Alpine
SPECIALTY CHEMICALS

ALPINE SPECIALTY CHEMICALS

Version 6

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Lubricants

ALPINE DRILL BEADS

Typical physical properties

Physical appearance	Semi-transparent copolymer spheres
Specific gravity	1.02 to 1.15
Solubility in water	Insoluble
Temperature range	Stable to 525°F (274°C)
Size range	Fine: 35–140 mesh (100–500 µm) Coarse: 18–45 mesh (350–1,000 µm)
Reactivity	Inert

ALPINE DRILL BEADS† additive is a completely spherical copolymer bead designed to act as a mechanical lubricant.

ALPINE DRILL BEADS lubricant is temperature stable to 525°F (274°C). It is compatible with water-base, oil-base and synthetic-base mud systems. Because of its high compressive strength, this lubricant is able to minimize casing wear, reduce torque and drag and lower the risk of differential sticking in depleted, underbalanced formations.

Applications

ALPINE DRILL BEADS additive is designed for use in situations where torque, drag, casing wear, and/or the potential for differential sticking are likely.

Typical applications for ALPINE DRILL BEADS lubricant are highly deviated holes, wells with high tortuosity and wells with severe or unplanned doglegs where high torque and drag are encountered.

The initial concentration of ALPINE DRILL BEADS additive is in the range of 2–6 lb/bbl (5.6–17 kg/m³). This value can be adjusted in accordance with the torque and drag limitations of the drilling operation. After the initial treatment, additions need to be made to replace product that is left embedded in the formation or the mud filter cake.

In wells where rotation inside of casing is required for extended periods of time, ALPINE DRILL BEADS lubricant reduces casing wear, which in turn reduces the risk of compromised casing integrity.

Benefits

- Reduces friction
- Minimizes casing wear
- Decreases torque and drag
- Breaks capillary attraction
- Lowers risk of differential sticking
- Compatible with all drilling fluids
- Non-abrasive

ALPINE DRILL BEADS mechanical lubricant can also be spotted in an openhole for logging operations and for running casing at 8–12 lb/bbl (22.8–34.2 kg/m³).

ALPINE DRILL BEADS lubricant is available in fine or coarse sizes, varying from 100 microns to 1,000 microns.

Packaging and storage

ALPINE DRILL BEADS is packaged in 50 lb (22.7 kg), multi-wall, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.

ALPINE DRILL BEAD Recovery Unit

Typical components and footprint

Component	Length	Width	Height	Weight
Main recovery unit	11′	7′	12′4″	11,600 lb
Recovery shaker	8′	5′	4′8″	2,200 lb
Drip pan	8′	5′	12′	850 lb
Recovery pump	5′4″	2′	2′10″	850 lb

The ALPINE DRILL BEAD† Recovery Unit is designed to minimize the amount of ALPINE DRILL BEAD particles lost to surface solids control equipment, eliminating costly and repetitive additions of drill beads to the mud system.

Without a recovery unit, the majority of drill beads would be removed from the circulating system at the shale shakers.

ALPINE has designed a system that meets strict industry guidelines for safety, minimizes the amount of personnel required and provides an efficient recovery method.

Utilizing the BRU (Bead Recovery Unit), all cuttings and solids removed at the rig shaker are transported to a second set of shakers where drill solids and waste material are separated from the drill beads, and are discharged to the waste stream, while the drill beads are recovered and returned to the suction pit.

How it works

ALPINE positions the equipment as close to the rig shale shakers as possible. As cuttings and drill beads return from downhole, they are washed down to the first shale shaker with base fluid where fine solids and drill beads pass through a 10-mesh screen into the catch tank. The fluid is then pumped through hydrocyclones which separate the drill solids from the drill beads. The drill solids are discharged in the underflow of the hydrocyclones and are removed by a fine-mesh screen then transported to the solids control waste stream.

Features

- Streamlined to fit all rigs
- Designed to meet OSHA standards
- Customized linear-motion shakers
- Self-contained and fully equipped

Benefits

- Meets safety requirements
- Efficient recovery of drill bead particles
- Minimal personnel requirements
- Compatible with all WBM, OBM and SBM systems
- Screen changes in one minute

The ALPINE DRILL BEAD particles have a lower specific gravity (1.1 Sg) than the cuttings, so they will pass with the overflow to a secondary shaker where a fine-mesh screen captures them.

The drill beads are then mixed with drilling fluid and pumped to the suction pit where they are sent downhole again.

Lubricants

ALPINE SPOTTING BEADS

Typical physical properties

Physical appearance	Copolymer spheres
Specific gravity	1.08–1.50
Solubility in water	Insoluble
Temperature range	Stable to 425°F (218°C)
Size range	18–200 mesh (74–1000 µm)
Reactivity	Inert
Color	May vary*

ALPINE SPOTTING BEADS† additive is a spherical copolymer bead designed to act as a mechanical lubricant.

ALPINE SPOTTING BEADS lubricant is temperature stable to 425°F (218°C). It is compatible with water-base, oil-base and synthetic-base mud systems. Because of its wide range of particle sizes and specific gravities, this lubricant is able to reduce torque and drag and lower the risk of differential sticking in depleted, underbalanced formations by optimizing radial symmetry of the beads within the wellbore.

Applications

ALPINE SPOTTING BEADS additive is designed for usea in situations where torque, drag and/or the potential for differential sticking are likely. Typical applications for ALPINE SPOTTING BEADS lubricant are highly deviated holes, wells with high tortuosity and wells with severe or unplanned doglegs where high torque and drag are encountered.

ALPINE SPOTTING BEADS mechanical lubricant should be spotted in openhole for logging operations and for running casing at 8–12 lb/bbl (22.8–34.2 kg/m³).

