stimulation of oil and gas. **CST-2810** finds application in the control of foam in water based mud system, foam drilling operations, gas separation equipment, glycol dehydration units, gas plant absorption columns amine sweetening units, foamy crude oil production systems and other crude oil processing equipment. **CST-2810** is especially effective in the control of foam pits during air mist/stable foam drilling operations.

CST-2810 effectively breaks the bubble structure of both polyhedron and sphere foams, allowing the entrained gas to be released from the aqueous phase of the system. Being oil soluble, the product remains on the surface of water systems to remain effective in controlling further accumulations of foam.

Suggested Formulation

CST-2810 is a finished product that is ready for field application. In control of large foam pits, the product may be diluted 50:50 with kerosene, diesel, aromatic naphtha or methanol to meet the desired application of the formulator.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	6.7
Flash Point, °F (TCC)	>200
Pour Point, °F	-40
Solubility	
Fresh Water	Insoluble
High TDS Brine	Insoluble
Isopropanol	Insoluble
Xylene	Soluble
Crude Oil	Soluble

Application Information

CST-2810 may be applied by either batch or continuous injection processes depending upon the application. Use concentrations will vary depending on the type of application and the severity of the foaming problem. In drilling applications **CST-2810** is typically applied at a rate of 1 to 4 quarts per 100 barrels to effectively control most foaming problems in water based drilling fluids. During foam drilling operations the product may be injected into the blooey line, drilled in at the end of the return line or sprayed directly onto the pits for foam control.

When continuously injected, the selection of an injection point is very important in the application of a defoamer. It is recommended that a site as far upstream from the foaming problem as possible be selected. This will allow for adequate mixing and provide antifoam performance as well as defoaming of any existing foam.

Shipping and Handling

CST-2810 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-2810**.

UN1993, Flammable Liquid, N.O.S.

TDS-0697

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CST-2815 Defoamer Concentrate

Generic Description

CST-2815 is a silicone based defoamer/antifoam concentrate.

General Information

CST-2815 is a silicone based defoamer/ antifoam concentrate designed to control a wide variety of foaming problems encountered in the drilling, production and stimulation of oil and gas. Formulations with **CST-2815** find application in oil and gas separation equipment, glycol dehydration units, gas plants absorption columns, amine sweetening units, foamy crude oil processing equipment. **CST-2815** is especially effective in the treatment of gas cut emulsions created from the production of oil and gas through the same tubing string. The product has also provided excellent performance in gas and water separation vessels where foaming decreases vessel volume and retention time.

Application Information

CST-2815 may be applied by either batch or continuous application depending upon the application. In a new application it is recommended that the system be slug treated with 15 to 20 ppm of the product to establish the treatment and obtain foam control. Following this initial treatment the formulated product should be continuously injected at an initial rate of 15 to 20 ppm. The injection rate should then be increased or decreased until the most effective usage rate is determined for the individual application.

The selection of an injection point is very important in the application of a defoamer. It is recommended that a site as far upstream from the foaming problem as possible be selected. This will allow for adequate mixing and provide anti-foam performance as well as defoaming of any existing foam.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/Gal)	7.27
Flash Point, °F (TCC)	145
Pour Point, °F	-20
Solubility	
Fresh Water	Insoluble
High TDS Brine	Insoluble
Isopropanol	Insoluble
Xylene	Dispersible
Crude Oil	Dispersible

Suggested Formulation

CST-2815 should be blended with kerosene, diesel or aromatic naphtha to meet the desired application of the formulator. Typical field blends contain 25 to 30% **CST-2815** formulated with the desired solvent. **CST-2815** dilutions should be hand blended to assure stability before formulating field quantities.

Shipping and Handling

CST-2815 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-2815**.

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

TDS-0697

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CST-2825 Multi-Purpose Iron Complexing Agent

Generic Description

CST-2825 is a powerful reducing agent for ferric iron in acids, such as those commonly used in oil well treating. It is a nonionic organic compound that is compatible with all common acid additives. Reduces acid emulsions caused by iron sludge, and prevents asphaltene sludging caused by dissolved iron during the acidizing process.

Application Information

CST-2825 is used in oilwell acidizing if ferric iron-induced sludging or ferric-iron reprecipitation is a potential problem. Normal usage levels are 2 to 5 gallons of **CST-2825** per 1,000 gallons of acid. This application of **CST-2825** will rapidly reduce yellow ferric iron to the colorless, soluble ferrous form of iron in hydrochloric acid solutions. **CST-2825** performs in other common oilfield acids as well. The use of **CST-2825** has not been found to interfere with performance of other common acid additives.

Product Features

- * Highly Effective Iron Complexing Agent
- * Eliminates Iron Sludge
- * Excellent for use in ALL ACIDS
- * Eliminates Re-Precipitation
- * Nonionic Organic Compound
- * Compatible with other Additives
- * Can be used with scale inhibitors

Typical Physical Properties

Form , @ 70°F	Liquid
Density , (lbs/gal)	10.8
Flash Point , °F (TCC)	>200
Pour Point , °F	<20
pH , (10% Solution)	1.0-3.0
Ionic Charge	Nonionic
Solubility	
Fresh Water	Miscible
High TDS Brine	Miscible

Shipping and Handling

CST-2825 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-2825**.

UN-2810, Toxic Liquid, Organic, N.O.S.

