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TUNNEL-GEL® 1
QUIK-GEL® 2
QUIK-GEL GOLD® 3
N-SEAL™ 4
BENSEAL® 5–6
HOLEPLUG® 7–8
EZ-MUD® 9–10
EZ-MUD® DP 11–12
QUIK-TROL® GOLD 13
PENETROL® / CON DET® 14–15
AQUA-CLEAR® PFD 16

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PRODUCT LIST

TUNNEL-GEL®

Viscosifier/Gellant

QUIK-GEL®

Viscosifier

QUIK-GEL GOLD®

Viscosifier

N-SEAL™

Lost Circulation Material

BENSEAL®

Sealing and Plugging Agent

HOLEPLUG®

Graded Sodium Bentonite

EZ-MUD®

Polymer Emulsion

EZ-MUD® DP

Borehole Stabilizing Dry Polymer

QUIK-TROL® GOLD

Highly Dispersable Filtration Control Additive

PENETROL®

Wetting Agent

AQUA-CLEAR® PFD

Phosphate-Free Dispersant

NSF/ANSI Standard 60 Certified Products.

NSF International is The Public Health and Safety Company™, providing public health and safety risk management solutions to companies, governments, and consumers around the world. NSF/ANSI Standard 60: Drinking Water Treatment Chemicals -- Health Effects is the nationally recognized health effects standard for chemicals which are used to treat drinking water.

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TUNNEL-GEL®

Viscosifier/Gellant

TUNNEL-GEL® viscosifier is a single-sack, bentonite slurry additive specially formulated for use in large HDD and micro-tunnelling applications. TUNNEL-GEL viscosifier provides slurry viscosity to aid in the transport of spoils, permits removal of solids through separation equipment, and promotes ground stability while providing effective filtration control.

Advantanges

- Single-sack product
- Easy to mix and quickly reaches maximum viscosity
- Non-fermenting

Applications/Functions

The use of TUNNEL-GEL viscosifier assists and promotes the following:

- Effective slurry viscosity
- Carrying capacity to transport spoil
- Effective filtration control and stabilization of permeable formations
- Stability at the face in poorly consolidated formations

Typical Properties

- Appearance : Grey to tan powder
- Specific Gravity, g/cm3 : 2.6
- pH (3% Solution) : 10.4

Recommended Treatment

Using a Venturi hopper, or into a colloidial mixer, add TUNNEL-GEL, viscosifier, slowly and uniformly to the entire circulating system or mix tank.

Approximate Amounts of TUNNEL-GEL Viscosifier Added to Water Based Fluids		
lbs/bbl	lbs/100 gallons	kg/m^3
10.5 – 21	25 – 50	30 – 60

Packaging

TUNNEL-GEL viscosifier is packaged in 25-kg (55.1-lb) multiwall paper sacks and 1000-kg (2205-lb) bulk bags.

QUIK-GEL®

Viscosifier

QUIK-GEL® viscosifier is an easy-to-mix, finely ground (200-mesh), premium-grade, high-yielding Wyoming sodium bentonite. QUIK-GEL viscosifier imparts viscosity, fluid loss control and gelling characteristics to freshwater based drilling fluids.

Applications/Functions

The use of QUIK-GEL viscosifier promotes or assists the following:

- Mix with fresh water to form a low-solids drilling fluid for general drilling applications
- Viscosify water-based drilling fluids
- Reduce filtration by forming a thin filter cake with low permeability
- Improve hole-cleaning capability of drilling fluids
- Mix with foaming agents to make "gel/foam" drilling fluids for air/foam drilling applications

Advantanges

- NSF/ANSI Standard 60 certified
- Single-sack product and cost effective
- Can provide lubricity for drilling fluids
- Can mix easily and quickly reach maximum viscosity
- Can yield more than twice as much mud of the same viscosity as an equal weight of API oilfield grades of bentonite

Typical Properties

- Appearance : Grey to tan powder
- Bulk density, lb/ft3 : 68 to 72 (compacted)
- pH (3% solution) : 8.9

Recommended Treatment

Mix slowly through a jet mixer or sift slowly into the vortex of a high-speed stirrer.