Benefits

- Reduces friction
- Radial symmetry
- Decreases torque and drag
- Breaks capillary attraction
- Lowers risk of differential sticking
- Compatible with all drilling fluids
- Non-abrasive

Due to cuttings-bed deposition from the potential rapid settling of drill solids and barite in hole angles between 40 and 60 degrees from vertical from the Boycott settling, the minimum recommended interval for spotting beads would be at hole angles between 30 and 70 degrees. If casing is set through these critical angles, it may be feasible to spot the beads in openhole from the casing shoe to T.D.

ALPINE SPOTTING BEADS mechanical lubricant has a wide range of particle sizes, 18–200 mesh (74–1000 microns) and specific gravities (1.08–1.50 sg.) and aids in optimizing the radial symmetry of the beads in the wellbore.

Packaging and storage

ALPINE SPOTTING BEADS additive is packaged in 50 lb (22.7 kg), multi-wall, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.

* Color may vary as to manufacturing process and has no affect on the performance in this application.

QUICK SLIDE DS

Benefits

- Effective lubricant for water-base mud systems
- Decreases the coefficient of friction, which reduces torque and drag
- Reduces the potential for differential sticking
- Mechanically and chemically lubricates
- Temperature stable to 400°F in most cases
- Reduces the tendency for bit and BHA accretion when drilling sticky shales

Typical physical properties

Physical appearance	Milky white/tan liquid
Specific gravity	1.00–1.02
Flash point	>201°F (94°C)

QUICK SLIDE† DS multi-blend lubricant is designed to decrease the coefficient of friction in all water-base drilling fluids.

Decreasing the coefficient of friction reduces torque, drag and the potential for differential sticking in the wellbore. QUICK SLIDE DS lubricant is a suspension of polymer drill beads in a base fluid that contains no hydrocarbons. The copolymer beads act as a mechanical lubricant, embedding themselves in the filter cake in openholes and providing mechanical standoff in cased holes, reducing metal-to-metal friction. The carrying fluid has a unique wettability characteristic that lowers the potential of accretion on the BHA and drill pipe, allowing more consistent weight to be applied to the bit. QUICK SLIDE DS lubricant is only slightly water soluble under most conditions, but is dispersible in water-base muds.

Applications

QUICK SLIDE DS multi-blend lubricant is designed for situations where torque and drag and/or the potential for differential sticking are likely, such as when drilling deviated holes or wells with high overbalance. The lubricant is applied in situations where directional concerns require extended drilling without rotation, which causes bottomhole assemblies to hang up because of a lack of weight transfer to bottom. It is also applied during casing and logging operations where hole conditions warrant the use of a lubricant for tools and pipe to successfully reach bottom.

Normal concentrations of QUICK SLIDE DS lubricant are in the range of 1½–3% by volume (5–10 lb/bbl [14.3–28.5 kg/m³]) depending on the fluid density, desired reduction in coefficient of friction and the mud system. QUICK SLIDE DS blended lubricant can be used in higher concentration when applied in pills where torque and drag are clearly being produced in build sections of highly deviated wells. In those situations, concentrations should range 7–10% by volume (24.5–35 lb/bbl [69.8–99.8 kg/m³]). When circulating these pills, allow sufficient time for the drill beads to work themselves into the formation around the BHA.

QUICK SLIDE DS multi-blend lubricant is water dispersible and blends easily in all water-base mud systems. It can be added to the mud system through the mud hopper or directly to the surface system anywhere good agitation is available.

Packaging and storage

QUICK SLIDE DS lubricant is packaged in 55-gal (208-L) drums and in 550-gal (2082-L) tote tanks.

Store in a dry location away from sources of heat or ignition.

Lubricants

QUICK SLIDE CT

Benefits

- Effective lubricant for water-base mud systems
- Decreases the coefficient of friction, which reduces torque and drag
- Reduces the potential for differential sticking
- Mechanically and chemically lubricates
- Temperature stable to 400°F (204°C)
- Reduces the tendency for bit and BHA accretion when drilling sticky shales

Typical physical properties

Physical appearance	Milky white liquid
Specific gravity	1.00–1.02
Flash point	>201°F (94°C)

QUICK SLIDE CT† multi-blend lubricant is designed for coil tubing operations to decrease the coefficient of friction in all water-base drilling fluids.

Decreasing the coefficient of friction reduces torque, drag and the potential for differential sticking in the wellbore. QUICK SLIDE CT lubricant is a suspension of polymer drill beads in a base fluid that contains no hydrocarbons. The co-polymer beads act as a mechanical lubricant, embedding themselves in the filter cake in openholes and providing mechanical standoff in cased holes, reducing metal-to-metal friction. The carrying fluid has a unique wettability characteristic that lowers the potential of accretion on the bottomhole assembly (BHA) and drill pipe, allowing more consistent weight to be applied to the bit. QUICK SLIDE CT lubricant is only slightly water soluble under most conditions, but is dispersible in water-base muds.

Applications

QUICK SLIDE CT multi-blend lubricant is designed for situations where torque and drag and/or the potential for differential sticking are likely, such as when drilling deviated holes or wells with high overbalance. The lubricant is applied in situations where directional concerns require extended drilling without rotation, which causes bottomhole assemblies to hang up because of a lack of weight transfer to bottom. It is also applied during casing and logging operations where hole conditions warrant the use of a lubricant for tools and pipe to successfully reach bottom.

Normal concentrations of QUICK SLIDE CT lubricant are in the range of 1½–3% by volume (5–10 lb/bbl [14.3–28.5 kg/m³]) depending on the fluid density, desired reduction in coefficient of friction and the mud system. QUICK SLIDE CT blended lubricant can be used in higher concentration when applied in pills where torque and drag are clearly being produced in build sections of highly deviated wells. In those situations, concentrations should range 7–10% by volume (24.5–35 lb/bbl or 69.8–99.8 kg/m³). When circulating these pills, allow sufficient time for the drill beads to work themselves into the formation around the BHA.

