ECHO

Echo Energy Petroleum

# ECHO

## Company Profile 2025.

# ABOUT COMPANY

Driving efficiency and innovation in oilfield chemicals and logistics.

Founded in **2022 in Basra, Iraq,** our company has established itself as a leading provider of **oilfield chemical solutions** and logistics services. We specialize in **importing, supplying, and consulting** on chemicals used in oil and gas operations, ensuring efficiency and compliance with industry standards.

# OUR SERVICES

***We offer a comprehensive range of services, including:***

**1**

Import & Supply of Oilfield Chemicals, essential for:

- Drilling operations
- Injection water treatment
- Production processes at separation stations
- Liquid gas production

**2**

Logistics & Customs Clearance

**3**

Engineering Consultancy for Oil Well Drilling across Iraqi oil fields

**4**

Technical, Advisory & Logistical Support

# DRILLING FLUID PRODUCTS

## WEIGHTING MATERIALS

| Product | FUNCTION |
|---|---|
| Barite BaSO4, meets API specifications 13A section 7 | Universally used as weighting agent. |
| Barite BaSO4, meets API specifications 13A section 20 | Universally used as weighting agent. |
| Barite BaSO4, SG-4.0 | Universally used as weighting agent. |
| Hematite, meets API specifications 13A section 8 | Used as weighting agent. |
| Ground marble (calcium carbonate) | High purity ground marble, used as a bridging & weighting agent in drilling, work over & completion fluids. It is generally more pure with high hardness & provides better acid solubility. Available in different microns size. |
| Ground Limestone (calcium carbonate) | Ground Limestone based Calcium carbonate used to increase the density of the drilling fluids & serve as LCM & Bridging agent. It can be used in both water based & Oil based drilling fluids. Available in various particle sizes. |

## FILTRATION CONTROL AGENTS

| Product | FUNCTION |
|---|---|
| Resin modified Lignite | High temperature Fluid loss control & rheology modifier for all water based fluids. |
| Preserved modified starch, Pregelatinized Starch | Non fermenting starch for Fluid loss control & rheology stabilizer in fresh water & saturated salt water mud. |
| Preserved modified starch, Pregelatinized Starch | High temperature stable, Non fermenting starch for Fluid loss control & rheology stabilizer in fresh water & saturated salt water mud. |
| Modified Natural Polymer, Carboxy methyl starch | Fluid loss controller in most water base drilling & drill-in fluids at high temperature environment, does not significantly increase viscosity. Can be used to encapsulate drill cuttings & exposed wellbore formations to reduce particle dispersion & reactive clay/shale formation swelling. It does not require a biocide to prevent fermentation. |
| Non ionic, cross-linked Starch for HTHP applications | A special starch derivative to reduce HTHP filtrate loss for all water based muds including drilling, completion & work over. It is non ionic in nature suitable for muds containing salts or ion sensitive additives. Acts synergically with Xanthan gum polymer to increase LSRV. It can be used in most brines including seawater, NaCl, KCl, CaCl2, NaBr and formate salt systems. |
| Modified Starch for divalent drilling fluid system applications | High-molecular weight, branched-chain starch derivative, used to provide elevated low-shear-rate viscosity (LSRV) and controls fluid loss in the divalent drilling fluid system such as calcium chloride, magnesium chloride, calcium bromide and zinc bromide brines. |

## FILTRATION CONTROL AGENTS

| Product | FUNCTION |
|---|---|
| Polysaccharide derivative to control filtration in Mixed Metal Oxide system | PAL-FC fluid-loss-control agent is a polysaccharide derivative used to control filtration in Mixed-Metal Oxide system. It will not destroy the low-end rheology of the Mixed Metal Oxide system. It is effective in seawater fluids, but all hardness should be treated out before the product is added. It is resistant to bacterial degradation. It can be used in any other type of fluid where starch & cellulose additives are permitted. |
| Sodium Carboxy methyl cellulose Low viscosity | Technical grade Low viscosity, Fluid loss additive used in fresh water & sea water muds. It is used in high viscosity, high solids or heavily weighted fluids & produces only slight increase in viscosity. |
| Sodium Carboxy methyl cellulose High viscosity | Technical grade High viscosity, Fluid loss additive used in fresh water & sea water muds. It is used in Low viscosity or low solids fluids & increase viscosity in addition to controlling fluid loss. |
| Polyanionic cellulose-Low viscosity | Low viscosity grade fluid loss control polymer with minimal viscosity increase. It will perform well in all brine applications, especially saltwater-base fluids. It can be used at all densities in either dispersed or non-dispersed systems. It will encapsulate solids to control dispersion of active shale. |
| Polyanionic cellulose-Super Low viscosity | Super low-viscosity PAC is used primarily as a fluid-loss reducer. It is a high performance product, readily dispersible in ater-base drilling fluids ranging from fresh to saturated salt water. PAL PAC SLV polymer is primarily used in weighted systems to avoid an uncontrollable viscosity build-up. |

