gumpro

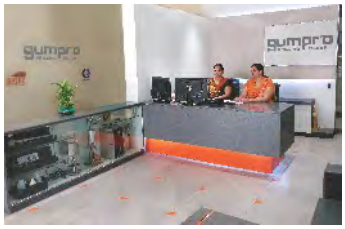
DRILLING FLUIDS

Solutions

gumpro DRILLING FLUIDS

- Manufacturing Specialty Oilfield Chemicals since 1983
- An ISO 9001:2015 Certified Company
- R&D Centre with Dedicated Scientists
- Custom Made Products
- Completely Automated Manufacturing Process
- Plants in India and U.A.E with dedicated QC Laboratories
- Committed to Minimize Environmental Impact
- Adhere to Oilfield Standards of Quality Assurance, Packing, Logistics and Documentation
- Inventors & Makers of POLYO Series













POLVO SERIES

Polvo series additives through innovative technology are made into powdered form from existing liquid state.

Polvo series products are mainly for NAF and selected WBM applications.

PATENTED

Salient Features :

- **Polvo series** provides complete range of oil based drilling fluid additives in powder form.
- **Polvo series** products are free flowing readily dispersible powder.
- **Polvo series** chemicals being in powder form do not have any limitation of freezing as in conventional liquid additives.
- **Polvo series** are packed in bags thereby eliminating risk of leakages of liquid from drums and residual losses.
- **Polvo series** provides added advantage of eliminating high cost of drum handling, disposal.
- **Polvo series** additives are compatible with all types of existing non-aqueous drilling fluids additives and base oils.
- **Polvo series** emulsifiers being in powder forms do not have any mutual or other solvents which are essential to the liquid counterpart. Mutual solvents tend to destabilize emulsions.
- **Polvo series** emulsifiers are more effective.
- **Polvo series** additives are suitable for wide range of Mud Weights and Oil Water Ratios.
- **Polvo series** additives are effective over a wide range of bottom hole temperatures.
- **Polvo series** additives enhances system rheology and reduces dosages of viscosifiers.

Polvo Additives for Water Based Mud :

- **Polvo Lube, Polvo EPTR** and **Polvo EB Lube** are available as lubricants for different conditions of applications.

Limitations :

- **Polvo series** may increase system rheology which can be optimised by reduced dosages of traditional viscosifiers.

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GT Mul HP

GT MUL HP is a multipurpose nitrogen free emulsifier for high brine internal phase which works well as Primary as well as Secondary Emulsifier.

Salient Features :

- **GT Mul HP** is a multipurpose nitrogen free emulsifier for high brine internal phase.
- **GT Mul HP** also works as a high temperature emulsifier for normal oil water ratio.
- **GT Mul HP** works as primary as well as secondary emulsifiers.
- **GT Mul HP** provides a strong and stable emulsion over wide range of internal phase salinities with as low as 30% continuous oil phase which results in substantial savings in cost.
- **GT Mul HP** adsorbs on to mineral surfaces, reducing interfacial surface energy and rendering barite and other weighing material and drill solids oil wet.
- **GT Mul HP** is tolerant to water and drilled solids contaminations.
- **GT Mul HP** provides stable emulsion (>450^{0}F / 232^{0}C) and excellent oil wetting properties at higher oil water ratios.

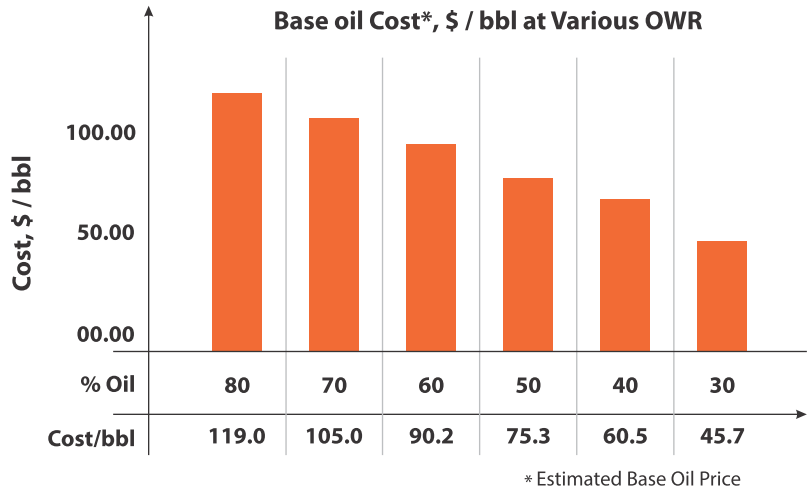
Application and Dosages :

- **GT Mul HP** is compatible with all types of base oils.
- **GT Mul HP** is required at dosage of 4 to 18 lb/bbl (11.4 to 45.7 kg/m^{3}), depending on the density, oil : water ratio and required temperature stability.