QUICK SLIDE CT multi-blend lubricant is water dispersible and blends easily in all water-base mud systems. It can be added to the mud system through the mud hopper or directly to the surface system anywhere good agitation is available.

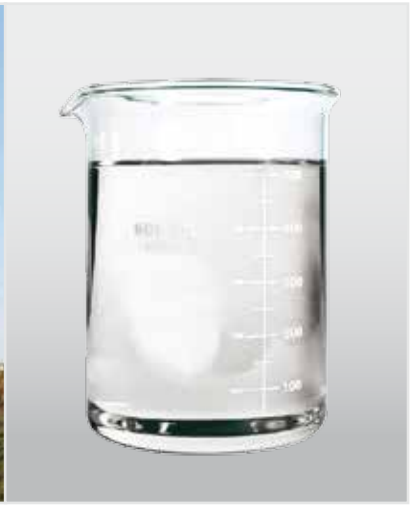
Packaging and storage

QUICK SLIDE CT lubricant is packaged in 55-gal (208-L) drums and in 550-gal (2082-L) tote tanks.

Store in a dry location away from sources of heat or ignition.

Lubricants

BRINE SLIDE



Typical physical properties

Physical appearance	Clear liquid
Specific gravity	1.01 @ 60°F (16°C)
Solubility in water	Soluble
pH	6.5

Benefits

- Return permeability testing has shown that ALPINE BRINE SLIDE lubricant is not damaging to the formation
- Completion fluid oil and grease values are not elevated with as much as 10 times the recommended concentration of ALPINE BRINE SLIDE lubricant
- ALPINE BRINE SLIDE lubricant does not contribute a sheen in a Static Sheen Test
- Soluble in most completion brines
- Effective at low concentration (0.6% by volume)
- Filtration operations are not adversely impacted by addition to brine

ALPINE BRINE SLIDE† additive is a patent-pending, water-soluble brine lubricant.

The novel chemistry demonstrates exceptional reduction in metal-to-metal friction when added to brine-base completion fluids at extremely low concentrations.

Applications

ALPINE BRINE SLIDE lubricant is designed to reduce the coefficient of friction in seawater, sodium chloride, sodium bromide, calcium chloride and calcium bromide completion fluids.

Torque and drag in completion fluids in high-angle, extended-reach wells has become a major concern to completion operations.

ALPINE BRINE SLIDE lubricant has reduced torque and drag up to 50% at extremely low concentrations in field applications.

The optimum concentration of ALPINE BRINE SLIDE lubricant is one drum per 218 barrels (0.6% by volume). The product can be added before the fluid passes through a DE filter press or cartridge unit. ALPINE BRINE SLIDE lubricant will not be removed by the filtration process.

Packaging and Storage

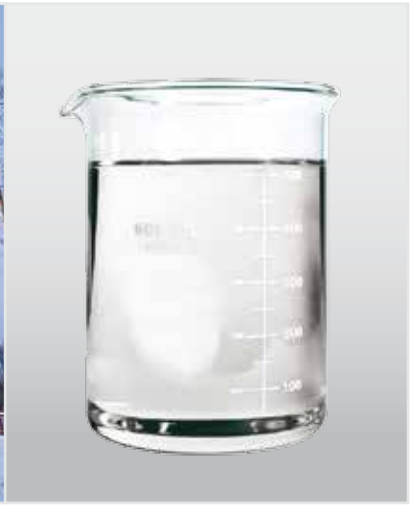
ALPINE BRINE SLIDE lubricant is packaged in 55-gal (208-L) drums.

Store above freezing temperature in a dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames.

Store away from incompatibles. Follow safe warehousing practices regarding palletizing, shrink-wrapping and/or stacking.

Lubricants

ALPINE BRINE SLIDE CW



Typical physical properties

Physical appearance	Clear liquid
Pour point	-1°F (-18°C)
Specific gravity	1.05 @ 60°F (16°C)
Solubility in water	Soluble
Flash point	293°F (145°C)
pH	6.0–7.5

ALPINE BRINE SLIDE† CW additive is a water soluble brine lubricant.

The novel chemistry demonstrates an exceptional reduction in metal-to-metal friction when added to brine-base completion fluids at extremely low concentrations. In addition, the product can withstand storage temperatures as low as 0°F.

Applications

ALPINE BRINE SLIDE CW lubricant is designed to reduce the coefficient of friction in seawater, sodium chloride, sodium bromide, calcium chloride, and calcium bromide completion fluids in cold weather climates.

Torque and drag in completion fluids in high-angle, extended-reach wells has become a major concern to completion operations.

ALPINE BRINE SLIDE CW lubricant has reduced torque and drag up to 50% at extremely low concentrations in field applications.

The optimum concentration of ALPINE BRINE SLIDE CW lubricant is one drum per 218 bbl (0.6% by volume). The product can be added before the fluid passes through a DE filter press or cartridge unit. ALPINE BRINE SLIDE CW lubricant will not be removed by the brine filtration process.

Benefits

- Return permeability testing has shown that ALPINE BRINE SLIDE CW lubricant is not damaging to the formation
- Completion fluid oil and grease values are not elevated even with as much as 10 times the recommended concentration of ALPINE BRINE SLIDE CW lubricant
- Ideally suited for use in cold weather climates
- Does not contribute to a sheen in a Static Sheen Test
- Soluble in most completion brines
- Effective at low concentration (0.6% by volume)
- Adding ALPINE BRINE SLIDE CW to brine will not adversely impact filtration operations

Packaging and Storage

ALPINE BRINE SLIDE CW lubricant is packaged in 55-gal (208-L) drums.

Store above 0°F. The CW product was created for cold weather storage. The pour point is -1°F so the product should be stored above that temperature in a dry, well-ventilated area. Keep container closed. Keep away from heat, sparks, and flames. Store away from incompatibles products. Follow safe warehousing practices regarding palletizing, shrink-wrapping, and/or stacking.