## FILTRATION CONTROL AGENTS

| Product | FUNCTION |
|---|---|
| Specially Processed blend of Polysaccharide derivatives | Specially processed blend of Polysaccharide derivatives which gives higher temperature stability than regular PAL PAC LV Tech grade. Specially designed for situations where filtration control is needed with only minimal increases in rheology. |
| Polyanionic cellulose Regular Viscosity grade | Regular grade viscosity PAC useful in controlling fluid loss & increasing rheology in all types of water. It will aid in dispersion control by attaching & encapsulating the dispersion solid. It may be used in all density ranges and functions effectively in dispersed & non dispersed system. |
| High-quality, Medium Purity polyanaionic cellulose, low viscosity | High quality, Medium Purity, low-viscosity grade fluid-loss-control polymer. It is designed for situations where filtration control is needed with only minimal increases in rheology. It performs well in all brine applications, especially saltwater-base fluids. Can be used at all densities in either dispersed or non-dispersed systems. Functions at all pH range. Temperature stability is up to 300° F. |
| High-quality, Medium Purity polyanaionic cellulose, regular viscosity | High quality, Medium Purity filtration control agent used in most water-based drilling fluids, can provide secondary viscosity and is effective even at low concentrations. It is suitable for use in fresh water, salt water and brine-based fluids & stable to 300°F (149°C). Effective in moderate to high pH systems. |
| High-quality, High-purity polyanaionic cellulose Low viscosity | High-purity, low-viscosity grade polymer, effective in low concentration to provide fluid loss control with minimal increase in viscosity in water base muds. Encapsulates shale particles to inhibit swelling and dispersion of active drill solids. Temperature stability is up to 300° F. |

## FILTRATION CONTROL AGENTS

| Product | FUNCTION |
|---|---|
| High-quality, High-purity polyanaionic cellulose Regular viscosity | High-purity, regular-viscosity grade polymer, effective in low concentration to control fluid loss, increase viscosity and provide shale inhibition in water base muds. Temperature stability is up to 300° F. Effectively function in a wide range of salinity, hardness and pH levels. |
| Syntheric polymer High temperature/High salinity Fluid loss controller | PAL SFC-HTHS a synthetic polymer specifically designed for high-temperature and /or high-salinity environments. Works well at any salinity. Reduces differential sticking tendencies. Temperature stable upto 475°F (246°C). Calcium tolerance in excess of 100,000 ppm. |

## VISCOSIFIERS

| Product | FUNCTION |
|---|---|
| Sodium Bentonite, meets API specifications 13A section 9 | Premium-grade sodium montmorillonite clay, used as primary filter-cake building, filtration-control and suspension agent in water-base mud systems. |
| Non treated Bentonite, meets API specifications 13A section 10 | Chemically untreated, premium-grade sodium montmorillonite clay, used as primary filter-cake building, filtration-control and suspension agent in water-base mud systems. |
| Gaur Gum, Viscosity & Fluid loss control in low solids mud | Rapid mixing high viscosity polymer for use in freshwater and seawater spud muds. |
| Primary viscosifying polymer. Xanthan Gum | High molecular weight linear polysaccharide, used to increase viscosity for cutting transport and weight-material suspension for all waterbase mud. Provides better rheological profile with elevated low-shear-rate viscosity and highly shear-thinning characteristics. |
| Primary viscosifying polymer. Highly dispersible bio polymer. Xanthan Gum | Highly dispersible, high molecular weight linear polysaccharide, used to increase viscosity for cutting transport and weight-material suspension for all water-base mud. Provides better rheological profile with elevated low shear-rate viscosity and highly shear-thinning characteristics. |
| Liquified xanthan gum, non clarified | High purity Xanthan Gum biopolymer, suspended in an ultra-clean mineral oil or Glycol used in most types of water-based fluids for rheology modification, improved hole cleaning and solids suspension. |

## VISCOSIFIERS

| Product | FUNCTION |
|---|---|
| Attapulgite clay, meets API specifications 13A section 12 | Premium Attapulgite clay, used to provide viscosity and hole cleaning capabilities in drilling fluids with high concentrations of salts. |
| Hydroxy Ethyl Cellulose polymer | Multi-purpose viscosifying agent for use in freshwater, sea-water and complex brine systems, its viscosifying characteristics are unaffected by common contaminants & dissolved salts. |