Limitations :

- **GT Mul HP** requires relatively higher dosage of viscosifiers when oil phase > 60%.
- **GT Mul HP** with oil water ratio < than 50% oil are stable upto 250^{0}F.

Cost Advantages of GT Mul HP :



* Estimated Base Oil Price

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GT Vis SF

GT Vis SF is a viscosifier for non-aqueous clay free systems.

GT Vis SF is a liquid viscosifier providing flat rheology for deep water environment and is also effective at high temperatures.

Salient Features :

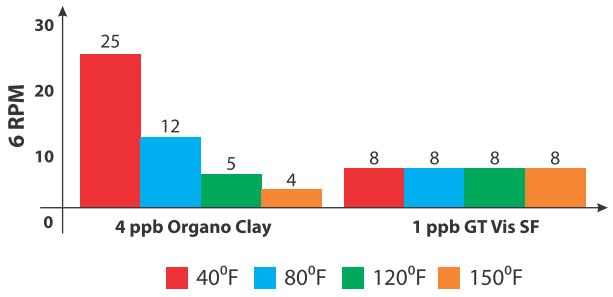
- **GT Vis SF** provides rheological profile at low dosages compared to organo clays.
- **GT Vis SF** provides flat rheology.
- **GT Vis SF** is used in non-damaging clay free system as an NAF Drill-In-Fluids.
- **GT Vis SF** provides higheryield point and gel strengths with minimal increase in plastic viscosity.
- **GT Vis SF** provides high thixotropic properties to suspend the cuttings.
- **GT Vis SF** does not give progressive gels.
- **GT Vis SF** increases Low-Shear-Rate Viscosity (LSRV).
- **GT Vis SF** pill can be used to clean bore-hole in directional, ERD or horizontal wells.

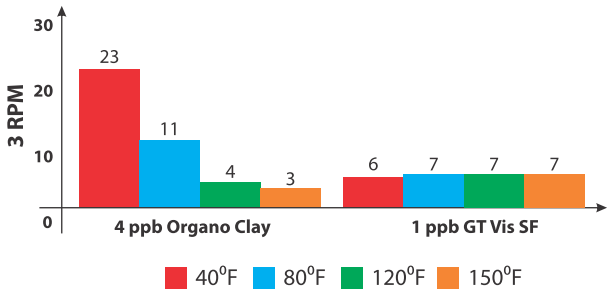
Application and Dosage :

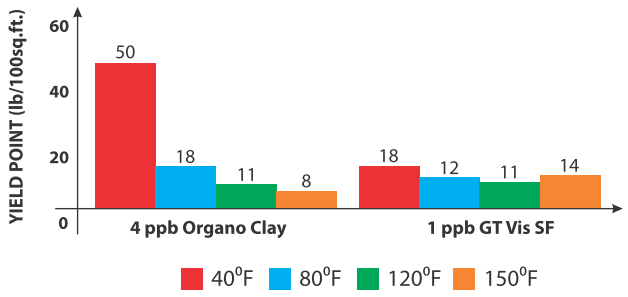
- **GT Vis SF** provides required rheological profile with and without organo-phillic clays.
- **GT Vis SF** is used 0.25 to 3 lb/bbl (0.7- 8.6 kg/m^3).

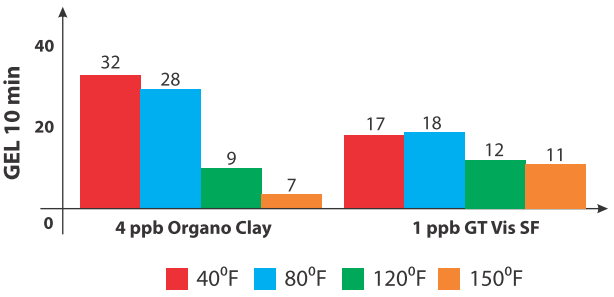
Limitations :

- **GT Vis SF** is to be mixed slowly.









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GT Trol L

GT Trol L is fluid loss control additive for non-aqueous fluids black powder free system.

GT Trol L provides fluid loss control up to 450^{0}F / 232^{0}C.