TDS-0697

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CST-2830 Calcium Sulfate Dissolver

Product Features

- * Highly Effective Calcium Sulfate Dissolver
- * Rapid Reaction For Optimum Performance
- * Does Not Require an Acid Follow-up

Product Description

CST-2830 is a water soluble organic concentrate designed to rapidly dissolve calcium sulfate scale that is formed on the formation face, well-bore, tubing, flow lines, and production equipment. The removal of this acid insoluble scale improves lost production and promotes pumping and equipment efficiency. This product is a proprietary blend of surfactants, chelants and converters designed to penetrate the lattice structure of calcium sulfate scale and destroy the molecular structure of the molecule.

Recommended Application

CST-2830 should be used at 2 to 5 times the net well bore volume across the zone of interest. This volume should be adjusted according to estimated near well bore damage and depth of existing formation damage. **CST-2830** requires a shut-in period of 12 to 24 hours for maximum scale dissolution. The removal of scale in production equipment and tubing can be calculated at an optimum rate of 2 pounds of calcium sulfate for each gallon of **CST-2830** utilized. **CST-2830** can be diluted at a rate of 1 to 1 with fresh water to encompass large volumes necessary to achieve the volumes required.

Typical Physical Properties

Form, @ 70°F	Liquid
Density, (lbs/gal)	9.5
Flash Point, °F, (TCC)	>200
Pour Point, °F	32
pH (10% solution), Ionic Charge	7.5-8.1 Nonionic
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Hydrocarbon	Insoluble

Shipping and Handling

CST-2830 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-2830**.

Non-Regulated / Non-Hazardous

TDS-0697

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CST-2835 Oil Soluble Sulfide Scavenger

Product Features

- * Highly Effective Hydrogen Sulfide Scavenger
- * Rapid Reaction for Optimum Performance
- * Eliminated Solids Deposition
- * Promotes Passage of Copper Strip Test

Product Description

CST-2835 is a concentrated oil soluble organic sulfide scavenger designed to rapidly complex with hydrogen sulfide in gas and hydrocarbon streams. **CST-2835** effectively removes H₂S in batch tank treatments or continuous injection application to provide effective sweetening of hydrocarbon streams to assure optimum system productivity. **CST-2835** is suitable for use in finished product streams such as gasoline, kerosene and diesel fuel to promote compliance with the copper strip test. **CST-2835** is mildly surface active to enhance system performance.

Recommended Application

CST-2835 should be continuously injected into gas streams or batch treated into storage tanks. In continuous application the recommended application rate may be determined using the following equation.

CST-2835 Requirement Gallons per day = Daily Gas Production (MMCF) x H₂S Concentration (ppm) x 0.0608

Batch treatments with **CST-2835** into hydrocarbon streams should be applied at concentration of 1.0 - 1.2 ppm of **CST-2835** for each ppm of hydrogen sulfide present in the product stream.

Typical Physical Properties

Form , @ 70°F	Liquid
Density , (lbs/gal)	8.5
Flash Point , °F, (TCC)	74
Pour Point , °F	-40
pH , (10% Solution)	9.0-9.5
Ionic Charge	Cationic
Solubility	
Fresh Water	Insoluble
High TDS Brine	Insoluble
Hydrocarbon	Soluble

Shipping and Handling

CST-2835 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-2835**

UN1993, Flammable Liquid, N.O.S.

TDS-0697

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CST-2845 Oxygen Scavenger

Generic Description

CST-2845 is an Ammonium Bisulfite Solution with Nickel Catalyst.

General Information

CST-2845 is a water soluble oxygen scavenger concentrate designed for use in oil field applications. Products formulated with **CST-2845** have proven successful in eliminating oxygen in a wide range of oilfield applications and water processing equipment.

CST-2845 is particularly effective for systems which are experiencing corrosion due to oxygen pitting. **CST-2845** is a highly effective liquid catalyzed product for use in fresh and salt waters to prevent corrosion due to dissolved oxygen. **CST-2845** reacts with oxygen at a ratio of approximately equal to catalyzed sodium bisulfite. Unlike powdered forms of sulfite, this liquid formulation is used directly.

Application Information

This suggested formulation of **CST-2845** may be applied by either batch or continuous methods to meet individual system needs. This product is especially useful in continuous treatment applications. The injection location should be as far back in the system as possible to allow the product sufficient mixing to eliminate foaming problems. **CST-2845** may also be applied with the spray nozzle directly into the foam or batch treatments. When **CST-2845** is utilized in downhole batch treatments, treating frequency will be determined by the severity of the foaming characteristics of the problem crude and vessel configuration.

Typical Physical Properties

Form, @ 70°	Liquid
Density, (lbs/Gal)	11.6
Flash Point, °F (TCC)	N/A
Pour Point, °F	-10
pH, (10% Solution)	3.0-5.0
Solubility	
Fresh Water	Soluble
High TDS Brine	Soluble
Heavy Aromatic Naphtha	Insoluble
Kerosene	Insoluble
Crude Oil	Insoluble

Suggested Formulation

Use concentrations of **CST-2845** are extremely low to suppress most foams. For new applications, use a concentration of 10 ppm **CST-2845** for each 1 ppm O₂ in the system.

Shipping and Handling

CST-2845 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-2845**.

UN2693, Bisulfites, Inorganic, Aqueous Solutions, N.O.S.

TDS-0697

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