## LOST-CIRCULATION MATERIALS

| Product | FUNCTION |
|---|---|
| Micronized Cellulose fibre | Bridging and sealing permeable formations in water/oil/synthetic base fluids. It is particularly useful for preventing differentially pipe when drilling depleted zones where high differential pressures exist. Available in Fine, Medium & coarse grades. |
| Sized grade of Mica | Flake LCM for seepage losses and prevention. It is used for preventing or curing formation losses while drilling fractured or porous zones. Available in Fine, Medium & coarse grades. |
| Ground nut shells | Granular Lost circulation material. |
| Granular Graphite | Chemically inert and thermally stable, effective bridging and sealing agent used in water, oil or synthetic based drilling fluid. Can lower the potential for stuck pipe, control lost circulation and reduce torque and drag. |
| Granular Graphite/Coke blend | Chemically inert, sized plugging agent used to bridge and seal porous and fractured formations in water, oil or synthetic based drilling fluid. Can lower the potential for stuck pipe, control seepage, partial and severe lost circulation and reduce torque and drag. |
| Blend of fibrous, flaky & granular LCM | Mixture of selected non-abrasive granular, flake and fibrous material with a unique physical structure and an extensive range of particle size that enhances its bridging properties. It very effective to combat severe lost circulation for water base mud. Will function at all temperatures. |
| Cotton Seed Hulls | Fibrous, biodegradable material, an excellent bridging agent when large-particle-size material is needed. Can be used in any water-base mud system. |

## LOST-CIRCULATION MATERIALS

| Product | FUNCTION |
|---|---|
| Diatomaceous earth blend for preparing soft plugs for severe lost circulation | Highly effective, high-fluid-loss lost circulation squeeze material. Creates a seal in the loss zone, effective in both water-based and oil-based mud applications. |
| Granular Nut shells | Granular Lost circulation material, inert additive, compatible in all types and densities of fluids. |

## THINNERS AND DISPERSANTS

| Product | FUNCTION |
|---|---|
| Polymeric temperature stabilizer | Polymeric alkaline material, improves the temperature stability of polymer fluid by a margin of 70°F (39°C) by effectively reducing the degradation of polymers at higher thermal condition. |
| Resinated lignite complex | Most effective HTHP filtration control additive provides rheological stability over a wide range of temperatures, suitable for use in freshwater, seawater & brackish water. |
| Ground lignite | Effectively reduce fluid loss in high temperature application and deflocculate water-base muds. Provides thin, low-permeability filter cakes, performs exceptionally well in dispersed systems as a synergistic additive with lignosulfonates. |
| Caustilized lignite | Controls rheology and reduce fluid loss for higher temperature muds, emulsifies oil, reduces flocculation and stabilizes water-base drilling fluids. |
| Chrome lignite, sodium hydroxide, neutralized | High-temperature thinner, excellent additive for HTHP filtration control and rheological stabilization for muds subjected to high temperatures. |
| Ferrochrome lignosulfonate, Chrome lignosulfonate | Multi-purpose deflocculant and gel-strength reducer, temperature stabilizer and filtration-control additive for use in all water-base systems. Exhibits superior deflocculating ability, even in the presence of contaminants and elevated temperatures. |
| Chrome-free lignosulfonate, Environmentally acceptable thinner | Environmentally acceptable deflocculant and fluid loss additive in all types of water-base systems. Exhibits superior deflocculating ability, even in the presence of contaminants and elevated temperatures. |

## SHALE INHIBITORS AND FLOCCULANTS

| Product | FUNCTION |
|---|---|
| Broad-cloud-point, general purpose polyglycol for low salinity fluids and low temperatures | Improves shale stability, lubricity and high temperature filtration control in freshwater to seawater polyglycol systems. |
| Polyglycol for high-salinity fluids and high tempera-tures | Improves wellbore stability, lubricity, high-temperature filtration control in fresh-to-high salinity and can be used in wells with high formation temperatures. |
| Low-cloud-point polyglycol for low-salinity fluids and low temperatures | Improves wellbore stability, lubricity, high-temperature filtration control in fresh-to-medium salinity and can be used in wells with low formation temperatures. |
| Medium-cloud-point polyglycol for moderate salinity fluids and high temperatures | Improves wellbore stability, lubricity, high-temperature filtration control in fresh-to-medium salinity and can be used in wells with moderate formation temperatures. |
| Sulfonated asphalt | Water dispersible shale inhibitor, aids in stabilizing shale sec-tions, controlling solids dispersion and improving wall cake characteristics. |
| Sulfonated asphalt supreme | Water dispersible shale inhibitor, aids in stabilizing shale sec-tions, controlling solids dispersion and improving wall cake characteristics. Provide high temperature fluid-loss control for water-base drilling fluid. |
| Sodium asphalt sulfonate | Water soluble shale inhibitor, effective in controlling HTHP fluid loss, increases lubricity, prevents bit balling, reduces torque & drag and helps to prevent differential sticking. Environmentally acceptable and can be used in water, oil and synthetic base muds. |