FORM-A-BLOK

Typical physical properties

Physical appearance	Gray powder
Specific gravity	1.98
Odor	Odorless or non-characteristic odor

FORM-A-BLOK† high-performance, high-strength additive is a single-sack proprietary blend designed for wellbore strengthening applications and a wide variety of lost-circulation scenarios, including, but not limited to, fractures and matrix permeability.

This product is applied in the form of a pill which, depending on the application, de-waters or de-oils rapidly to form a high-strength plug.

Applications

FORM-A-BLOK additive can be used in water-base or non-aqueous drilling fluids (NAF) for wellbore strengthening applications and to cure losses at temperatures up to 370°F (~188°C).

FORM-A-BLOK product is designed to be used for:

- Wellbore strengthening applications
- Curing partial or severe losses
- Openhole remedial and/or preventive lost circulation squeeze
- Improving casing shoe integrity
- Cased-hole squeeze for sealing perforations and casing leaks

The recommended concentration of FORM-A-BLOK additive is 40 lb/bbl (114 kg/m^3), for all fluid densities in freshwater, seawater or base oil/synthetic systems.

The only exception is NAF slurries at or above 15.0 lb/gal (1.79 sg) which require 20 lb/bbl (57 kg/m^3). While FORM-A-BLOK additive can be mixed with oil or synthetic base fluids, mixing a water-base pill will provide the maximum strength. The slurry can be weighted with barite, calcium carbonate or heavy brine. It is recommended to continuously agitate the pill until pumped and to pull pump screens prior to pumping. FORM-A-BLOK high-performance, high-strength additive is a single-sack proprietary blend designed for wellbore strengthening applications and a wide variety of lost-circulation scenarios, including, but not limited to, fractures and matrix permeability.

This product is applied in the form of a pill which, depending on the application, de-waters or de-oils rapidly to form a high-strength plug.

Benefits

- Quick-acting plug for wellbore strengthening and lost-circulation applications. Single-sack system. Compatible with freshwater, seawater and NAF
- Temperature stable up to 370˚F (~188°C) high-performance, high-strength pill
- Can be mixed as a pill in densities of up to 18.0 lb/gal (2.16 sg). Easy to mix with standard rig equipment
- Does not require an activator or retarder
- Does not depend on temperature to form a rigid plug
- Can be pre-mixed well in advance of pumping provided pill is agitated continuously

Packaging and storage

FORM-A-BLOK product is packaged in 20 lb (9 kg), multi-wall, paper sacks.

Store in a dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

Lost Circulation Products

FORM-A-SQUEEZE

Typical physical properties

Physical appearance	Gray powder
Specific gravity	1.70–1.76
Solubility in water	Slight
Odor	None

FORM-A-SQUEEZE† high-fluid loss high-solids slurry is a cost-effective solution to lost circulation in all types of fractures, vugular formations, matrix and underground blowout events.

When placed in and/or across a loss zone, the liquid phase squeezes from the slurry, rapidly leaving a solid plug behind. This process can cure losses instantly, without time or temperature dependency.

Applications

FORM-A-SQUEEZE lost-circulation (LC) plug can be used to stop losses occurring in any water-base and non-aqueous base fluid and can be easily mixed in freshwater, seawater or base oil/synthetic.

It was designed to be used as:

- Openhole remedial and/or preventive lost-circulation squeeze
- Plug to run in front of cement squeezes
- Plug to improve casing shoe integrity
- Preventive LC material for seepage losses, up to 20 lb/bbl (57 kg/m³) in the whole active system
- Cased-hole squeeze for sealing perforations and casing leaks

The recommended concentration of FORM-A-SQUEEZE slurry is 80 lb/bbl (228 kg/m³) in either water or base oil/synthetic. The slurry can be weighted to the desired density with barite or calcium carbonate.

The slurry should be pumped to the annulus, covering at least 50% in excess of the loss zone. The drill string is then pulled slowly 90 ft (27 m) above the pill. The slurry should be gently squeezed in the range of 100-300 psi (6.9–20.7 bar) to the maximum of anticipated mud weight required for the interval, holding the pressure for 10–20 min.

Benefits

- Quick-acting plug for fractured, vugular formations and underground blowout events
- Single-sack product
- Extremely easy to mix through a standard hopper in both water and base oil/synthetic
- No special equipment required to spot the pill
- No spacer is required – contaminant friendly to both water-base and non-aqueous base fluids
- Not dependant on time, temperature activator and retarder formulations or pH
- Temperature stable up to 450°F (232°C)
- Environmentally acceptable (complies with LC_{50} requirements)
- Can be mixed in rig slugging pit up to 17 lb/gal (2 kg/L)
- Can be used in whole circulation system up to 10 lb/bbl (28.5 kg/m³) for seepage loss

Packaging and storage

FORM-A-SQUEEZE additive is packaged in standard 40 lb (18.18 kg) sacks.

Store in a dry, well-ventilated area away from sources of heat or ignition. Avoid generating dust. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

TIGER BULLETS

Typical physical properties

Physical appearance	Tan granular material
Specific gravity	1.2–1.6
Solubility in water/oil/synthetic	Insoluble
Size range (Regular, Coarse, Extreme)	4–325 Mesh (45–4,760 m)
Reactivity	Inert

Benefits

- Effective bridging and sealing agent for a wide range of formations.
- Inert material with minimum effect on mud properties.
- Compatible with all mud systems and other lost circulation materials.
- Easily mixed and dispersed into the mud system.
- Has been utilized with MWD and mud motor in concentrations up to 35 ppb.
- Used for loss prevention and lost circulation as well as helps in reducing torque and drag and prevents differential sticking.

TIGER BULLETS† additive is a superior bridging agent, field-proven to be highly effective when drilling high-permeability/high-porosity zones with high differential pressures.