Approximate Amounts of QUIK-GEL viscosifier Added to Freshwater			
Application/Desired Result	lb/100 gal	lb/bbl	kg/m^3
Normal Drilling Conditions	15-25	6-10	18-30
Unconsolidated Formations	35-50	15-21	42-60
Make-Up For Gel/Foam Systems	12-15	5-7	14-18

- *1 bbl = 42 U.S. gallons*

Additional Treatment

Note: For optimum yield, pre-treat make-up water with 1-2 pounds of soda ash per 100 gallons of water (1.2-2.4 kg/m3).

Packaging

QUIK-GEL viscosifier is packaged in 50-lb (22.7-kg) multiwall paper bags.

QUIK-GEL GOLD®

Viscosifier

QUIK-GEL GOLD® high-yield viscosifier is a selectively mined, premium sodium bentonite designed for water well, minerals exploration and other industrial drilling applications. QUIK-GEL GOLD high-yield viscosifier provides an optimized grind size which results in easy mixing and rapid hydration characteristics. The enhanced viscosity development, filtration properties and resultant fluid stability make QUIK-GEL GOLD high-yield bentonite viscosifier the new benchmark in the industrial drilling applications market.

Applications/Functions

The use of QUIK-GEL GOLD viscosifier assists the following:

- Viscosify freshwater-based drilling fluids
- Form a low-solids, freshwater drilling fluid for general applications
- Reduce filtration by forming a thin filter cake with low permeability
- Improve hole-cleaning capability of drilling fluids
- Mix with foaming agents to make "gel/foam" drilling fluids for air/foam drilling applications

Advantanges

- NSF/ANSI Standard 60 certified
- Single-sack product and cost effective
- Optimized grind size for enhanced mixing and yield
- Easy to mix and quickly reaches maximum viscosity
- Yields more than twice as much drilling fluid of the same viscosity as an equal concentration of API grade bentonite

Typical Properties

- Appearance : Fine tan to brown powder
- Bulk density, lb/ft3 : 69 to 74 (compacted)
- pH (3% solution) : 8.9

Recommended Treatment

Mix slowly through a jet mixer or sift slowly into the vortex of a high-speed stirrer.

Approximate Amounts of QUIK-GEL GOLD High-Yield Viscosifier Added to Freshwater			
Application/Desired Result	**lb/100 gal**	**lb/bbl***	**kg/m^3**
Normal Drilling Conditions	15-25	6.3-10.5	18-30
Unconsolidated Formations	25-40	10.5-16.8	30-48
Make-Up For Gel/Foam Systems	12-15	5.0-6.3	14-18

- **1 bbl = 42 U.S. gallons*

Additional Treatment

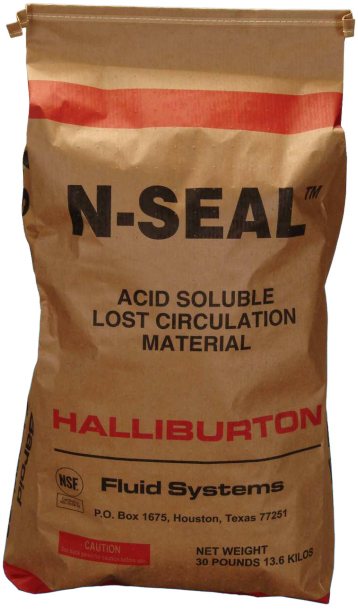
Note: For optimum yield, pre-treat make-up water with 1-2 pounds of soda ash per 100 gallons of water (1.2-2.4 kg/m3).

Packaging

QUIK-GEL GOLD® high-yield viscosifier is packaged in 50-lb (22.7-kg) multiwall paper bags.

N-SEAL™

Lost Circulation Material



N-SEAL, acid soluble lost circulation material, is specially formulated extrusion spun mineral fiber. Due to its solubility in weak acids, N-SEAL is easily removed from production zones.

Applications/Functions

N-SEAL can be used as an additive for loss of circulation in concentrations of up to 70 lb/100 gallons (86 kg/m3).

Typical Properties

- Appearance : Gray white fiber
- Specific gravity : 2.6

Advantanges

- NSF/ANSI Standard 60 certified
- Acid soluble
- Easily-wetted
- Inorganic and non-fermenting

Recommended Treatment

N-SEAL can be added directly through the hopper.