## SHALE INHIBITORS AND FLOCCULANTS

| Product | FUNCTION |
|---|---|
| Poly amino acid hydration suppressant & Shale Inhibitor | Water soluble hydration suppressant, environmentally acceptable, organic compound designed to reduce the dispersion & swelling of reactive clay formation & minimizes the potential for bit balling. |
| Liquid sodium-silicate | Provides superior chemical inhibition to reactive shales, clay and claystone formations, chalk, and formations interbedded with dispersive clays. Secondary inhibition is achieved with the use of KCl or NaCl. |
| Potassium Silicate | Provides superior chemical inhibition to reactive shales, clay and claystone formations, chalk, and formations interbedded with dispersive clays. It does not require additional salt to enhance inhibition, used in environmentally sensitive areas, where chlorides are prohibited from being discharged. |
| Dry PHPA polymer | Encapsulating polymer for freshwater and saltwater mud. |
| Liquid PHPA | Provide cuttings encapsulation and clay-dispersion inhibition in fresh and saltwater drilling fluids. |
| Readily dispersible PHPA powder | Provide cuttings encapsulation and shale stabilization in freshwater to saltwater drilling fluids ranging from low solids to weighted mud. |

## BIOCIDES AND SCAVENGERS

| Product | FUNCTION |
|---|---|
| Biocide Triazine base, Available in 50% & 78% active content | Prevent bacterial growth in water base muds and low-salinity clear brine fluids. Effective H S scavenger. |
| Biocide Amine base, Quartenary Ammonium compounds | Prevent bacterial degradation of drilling mud. |
| Biocide Gluteraldehyde base | Prevent bacterial degradation. It is de-activated by ammonia, primary amines and oxygen scavengers. |
| Organic $H_2S$ scavenger, Triazine base | Provides solid free $H_2S$ scrubbing for brine based drilling fluid in neutral-high pH conditions. |
| $H_2S$ scavenger Glyoxal base | Displays a continuous $H_2S$ scavenging activity over longer time period. Exhibits good temperature stability upto 150°C and intended for use in low pH conditions. |
| BiSulfite-base oxygen scavenger | Removes dissolved oxygen from drilling and completion fluids, eliminating a potential source of corrosion. Suitable for use in freshwater and monovalent brines, incompatible with Gulteral-dehyde base biocide. |
| Sulfite-based oxygen | Removes dissolved oxygen from drilling and completion fluids, eliminating a potential source of corrosion. Improves thermal stability of polymers by a margin of 20°F (11.1°C). Suitable for use in freshwater and mono-valent brines. |

## BIOCIDES AND SCAVENGERS

| Product | FUNCTION |
|---|---|
| Sodium Erythorbate base oxygen scavenger | Non-sulphite oxygen scavenger suitable for mono valent and divalent brines. |
| ZINC OXIDE material reacts with sulfides to form ZnS | Efficient $H_2S$ scavenger, Zinc oxide reacts with sulfides to form ZnS precipitate, which is an insoluble, inert, fine solid remain harm-lessly in the drilling fluid and removed through the solids-control equipment. |

## DEFOAMERS AND FOAMERS

| Product | FUNCTION |
|---|---|
| Alcohol-base defoamer | Higher esters based product to control foaming in all water-based drilling fluids as well as brine-based completion and workover fluids. |
| Silicone-base defoamer | Silicon based defoamer to prevent foaming in drilling fluids as well as solids free workover and completion fluids. Highly effective in low concentration at a wide range of pH. |
| Polyether Poyol based defoamer | Low-toxicity blend of defoaming agents to control foaming in freshwater muds, seawater muds and all brine systems. Compatible with all common mud additives and effective in low oncentration. |
| Blend of Organo silicone, high molecular weight alcohol and | Effective defoamer to reduce the foam in water-based drilling fluids, crude oils and aqueous solutions. Also controls foaming in fluids viscosified with polymers. Effective in small concentrations. |
| Foaming Agent Powder | Biodegradable surfactants that can be added to fresh, brine, or brackish water for air/foam, air/gel foam, or mist drilling applications. |
| Foaming Agent Liquid | Biodegradable surfactants that can be added to fresh, brine, or brackish water for air/foam, air/gel foam, or mist drilling applications. |