Applications

TIGER BULLETS additive is designed to bridge and seal permeable formations, reducing the possibility of stuck pipe, controlling lost circulation and providing filtration control.

The recommended treatment is 4–8 lb/bbl (11–23 kg/m³) to reduce differential sticking tendencies. After initial treatment, periodic treatments should be used to maintain the desired concentration.

For seepage losses, normal treatments are from 10–20 lb/bbl (29–57 kg/m³). Concentrations in the 20–35 lb/bbl (57–100 kg/m³) range are recommended for more severe lost circulation. Pilot testing is recommended before adding high concentrations because the material absorbs a small quantity of liquid when added to the mud system.

TIGER BULLETS additive should be added to the mud system through a mixing hopper into a pit with good agitation, such as the suction pit. It is most effective when maintained at the desired concentration throughout the circulating system. However, treatment methods such as frequent periodic additions, sweeps, batch- or slug-treatments and pills have all been used successfully.

TIGER BULLETS additive is compatible with all mud systems and can be used in combination with other lost circulation materials, including nut plug, mica, sized calcium carbonate, gilsonite, etc.

TIGER BULLETS additive residue can be partially removed using standard treatments such as hydrochloric acid or alkaline hypochlorite solutions. TIGER BULLETS additive is approximately 44% acid soluble in 15% HCl at 212° F (100° C).

Packaging and Storage

TIGER BULLETS additive is packaged in 25 lb (11.4 kg), multi-wall, paper sacks.

Store in a dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

Lost Circulation Products

CELL-U-SEAL

Typical physical properties

Physical appearance	Tan to light brown powder and fibers
Bulk density	22–32 lb/ft³ (352–513 kg/m³)
Environmental	Biodegradable/non-toxic
Solubility in water	46% by weight acid soluble
Particle-Size Distribution (PSD)	0.5–2,000 µm

CELL-U-SEAL† cellulose fiber is a superior bridging agent and Lost Circulation Material (LCM) designed to bridge and seal permeable formations in water-,oil- or synthetic-base mud systems.

Bridging and sealing permeable formations and microfractured shales reduces the potential for differential sticking and lowers torque and drag tendencies. CELL-U-SEAL fiber has proven effective in reducing differential sticking when drilling extremely depleted zones where the differential pressures are very high.

Applications

CELL-U-SEAL cellulose fiber is a superior bridging agent field proven to be effective when drilling highly permeable, extremely porous zones with elevated differential pressures. It is effective for treating seepage losses where only minimal treatment is required to major losses where large batch treatments are necessary.

CELL-U-SEAL fiber is designed to bridge and seal permeable zones, where it reduces the possibility of stuck pipe, controls lost circulation and provides better filtration control.

The recommended treatment of CELL-U-SEAL material is 4–10 lb/bbl (11.4–28.5 kg/m³) by volume in sweeps and/or in the entire mud system to help prevent differential sticking tendencies. Additional treatments need to be made to replace material that remains downhole or is removed by solids control equipment. Significant quantities of the medium and coarse grades are removed by fine meshed screens (100 mesh and finer).

For medium to severe losses, 25–40 lb/bbl (71.3–114 kg/m³) should be spotted across the loss zone.

Benefits

- Effective bridging and sealing agent for a wide range of formations
- Offers some elongated material as well as granular particles, ensuring a matting effect across the formation
- Inert material with minimum effect on mud properties
- Compatible with all mud systems and other lost-circulation materials
- Easily mixed and dispersed into the mud system
- Biodegradable/non-toxic
- Offers unique particle sizes, smaller than conventional LCM, yet larger than solids found in most drilling fluids

Combinations of fine, medium and coarse CELL-U-SEAL fiber should be contemplated in these situations. Batch treatments are often preferred to treatments for the whole system because batch treatments minimize shaker losses and avoid bypassing shaker screens, which reduces mud contamination from drill solids.

CELL-U-SEAL fiber (fine) is sized so that approximately 40–43% passes through a 120-mesh screen.

CELL-U-SEAL lost-circulation material can be added to the mud system through the mud hopper, where good agitation occurs, and is compatible with all water-, oil- and synthetic-base mud systems.

Packaging and storage

CELL-U-SEAL is packaged in 40 lb (18.1 kg), multi-walled, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.

PA-10

Typical physical properties

Physical appearance	Light yellow-golden liquid
Specific gravity	0.90–0.93
Flash point	>200°F (93°C)

PA-10† liquid additive is designed to improve the rate of penetration in water-base drilling fluids, especially where Polycrystalline Diamond Compact (PDC) bits are being used. PA-10 liquid additive employs a non-petroleum base fluid in conjunction with surface active agents to maximize the cutting ability of the bit.

The chemical makeup of the additive resists the tendency of clays to adhere to the bit and Bottomhole Assembly (BHA) and assures that weight is more effectively transferred to bottom. It also helps maintain a clean bit face so that cutters have better contact with the formation being drilled. A secondary benefit is reduced torque and drag resulting from the increased lubricity of the drilling fluid.

Applications

PA-10 liquid additive is designed to optimize the ROP performance of water-base mud systems. It is applicable in both onshore and offshore environments. PA-10 additive coats metal surfaces, retards gumbo hydration and reduces cuttings accretion on bottomhole assemblies.

PA-10 liquid additive can be mixed directly into the suction pit, preferably as near as possible to the pump suction. The product is also effective when injected directly into the pump suction.

Initial treatment should be 1½–2% by volume, with a target of 2–5% being optimum. Continuous additions of PA-10 additive should be made to the system to maintain the proper concentration as new mud is added and as mud depletes as the additive coats the wellbore and drill solids.

The injection rate for PA-10 anti-accretion agent varies depending on the drill rate, hole size, pump rate and dilution level.

PA-10 liquid additive is effective when pumped in pill form with a concentration of 5–15%, especially during sliding operations.