Salient Features :

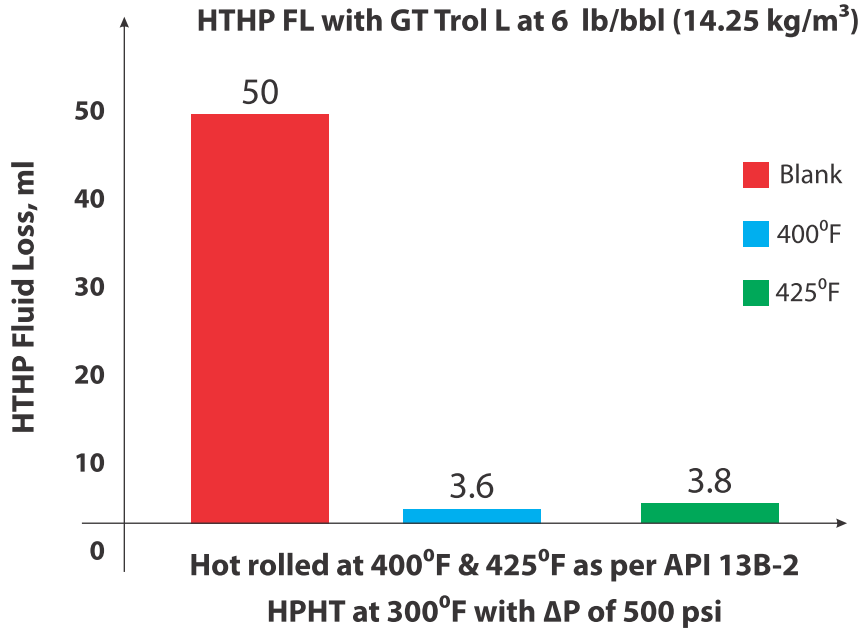
- **GT Trol L** is effective in controlling HPHT Fluid Loss for temperatures up to 450^{0}F / 232^{0}C.
- **GT Trol L** is compatible with a wide range of internal brine phase salinities.
- **GT Trol L** performance is not affected by contaminants such as water, solids and cement.
- **GT Trol L** also improves emulsion stability and rheology at high temperatures.

Application and Dosages :

- **GT Trol L** is used as dosage in the range from 2 to 8 lb/bbl. (5.72 to 22.8 kg/m^3), depending on the density, oil water ratio and required temperature stability.

Limitations :

- **GT Trol L** is required to be added slowly, fast addition may result in temporary coagulation requiring additional shearing to disperse it.



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GT Sal Lube

GT Sal Lube is a fully soluble lubricant for all types of clear brines.

GT Sal Lube is a non-toxic, bio-degradable environment friendly lubricant.

GT Sal Lube provides metal to metal lubrication in clear brines for completion.

Salient Features :

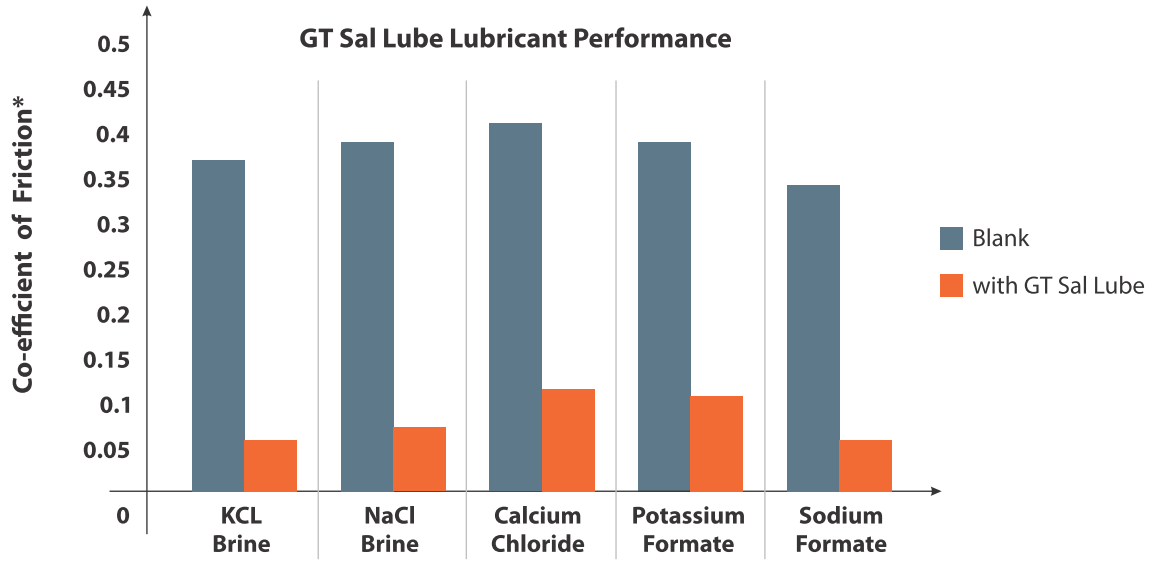
- **GT Sal Lube** is an effective universal lubricant for high angled, extended reach wells in completion operations.
- **GT Sal Lube** is 100% soluble in any brine to provide a clear fluid.
- **GT Sal Lube** reduces the torque and drag with all types of brines.
- **GT Sal Lube** is effective at low concentration (0.25 - 0.7% by volume).
- **GT Sal Lube** increases the lubricity from 25% to 80%.
- **GT Sal Lube** does not affect the filtration operations.