## LUBRICANTS

| Product | FUNCTION |
|---|---|
| Solid lubricant Spherical glass beads (or) Co-Polymer beads | Spherical beads to reduce torque & drag in Oil base mud systems. |
| Premium Ester base lubricant | Provides a tough lubricating film between the wallcake and drillstring, imparts lubrication to the bearing surfaces, reduce torque & drag experienced in highly deviated, horizontal & extended-reach wells. Suitable in all water base fluids and has temperature stability upto 400°F. |
| Extreme-pressure water base lubricant | Effectively reduce the coefficient of friction on metal-to-metal contact area and reduces the possibility differential wall sticking. |
| Low toxicity Lubricant | Effectively reduces torque, drag and the potential for differential sticking by reducing the coefficient of friction in all types of water-base mud and salinity. Will not affect the rheological properties, may lower fluid loss and has temperature stability upto 400°F (204°C). |
| Unique metal-wetting & water dispersible lubricant | Provides excellent metal-wetting characteristic which lowers the potential for bit & BHA balling and decreases the coefficient of friction which reduces torque and drag. Contains no hydrocar-bons and can be used in all water-base fluids. |
| Lubricant for SILICATE system | Reduces torque, drag and the potential for differential sticking by reducing the coefficient of friction in silicate mud system. |

## LUBRICANTS

| Product | FUNCTION |
|---|---|
| Fatty esters and specialities based environemental friendly lubricant | Provides excellent reduction in torque and drag issues in highly tortuous long reach wells, will not damage delicate production zones, increases penetration rates, prevents bit balling and differentially stuck pipe. Improves the overall API and HTHP fluid loss behaviors of the drilling fluid with no negative effects on the fluids rheology. |
| Water soluble brine lubricant | Provides exceptional reduction in metal-to-metal friction when added to seawater, sodium chloride, sodium bromide, calcium chloride and calcium bromide completion fluids. Reduce torque and drag in high-angle, extended-reach wells. |
| Rate of Penetration (ROP) enhancer | Improves the ROP in water base mud system by removing build-up of drill solids below the bit and allowing the cutter to make continuous contact with new formation, improves bit life & lowers torque and drag. |
| Liquid Asphalt for differential sticking prevention | Stabilize water-sensitive, micro-fractured shales when drilling with water-base drilling fluids by sealing micro-fractures, reduces API, HTHP, dynamic fluid loss and the potential for differential sticking. Improves lubricity and shale inhibition by reducing accretion from sticky clays. Combat seepage losses in conjunction with fibrous materials and calcium carbonate. Temperature stability is up to 425°F (218°C). |

## SURFACTANTS AND SPOTTING FLUIDS

| Product | FUNCTION |
|---|---|
| Surface tension reducer to prevent balling, drop sand & emulsify oil | Aqueous blend of surface-active agents can be used in any water base drilling fluid to reduce surface tension, reduce the sticking tendency of water-sensitive shale cuttings, minimize bit & BHA balling and reduce torque and drag. |
| Stuck pipe liberator, Unweighted | Effective additive to free the differentially stuck pipe in a shorter period of time, by cracking and penetrating the filter cake. |
| Weightable stuck pipe liberator, Liquid One-drum spotting Fluid | Single pack liquid blend, easy to mix and quickly prepare weighted oil base spotting fluid to free differently stuck pipe. Dehydrates and cracks the filter cakes, allowing the spotting fluid to penetrate between drillstring and formation, wets & lubricates the drillstring and reduces the force required to free stuck pipe. |
| Environmentally acceptable Low Toxicity Stuck pipe Liberator/Spotting fluid | Low-toxicity spotting fluid used for environmental sensitive offshore and onshore wells, to free differently stuck pipe by penetrating between the wall and drillstring, reduces torque & drag and provides metal wetting characteristics. |
| Powder Spotting fluid, Stuck pipe liberator, sack concentrate | One sack powder blend, easy to handle and store at rig sites, effective additive for freeing differently stuck pipe, can be mixed with diesel oil, mineral oil or synthetic fluids and weighted to the desired density before spotting. |

## OIL BASE MUD PRODUCTS

| Product | FUNCTION |
|---|---|
| Primary Emulsifier & wetting agent | Provides excellent emulsion stability, secondary wetting, filtration control and contamination-resistance of oil mud systems. |
| Secondary Emulsifier | Multi-functional additive serves as secondary emulsifier, wetting agent and filtration control agent in oil mud systems. |
| Non TOFA base multipurpose Emulsifier | High temperature stable invert emulsions, secondary wetting, reduce HPHT filtration, improves thermal stability and resistance to contamination in oil mud systems. |
| Highly concentrated high temperature stable Primary Emulsifier | Provides excellent emulsion stability, secondary wetting, HTHP filtration control, high temperature stability and contamination resistance of oil mud systems. |
| Highly concentrated high temperature stable Secondary Emulsifier | Multi-functional additive serves as secondary emulsifier, wetting agent and HTHP filtration control agent with improved thermal stability in oil mud systems. |
| Oil wetting agent for improving Oil wetting of solids & emulsion stability | Powerful oil wetting product used to oil wet drill solids and weighting agents in oil-based drilling fluids. |
| Oil mud Thinner for reducing the viscosity & gel strength | Reduces viscosity and gel strengths in oil base mud caused by high content of colloidal solids, without the need for changing the Oil/Water Ratio. |
| Rheological modifier to increase LSRV, yield point, gel strength & carrying capacity | Enhance LSRV and gel strength for improved cutting-carrying capacity in large-diameter, high-angle, horizontal and extended-reach wells. Improves shear thinning, thixotropic characteristics without using additional clay-base additive and reduce fluid loss in Oil base muds. |