Benefits

- Increases ROP while drilling clays and shales
- Reduces torque and drag
- Improves filter-cake quality
- Works well with high performance PDC bits
- Contains surface-active metal-wetting agents that reduce balling on bits and BHA
- Improves metal-to-metal lubricity
- Optimum performance may not be realized if the material is not added continuously in sufficient concentration while drilling
- Temperature stable up to 400°F in the absence of High pH and High Hardness

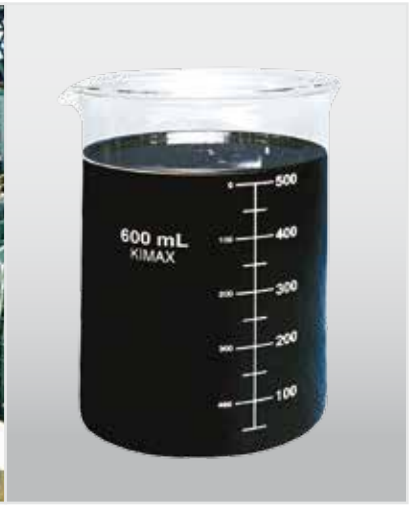
Packaging and storage

PA-10 liquid additive is packaged in 55 gal (208 L) drums and 550 gal (2,082 L) tanks.

Keep containers closed and firmly sealed. Store in a well- ventilated area away from sources of ignition such as heat, sparks, and open flame.

Wellbore Integrity/Stability

BLACK FURY



Benefits

- Improves wellbore stability and shale inhibition
- Improves lubricity
- Improves high-temperature filtration control
- Reduces bit balling potential
- Reduces filter-cake buildup in depleted sands
- Excellent environmental acceptability
- Field proven

Typical physical properties

Physical appearance	Black viscous liquid
Specific gravity	1.05–1.09
Flash point	>200°F (93°C)
pH	9.0–9.2 (2% in distilled water)

BLACK FURY† liquid asphaltite suspension is specifically formulated to stabilize water-sensitive, microfractured shales when drilling with water-base drilling fluids.

BLACK FURY liquid asphaltite seals microfracture, reduces dynamic fluid loss and minimizes the potential for differential sticking. Secondary benefits include improved lubricity and reduced accretion from sticky clays. The product has application in most water-base drilling fluids and is acceptable environmentally.

Applications

BLACK FURY liquid asphaltite can be used in most water-base drilling fluids. It has been extremely effective in lignosulfonate, potassium and PHPA mud systems. An initial treatment of 2–5% by volume (7–17.5 lb/bbl [20–49.9 kg/m³]) is recommended to achieve optimum results. The readily dispersible nature of the product allows high concentrations to be added easily to the mud system. The product contains glycol which aids in lubricity and inhibition. BLACK FURY liquid asphaltite is temperature stable to 425°F (218°C) and reduces API, HTHP, dynamic filtration, spurt-loss values and potential for differential sticking.

BLACK FURY liquid asphaltite works best when added to the mud system before encountering known trouble zones. It can be added directly to the system through the mud hopper or pumped directly in to the suction pit.

A concentration of BLACK FURY liquid asphaltite is maintained by volumetrics as the product is only slightly soluble in water. BLACK FURY shale-control additive does not induce foaming and is not sensitive to contamination. It is compatible with other sealing agents and has been used to combat seepage losses in conjunction with fibrous materials and calcium carbonate.

Packaging and storage

BLACK FURY is packaged in 55 gal (208 L) drums and in 550 gal (2,082 L) tote tanks.

Store in a dry location away from sources of heat or ignition, and minimize dust.

SACK BLACK

Typical physical properties

Physical appearance	Black powder
Specific gravity	1.04–1.06
Solubility in water	Partially insoluble

SACK BLACK† shale inhibitor is a partially water soluble, water dispersible, coupled asphaltite.

It is used to aid in stabilizing shale sections, controlling wall-cake characteristics, minimizing spurt loss, plugging microfractured shales and providing HTHP fluid loss control at elevated temperatures in water-, diesel- and synthetic-base drilling fluid systems.

Applications

SACK BLACK additive is a coupled asphaltite that can be used in most water-base and oil-base muds.

It is a free-flowing powder and can be added directly to the mud system through the mixing hopper.

SACK BLACK shale inhibitor has been pre-treated with a coupler to enhance its wettability in water-base fluids and requires no additional coupler when added to a mud system.

SACK BLACK inhibitor is ~80% non-soluble in water and therefore remains in a particulate phase in the mud system, becoming a malleable solid that deforms as needed to seal microfractures in shales and to reduce filtrate invasion in sands.

Benefits

- Easily disperses in water
- Plugs microfractures and seals shales
- Reduces HTHP fluid loss
- Reduces dynamic fluid loss
- Reduces torque and drag
- Reduces filter-cake thickness
- Stable at high-temperature applications (>400°F [>204°C])

Normal concentrations of SACK BLACK additive are in the range of 3–10 lb/bbl (8.6–28.5 kg/m³) for shale stabilizing control, and 4-6 lb/bbl (11.4–17.1 kg/m³) for high-temperature, fluid-loss control

In water- and oil-base drilling fluid systems, SACK BLACK shale stabilizer provides the following benefits:

- Reduces sloughing shales
- Lowers torque and drag
- Reduces HTHP and dynamic filtration fluid loss
- Enhances filter-cake quality
- Improves borehole stability
- Minimizes potential differential sticking in depleted sands

Packaging and storage

SACK BLACK is packaged in 50 lb (22.7 kg), multi wall, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.

Other Specialty Products

ANTI-FOAM XLRT

Typical physical properties

Physical appearance	Clear colorless liquid
Specific gravity	1.0 @ 21° C / 70° F
Solubility in water	Insoluble
Flash point	229° C / 444.2° F
Freeze point	-20° C / -4° F
pH	8.5 in water/ethanol solution (at 1:10 ratio)

ANTI-FOAM XLRT† additive is a low-toxicity blend of defoaming agents formulated to control foaming in freshwater or seawater drilling fluids and viscous brine systems.