Application and Dosage :

- **GT Sal Lube** is added to brine pit to ensure an even distribution.
- **GT Sal Lube** is added at a dosage of 0.25 - 0.6 v/v.

Limitations :

- **GT Sal Lube** is used only for clear brines.
- **GT Sal Lube** addition should not be through hopper as it may induce foaming.



* Major on OFITE EP and Lubricity tester model number 112-00-1

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Innovative Packaging

An Innovation in Powdered Drilling Products Packaging.

An Novel approach for packaging powdered drilling fluid additives to reduce the transportation cost.

PATENT PENDING

Salient Features :

- Increases the bulk density of the fluffy material.
- Will result in more material being packed.
- Can be customized to suit the palletisation of different types of materials.
- Saves cost by making it possible to ship more materials by volume reduction.
- Allows more material in same type of packaging resulting in less handling of waste.
- Requires comparatively less storage space.
- Increases the shelf life.
- Higher tolerance to rigorous oil field handling.



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Kure Pill

Kure Pill is a Reservoir Friendly, Cross Linked Soft cellulose polymer used to control loss of clear brine fluid to the formation during cased hole completion or workover.

Salient Features :

- **Kure Pill** is reservoir friendly.
- **Kure Pill** is easily pumpable.
- **Kure Pill** can be used in water or brine depending on the hydrostatic head requirement.
- **Kure Pill** can be pushed through grating of all sizes in the brine forming chunks floating in the brine.
- **Kure Pill** does not affect the base fluid viscosity - easy pumping even with high concentration.
- **Kure Pill** can be squeezed through bit under pumping pressure.
- **Kure Pill** does not stick to the sides of the metals or formation.
- **Kure Pill** is easy to flow back.
- **Kure Pill** is acid soluble.
- **Kure Pill** is packed in 5-gallon pails.

Application and Dosages :

- Take 0.62 m^3 of water or brine in a tank
- Place a grating on the hatch opening of the tank.
- Mix 20 pails of 5 gallons each of **Kure Pill** (in normal cases of losses) directly to the tank through the grating on the tank opening.
- Depending on severity of losses - up to 40 pails can be mixed in 0.62 m^3 of base fluid giving approximately 1.24 m^3 of the pill in place of 1 m^3.

Limitations :

- **Kure Pill** is used in non-zinc halide brines







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GT Bottoms Up

GT Bottoms Up is a drilling fluid additive for cleaning the well of the drill cuttings.

GT Bottoms Up is un-stretchable monofilament fiber made from synthetic proprietary polymer fiber.

Salient Features :

- **GT Bottoms Up** fiber are nontoxic, chemically inert and does not increase the viscosity of the base fluid in drilling fluids.
- **GT Bottoms Up** is added to drilling fluids to bring out the drill cuttings from the well bore.
- **GT Bottoms Up** forms a network in the mud or any aqueous carrier fluid for lifting the cuttings.
- **GT Bottoms Up** fiber uniformly suspends in any water-based drilling mud system and brings out solids from the hole while drilling.
- **GT Bottoms Up** removes metal fragment during milling operations.
- **GT Bottoms Up** fibers provides a cost effective hole-cleaning method prior to running casing, logging or tripping pipe.
- **GT Bottoms Up** is unaffected by sub-freezing temperatures as with some liquid polymers.