## OIL BASE MUD PRODUCTS

| Product | FUNCTION |
|---|---|
| Polymeric viscosifier for increasing yield point & gel strengths with minimal plastic viscosity | Provides elevated yield point and gel strength with minimal increase in plastic viscosity thereby minimize the amount of clay in formulation and improves LSRV to increase shear thinning, thixotropic characteristics oil base mud. |
| Organophilic clay, Viscosifier and gelling agent | Impart viscosity and suspension properties to oil base drilling fluids, for improving cutting carrying capacity and to provide long-term suspension of weighting agents. |
| Amine-treated lignite, HT filtration control Additive | High temperature filtration control agent, act synergistically with emulsifiers in conventional invert emulsion systems to enhance the overall emulsion and thermal stability. |
| Asphaltic resin, Filtration control Additive | Provides filtration control, seal low-pressure and depleted formations, also improves overall emulsion stability, thermal stability and suspension characteristics of oil base mud. |
| Blend of Lignite & Asphaltic resin for HTHP filtration control | Provides HTHP filtration control, seal low-pressure and depleted formations, also improves overall emulsion stability, thermal stability and suspension characteristics of oil base mud. |
| Amine-treated tannin Quebracho, HT filtration control additive for OBM & SBM | High temperature filtration control additive for use in any oil- or synthetic base mud systems with minimal effect on rheological properties of mud. Temperature stability is up to 500°F (260°C). |

## CORROSION AND SCALE INHIBITORS

| Product | FUNCTION |
|---|---|
| Water soluble Film forming amine corrosion inhibitor used for drilling | Provides excellent corrosion inhibiton from Oxygen, Carbon Dioxide and Hydrogen Sulphide gases during drilling, for the downhole tubular and associated surface equipments upto 300°F. Compatible with all types of water base mud. |
| Film forming amine corrosion inhibitor used for drilling, Oil soluble & water dispersible | It effectively protects the drilstring by forming a tough persistant film on metal surfaces. It is compatible with all types of water base muds both weighted & unweighted. It is most applicable in the presence of carbon dioxide or hydrogen sulfide gases. Effective up to 350°F. |
| General-use, all purpose water soluble organo phosphorus-base inhibitor | Highly effective passivating type inhibitor for reducing oxygen corrosion in aerated muds, low-solids, non-dispersed, polymer muds and potassium muds with minimal effect on fluid rheology. Effective up to 350°F. |
| General-use, all purpose water soluble Potassium salt-base inhibitor | Effective corrosion inhibitor used in water based drilling fluids systems, to control general and pitting corrosion due to oxygen, hydrogen sulfide and carbon dioxide without affecting the drilling fluid properties. Effective up to 250°F. |
| Phosphonate base Scale Inhibitor, inhibits scaling caused by calcium carbonate, calcium sulfate and arium | Inhibits deposition of mineral scales such as calcium carbonate, calcium sulfate and barium sulfate on downhole tubulars and associated surface equipment in clear brine completion fluid systems. |

## CORROSION AND SCALE INHIBITORS

| Product | FUNCTION |
|---|---|
| Amine corrosion inhibitor (15-20%) for clear completion/ Packer brines | It controls corrosion of tubing & casing strings when used in workover & packer brines including sodium chloride, calcium chloride, sodium bromide, calcium bromide & zinc bromide. Provide protection at bottomhole temperature upto 300°F. |
| Filming amine type inhibitor for mono and divalent brines | Effective water soluble corrosion inhibitor and bacteriostatic for water based workover and packer fluids which is compatible with non-ionic, cationic and anionic materials. |
| Low toxicity amine based corrosion inhibitor | Effective inhibitor to reduce corrosion in freshwater, monovalent brines and polymeric systems that are sensitive to brines and divalent ions. Also used to increase pH and treat carbonate contamination in water based systems. Provide protection at bottom hole temperature up to 350°F (175°C). |