Applications

ANTI-FOAM XLRT additive is a wide-application product that reduces the foaming tendencies of water-base muds. It is compatible with freshwater and seawater drilling fluids, brine systems and all common additives. ANTI-FOAM XLRT additive has proven to be especially effective in KCl and seawater muds. ANTI-FOAM XLRT additive is easy to mix, works quickly, is effective in low concentrations and is a more persistent defoamer and anti-foam agent than alternative products.

Normal treatments of ANTI-FOAM XLRT additive range from 0.14 to 0.29 kg/m³ (0.05 to 0.10 lb/bbl). Severe foaming can require treatments as high as 0.57 kg/m³ (0.2 lb/bbl). The use of ANTI-FOAM XLRT additive is recommended to prevent foaming when making periodic treatments with organic materials and should be added in a location that allows the product to be incorporated into the entire circulating mud system.

Benefits

- Easy to mix, works quickly and is effective at low concentrations in a wide range of systems
- A persistent defoamer and anti-foaming agent
- Especially effective in KCl and seawater mud systems
- Controls foaming in fluids viscosified with polymers
- Helps stabilize pump pressure by removing trapped air and gas
- Low-toxicity product and environmentally acceptable at the recommended concentrations

Packaging and storage

ANTI-FOAM XLRT is packaged in 5-gal (18.9-l) cans and 55-gal (208.2-l) drums.

Store in dry, well- ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink- wrapping and/or stacking.

RAPID SWEEP

Typical physical properties

Physical appearance	Tube filled with solids
Solubility in water	Soluble
Size	1¼ x 15 in.

RAPID SWEEP† polymer stick is a measured quantity of acrylic copolymer contained in a water-soluble package designed to provide viscosity, reduce friction, encapsulate cuttings and provide a limited amount of fluid-loss control in water-base drilling fluids.

RAPID SWEEP polymer stick is easily added at the drillstring during connections and provides a consistent method of cleaning the wellbore.

RAPID SWEEP polymer stick is a specially treated acrylic copolymer, engineered for a measured application and can be used in water-base mud systems ranging from low solids to weighted muds, using makeup waters from freshwater to saltwater.

Applications

RAPID SWEEP polymer stick is an engineered application where acrylic copolymer is introduced into the mud system by inserting a polymer stick directly into the drill pipe while making a connection. As the fluid moves down the drill string the polymer stick dissolves and sheers at the bit, resulting in a high-viscosity sweep that will aid in cleaning the hole and minimize potential for bit balling.

RAPID SWEEP polymer stick consists of an acrylic copolymer, soluble paper, and soluble plugs used to encapsulate drill cuttings and provide stabilization of the wellbore by adsorbing on to cuttings and formation surfaces, preventing dispersion. RAPID SWEEP polymer sticks will perform in the presence of salt and freshwater systems. It acts as a bentonite extender and viscosifier in low-solids non-dispersed muds.

Benefits

- Readily dispersible and does not form fish eyes
- Easily added at the rig floor during connections
- Eliminates the need for liquid polymers and possible slipping hazards on the rig floor
- Enhances hole cleaning and removal of drill solids
- Aids in preventing balling at the bit, on stabilizers and bottomhole assemblies by encapsulating solids
- Consistent, measured amount of polymer per application
- Ease of use promotes consistent usage
- Lower toxicity than polymers in liquid carriers
- Convenient re-sealable container eliminates loss of product

RAPID SWEEP polymer stick also helps flocculate and settle solids in clear-water drilling.

Packaging and storage

RAPID SWEEP packaging varies by area. Check with your ALPINE representative for package and quantities for your area. Each stick is packaged individually in a plastic bag and then inserted into a larger plastic bag to prevent absorption of moisture

Store in a dry location away from sources of heat or ignition and minimize dust.

ALPINE TRACER BEADS

Typical physical properties

Physical appearance	Translucent spheres
Specific gravity	1.01–1.09
Solubility in water	Insoluble

ALPINE TRACER BEADS† deepwater cement identifier is a one-sack mixture of different-sized macroporous, translucent spheres designed to refract light.

ALPINE TRACER BEADS spheres allow recognition of lead cement and spacers in deepwater applications where the required volumes of cement and spacers cannot be determined except through visual identification. The unique property of ALPINE TRACER BEADS additive allows visual confirmation when bottoms up has occurred at the sea floor. ALPINE TRACER BEADS material is inert and has no effect on mud properties. The product can be used in all types of fluids, including cement and cement spacers.

Applications

ALPINE TRACER BEADS additive is designed to refract light and is used in deepwater applications where intervals have been drilled without returns and annular volumes are unknown. Typically, an unspecified amount of cement and spacers is prepared and pumped, and the only method of assuring cement returns around the casing is by viewing the operation with a Remotely Operated Vehicle (ROV) and trying to discern differences between the mud and the cement that is displacing the mud out of the hole.

When ALPINE TRACER BEADS additive is mixed in the cement or the cement spacers, the ROV can distinguish the difference in the fluids because the ALPINE TRACER BEADS material refracts light, allowing visual confirmation of cement returns to the sea floor.

Benefits

- Extremely visible with ROV
- Allows positive identification of cement returns
- Minimizes excess cement
- No effect on mud properties

ALPINE TRACER BEADS material can be added to cement, cement spacers, and drilling fluids of all types. Recommended concentration is 1.75 to 2 sacks per barrel, and can be mixed through the mud hopper.

Packaging and storage

ALPINE TRACER BEADS additive is packaged in 35 lb (15.87 kg), multi-walled, paper sacks. Weight per bag is variable due to variation in product specific gravity.

Store in a dry location away from sources of heat or ignition, and minimize dust.