Application and Dosages :

- **GT Bottoms Up** fiber are easily added and premixed in drilling fluids at various concentration level depending on desired solids suspension. In water a dosage of 0.7 to 1.5 kg/m^3 of **GT Bottoms Up** fiber has shown to be effective to remove cuttings.
- **GT Bottoms Up** are mainly to be used in a pill to clean the hole. It can be mixed in mud or if permitted in water treated with fluid loss additive and shale inhibitor.
- **GT Bottoms Up** fiber are removed at the shaker along with the drill cuttings.



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GT Salt Hib

GT Salt Hib is specially designed product to prevent the crystallization of sodium chloride salt at saturation level of brine.

Salient Features :

- **GT Salt Hib** chemical is to prevent crystallization of salt while drilling salt domes using salt saturated water-based mud by controlling deposition of salts at different temperatures and pressures from bottom hole to surface.
- **GT Salt Hib** reduces the salt crystallization by a minimum of 50% in treated salt saturated brine compared to salt saturated brine with no salt crystallization inhibitor.
- **GT Salt Hib** increases solubility of salt beyond its saturation point at normal room temperature and pressure conditions in clear brine.

Application and Dosages :

- **GT Salt Hib** can be easily added through the mud mixing hopper.
- **GT Salt Hib** is effective at a concentration of 80-90 Kg/m^3.



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Emulsifiers

Emulsifiers for invert emulsion drilling fluids are manufactured through a unique process which results in :

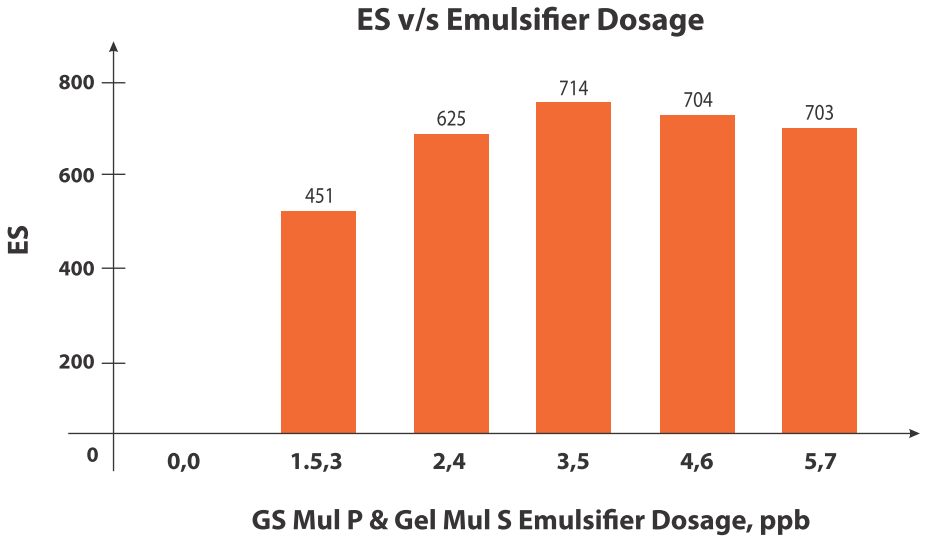
- **Strong Emulsion**
- **Effective at High Temperatures**
- **Biodegradable**
- **Low Cost**

Different Types of Emulsifiers Manufactured are :

- **GS Mul P -** Primary Emulsifier
- **Gel Mul S -** Secondary Emulsifier
- **GS Mul Ai1 -** All in One Emulsifier
- **Polvo Mul P -** Powdered Primary Emulsifier
- **Polvo Mul S -** Powdered Secondary Emulsifier
- **Polvo Mul Ai1 -** Powdered All in One Emulsifier

Features and Benefits :

- Concentrated products with minimum solvent.
- Compatible with all kinds of base oils like linear alpha olefin, internal olefins, etc.
- Effective over a wide range of oil water ratio and different mud weights.
- Stable and resistant to all kinds of contaminants including cement and water influx.



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Flake Calcium Carbonate

A Unique Loss Circulation Material

Gumpro through its innovative approach has developed Calcium Carbonate in flake form under commercial name of GT Flake.

GT Flake is available in three different grades :

- **GT Flake C -** Coarse
- **GT Flake M -** Medium
- **GT Flake F -** Fine

However, GT Flake can be sized for need based application.

Features and Benefits :

- **GT Flake** is reservoir friendly with minimum 98.0% acid soluble.
- **GT Flake** can be used both in water based and oil based drilling fluid systems.
- **GT Flake** has been successfully used in controlling seepage losses.
- **GT Flake** is designed to overcome the severe mud losses including total mud losses.