## WORKOVER, COMPLETION AND DRILL IN PRODUCTS

| Product | FUNCTION |
|---|---|
| Hydroxyl Ethyl Cellulose | Viscosifier in brine workover, completion fluids and water-base mud. |
| Liquid Hydroxyl Ethyl Cellulose | Liquid viscosifier for single-salt brines. |
| Modified Starch derivative, cross linked Non-Ionic | Non-ionic, starch derivative intended to reduce HTHP filtrate loss in all water based mud containing salts or ion sensitive additives for drilling, completion & work over application. Acts synergically with Xanthan gum polymer to increase LSRV. Can be used in most brines including seawater, NaCl, KCl, CaCl2, NaBr & formate salt systems. |
| Premium grade clarified Xanthan gum | Highly dispersible, premium grade, Xanthan gum used to provide superior hole cleaning and suspension, minimize filtrate invasion to formation and reduces torque and drag in reservoir drill in fluids. Provides better rheological profile with elevated low-shear-rate viscosity and highly shear-thinning characteristics. |
| Sodium Bromide | Used to eliminate potential of formation damage from the precipitation of carbonate, bicarbonate or sulfate compounds associated with using calcium-base brines where formation waters contain high concentrations of bicarbonate and sulfate ions. |
| High-quality polyanaionic cellulose Regular viscosity | Filtration control agent is used in most water-based drilling fluids, can provide secondary viscosity and is effective even at low concentrations. It is suitable for use in fresh water, salt water and brine-based fluids & stable to 300°F (149°C). Effective in moderate to high pH systems. |

## WORKOVER, COMPLETION AND DRILL IN PRODUCTS

| Product | FUNCTION |
|---|---|
| Calcium Bromide Liquid, used for mixing high density, solids free completion brines | Used to formulate clear-brine workover and completion fluid with densities ranging from 8.4 to 15.3 lb/ gal. Inhibits hydration and migration of swelling clays. |
| Amine corrosion inhibitor (15-20%) for clear completion/ Packer brines | It controls corrosion of tubing & casing strings when used in workover & packer brines including sodium chloride, calcium chloride, sodium bromide, calcium bromide & zinc bromide. Provide protection at bottomhole temperature upto 300 F. |
| Amine corrosion inhibitor (30-35%) for clear completion/ Packer brines | It controls corrosion of tubing & casing strings when used in workover & packer brines including sodium chloride, calcium chloride, sodium bromide, calcium bromide & zinc bromide. Provide protection at bottomhole temperature upto 350 F. |
| Calcium Carbonate Flakes | Acid-soluble bridging and weighting agent for controlling fluid loss and density. Available in Fine, Medium & coarse grades. |
| Ground marble (calcium carbonate) | High purity ground marble, used as a bridging & weighting agent in drilling, work over & completion fluids. It is generally more pure with high hardness & provides better acid solubility. Available in different microns size. |
| Water soluble brine lubricant | Provides exceptional reduction in metal-to-metal friction when added to seawater, sodium chloride, sodium bromide, calcium chloride and calcium bromide completion fluids. Reduce torque and drag in high-angle, extended-reach wells. |

## WORKOVER, COMPLETION AND DRILL IN PRODUCTS

| Product | FUNCTION |
|---|---|
| Mud cake clean up solvent | Multi-functional surfactant additive, serves as a wetting agent, a demulsifier and an interfacial tension reducer. Soluble in oil, acid, and water to penetrate deep in the formation to dissolve oil films on fines leaving them water-wet thereby preventing particle plugging and minimizing loss of permeability. |
| Potassium Formate brine | Used to formulate clear-brine workover and completion fluid with densities ranging from 8.4 to 13.1 lb/ gal. Inhibits hydration and migration of swelling clays. |

## COMMERCIAL CHEMICALS

| Product | FUNCTION |
|---|---|
| Calcium Chloride (CaCl2) powder is single salt used as soluble weighting agent and source of calcium | Used to form clear-brine workover and completion fluid with densities ranging from 8.4 to 11.8 lb/ gal. Inhibits hydration and migration of swelling clays. Used in invert emulsion mud to adjust the activity of the water phase. |
| CaCO3 is Acid Soluble weighting or bridging agent | Acid-soluble bridging and weighting agent for controlling fluid loss and density in drilling, workover & completion. |
| Sized Calcium Carbonate | Acid-soluble bridging and weighting agent for controlling fluid loss and density. Available in Fine, Medium & coarse grades. |
| Sodium hydroxide to control PH | Used to maintain or increase pH. Increasing pH with NaOH precipitates magnesium (Mg 2+) and suppresses (Ca2+) in high hardness water, reduces corrosion and neutralizes acid gases such as carbon dioxide and hydrogen sulfide. |
| Gypsum (Calcium sulfate ($CaSO_4 2H_2O$)) to treat carbonate contamination in high pH mud | Source of Ca ion, used to reduce carbonate ion contamination, without increasing the pH in freshwater and seawater muds. |
| Calcium Hydroxide for Alkalinity control & bicarbonate contamination. Primary invert emulsion mud component | Economical source of calcium and alkalinity in water and oil base muds. Flocculating agent in spud mud for improved hole cleaning, removes soluble carbonate ions, controls corrosion and activates fatty acid in oil base mud. |
| Calcium Oxide | Used as a source of alkalinity to elevate pH, buffer aqueous fluids at high pH, flocculate bentonite, precipitate soluble carbonate ions, and saponify fatty acid emulsifiers. |