CLEAN SPOT

Typical physical properties

Physical appearance	Amber liquid
Specific gravity	0.91–0.925
Flash point	>200°F (93°C)

CLEAN SPOT† pipe-freeing agent is a water-dispersible, low-toxicity spotting fluid designed to free differentially stuck pipe by penetrating between the wall cake and metal.

CLEAN SPOT additive also offers strong metal wetting characteristics and can be used as a lubricant after being incorporated into the active system.

Applications

CLEAN SPOT pipe-freeing agent is a low-toxicity spotting fluid that has proven itself highly effective in environmentally sensitive areas, both onshore and offshore.

Success in freeing differentially stuck pipe is greatest when the spotting fluid is applied as soon as possible after the pipe becomes stuck. A fluid that can be mixed and spotted quickly often frees the drillstring before fishing operations are required. CLEAN SPOT pills are easily prepared and are well suited for spotting situations.

CLEAN SPOT pipe-freeing agent contains no hydrocarbons, is compatible with most mud systems and can be used either weighted or unweighted in wells with differentially stuck pipe.

After being used as a spotting fluid, CLEAN SPOT additive can be incorporated into the active mud system to reduce torque and drag and reduce the possibility of differential sticking.

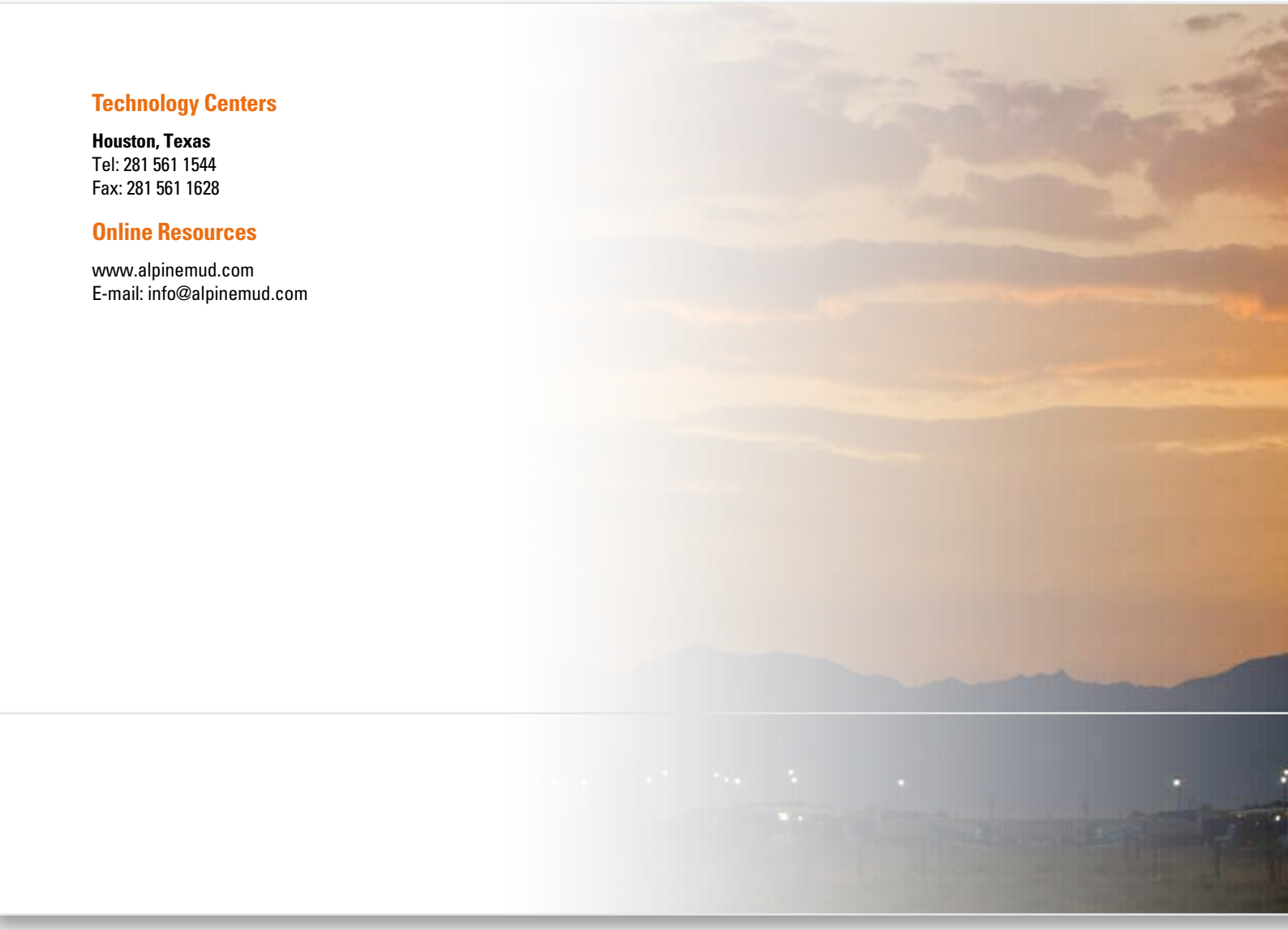
Packaging and storage

CLEAN SPOT pipe- freeing agent is packaged in 55- gal (208- L) drums, or 550- gal (2,080- L) tote tanks.

Keep containers closed and firmly sealed. Store in a well- ventilated area away from sources of ignition such as heat, sparks, and open flame.

Benefits

- Effective soak solution that quickly frees differentially stuck pipe
- Can be easily weighted with barite, FER-OX† or calcium carbonate
- Can be incorporated in most mud systems
- Contains no hydrocarbons and is water dispersible
- Excellent stability at downhole temperatures and pressures
- Aids in lubrication, improving torque and drag reduction characteristics of the fluid when incorporated in the system
- Temperature stable up to 400°F in the absence of High-pH and High Hardness



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