Coarse



D_{50} 1700 - 2300 µ

Medium



D_{50} 700 - 900 µ

Fine



D_{50} 200 - 300 µ

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Shale Inhibitor

Customized Polyamine

Reactive shales are known to be highly problematic resulting in increased well cost to the extent of well being lost.

Gumpro Drilling Fluids designs & manufactures various kinds of Polyamines for inhibition of different types of reactive shales.

Polyamine performance as inhibitor depends on :

- **Type of Amine – P, S or T**
- **Molecular Weight**
- **Type and Place of Substitution**
- **Nature of Ligand**

Clients require Polyamine based inhibitors for specific shale encountered in the assets.

The different Polyamine marketed by Gumpro are as follows :

1. **Gel PA**
2. **Gel PA A**
3. **Gel PA D**
4. **Gel PA P**
5. **Gel PA PE**
6. **GT Gard C**

In addition to the above, Gumpro can tailor make Polyamine based inhibitor for any specific reactive shales.



Figure 1 : Before Addition of Polyamine



Figure 2 : After Addition of Polyamine

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Lubricants

Gumpro Drilling Fluids manufactures various types of lubricant to meet different application and conditions in water based drilling fluid systems.

Different Types of Lubricants manufactured are :

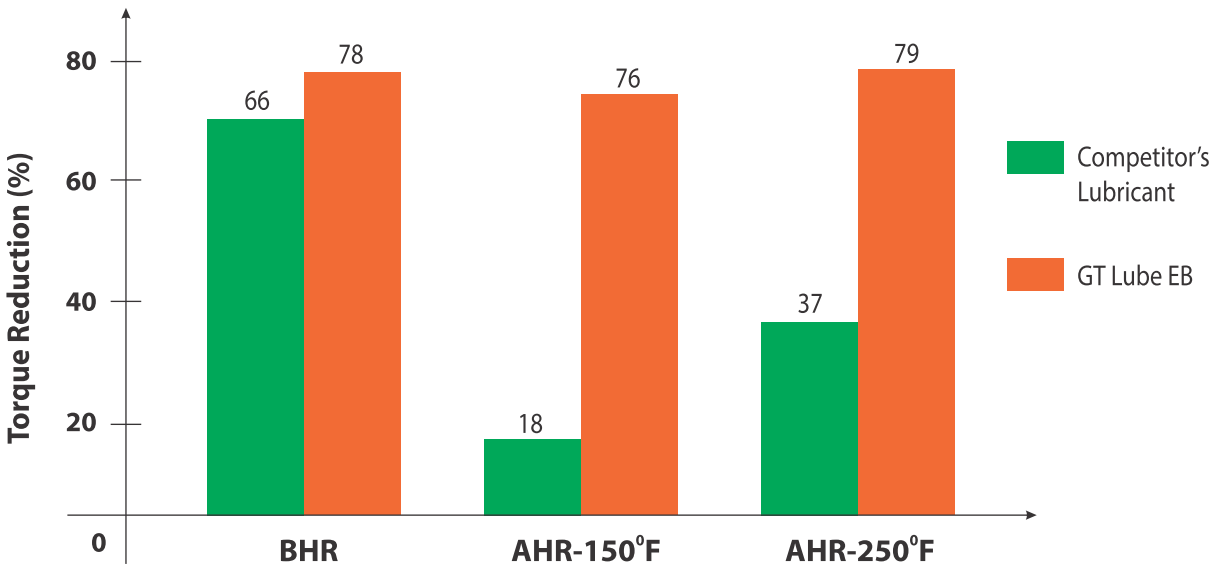
- **Gel Lube -** General Purpose Lubricant
- **GT Lube EB -** High Performance Ester Based Lubricant
- **Gel Sil EPL -** Silicate Lubricant
- **GT Sal Lube -** Clear Brine Lubricant
- **GT EP Torque Reducer -** Extreme Pressure Lubricant

Features and Benefits :

- **Gel Lube :** Cost-effective and provides excellent lubrication in conventional systems
- **GT Lube EB :** Effective ester based lubricant for high angled and extended reach wells
- **Gel Sil EPL :** Is an excellent lubricant for silicate mud systems and has high tolerance to alkaline pH
- **GT Sal Lube :** Readily soluble in any brine giving torque and drag reduction
- **GT EP Torque Reducer :** Aids in minimizing torque drag and differential sticking tendencies

None of the lubricants greases out.

Performance of GT Lube EB Vs Competitor's Ester Based Lubricant in $CaCl_2$ Mud System.



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