## COMMERCIAL CHEMICALS

| Product | FUNCTION |
|---|---|
| KCL, POTASIUM CHLORIDE | Used to form clear-brine workover and completion fluid with densities ranging from 8.4 to 9.7 lb/ gal. Inhibits hydration and migration of swelling clays. |
| KOH, Caustic Potash, Potassium Hydroxide | Used to maintain or increase pH, inhibitor for swelling shales. Used instead of caustic soda to reduce the sodium ion content and avoid dispersion of clays in inhibitive water-base fluids and drill-in fluids. Increasing pH with KOH precipitates magnesium (Mg 2+) and suppresses (Ca2+) in high hardness water, reduces corrosion and neutralizes acid gases such as carbon dioxide and hydrogen sulfide. |
| Is used as a tracer in water base Mud | Used as a tracer in water base muds to determine mud filtrate invasion in formation. |
| Sodium Acid Pyrophos-phate (Na2H2P2O7) is an effective dispersant and protect against cement contamination | Efficient dispersant in low-weight fresh water muds used in up hole drilling and effective additive for treating cement contami-nation and reduce viscosity. |
| Sodium carbonate to treat Ca ion out in makeup water and to remove Calcium Contamination particularly due to Anhydrite | Used as a source of carbonate ions to precipitate & remove soluble calcium from water base fluids and makeup waters. Provide effective treatment for Calcium Contamination particu-larly due to Anhydrite, increases pH and flocculates spud mud. |
| Sodium bicarbonate. To remove calcium | Used as a source of bicarbonate ions to precipitate & remove soluble calcium from water base fluids and reduce pH. Provide effective treatment for cement contamination and deflocculates cement contaminated fluids. |

## COMMERCIAL CHEMICALS

| Product | FUNCTION |
|---|---|
| Magnesium Oxide, Anhydrous | Used as a pH buffering agent, promotes temperaute stability and enhances the rheological and filtration properties of water base drilling fluid at high temperature. |
| NaCL for weight up and Salt Saturtaed System | Used to form clear-brine workover and completion fluid with densities ranging from 8.4 to 10 lb/ gal. Increase shale inhibition by decreasing water activity, reducing formation salt dissolution, reducing freezing point of water base fluids and reducing the potential of forming gas hydrates. |
| Na2CrO4, sodium salt in which chromium atoms are in the plus-6 valence state | Used as corrosion inhibitor. |
| Na2Cr2O7, sodium salt in which chromium atoms are in the plus-7 valence state | Is used as corrosion inhibitor and to prevent temperature gelation. |
| Long term tracer | Used as long term tracer in water base muds to determine mud filtrate invasion in formation. |
| Zinc Bromide Liquid, used for mixing high density, solids free completion brines | Used to formulate clear-brine workover and completion fluid which requires density to 19.2 lb/ gal. Inhibits hydration and migration of swelling clays. |
| Citric Acid for Cement Contamination | Reduce pH and removes calcium to pretreat or remedy cement contamination, sequesters soluble iron to prevent polymer crosslinking in the drilling fluid system. |

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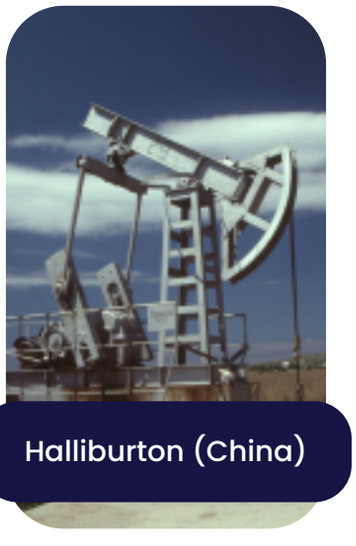

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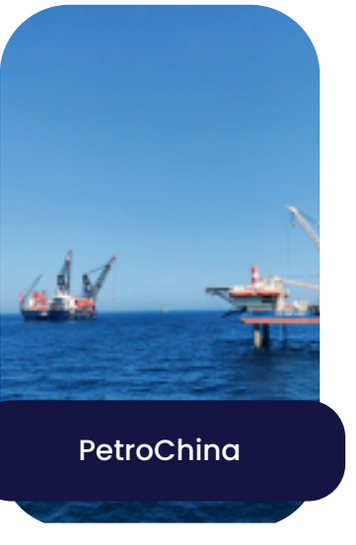

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