- For normal treatment to the active system, add 5-20 lb/100 gallons drilling fluid (6-24 kg/m3)
- As a pill, add 20-70 lb/100 gallons of drilling fluid (24-86 kg/m3)

N-SEAL is 95% acid soluble. To dissolve 1 lb of N-SEAL, treat with either

- *1-2 lb AQUA-CLEAR® MGA (1-2 kg/kg)*

or

- *0.5-1 gal of 10% HCl/5% Acetic acid blend (1-2 liters/kg)*

Packaging

N-SEAL is packaged in 30-lb (13.6 kg) multiwall paper bags.

BENSEAL®

Sealing and Plugging Agent

BENSEAL® granular (8-mesh), natural Wyoming sodium bentonite is used in the sealing and grouting of well casings and earthen structures. BENSEAL is not recommended for use as a drilling mud.

Applications/Functions

BENSEAL sealing and plugging agent assists or promotes the following:

- Seal or grout plastic or steel casings in monitor and water well construction
- Seal or plug abandoned boreholes
- Seal leaking ponds, ditches and dams
- Soil stabilization
- Prepare BENSEAL and EZ-MUD® grouting system
- Aid in controlling loss of circulation

Advantanges

- High swelling capacity
- Uniform particle size
- No heat of hydration
- Prevents commingling of aquifers and contamination from surface
- Forms a flexible seal to protect casing from corrosive contaminants
- Allows for hole re-entry
- NSF/ANSI Standard 60 certified

Typical Properties

- Appearance : Bluish to gray granules
- Dry screen analysis : 85% as 8 mesh
- Volume, ft3 /sack : 0.7 (as packaged)
- Specific gravity : 2.6
- Permeability : Less than 1 x 10-8 cm/sec (in fresh water)

Recommended Treatment

As a casing drill and drive operation:

- Dig a cone-shaped depression around casing. Depression should be 6 - 8 inches (152-203 mm) larger than the outside diameter of the casing and 2 - 3 feet (60-75 cm) deep.
- Keep cone-shaped depression filled with dry BENSEAL while driving the casing.

Note: When drilling and driving a 4" (102mm) pipe, expect to use 2.5 pounds of BENSEAL® sealing and plugging agent per foot of hole or 3.7 kilograms per meter of hole.

Sealing ponds or earthen structures:

Depending on the native soil, disc in or mix 3 to 5 pounds of BENSEAL sealing and plugging agent per square foot (14-24 kg/m2) uniformly over the area to be sealed so that a 6-inch (~152 mm) blanket of soil and BENSEAL sealing and plugging agent is formed. Do not neglect the edges of the dam or the sides/walls of the pond. This sealing blanket should then be compacted in place. As added protection to the sealing blanket, 2 to 4 inches (51-102 mm) of local soil or sand should cover the sealing blanket and be compacted. If the leaking area can be identified and isolated, an attempt can be made to broadcast BENSEAL uniformly at 4 to 6 pounds of BENSEAL per square foot (20-30 kg/m2) of surface area into the water over the area of concern.

BENSEAL®

Sealing and Plugging Agent

Recommended Treatment (Countinue)

Note: Bentonite is more effective as a sealing agent when confined. Therefore, every effort should be made to cover the BENSEAL after it is broadcast with a 2-3 inch (51-76 mm) layer of sand. This will reduce the potential for dispersion into the water and un-yielded bentonite particles interfering with the gill action of fish.

Lost returns (moderate):

- Begin with the pit full of mud.
- Raise the pump suction off bottom and place a shovel next to it and slightly under suction.
- Pour dry BENSEAL slowly into the space between shovel and suction and pump it down the hole.

Additional Information

- The grouting material and method selected will depend upon the specific subsurface environment including all prevailing geological and hydrological factors and any existing regulatory requirements. The grouting process may not be complete until the grout is static at the desired level.
- The use of bentonite may not be appropriate in environments where the formation water chemistry has a total hardness greater than 500 parts per million and/or a chloride content of greater than 1500 parts per million.
- If questions arise regarding subsurface environments it is always best to consult your local Baroid IDP representative to determine if the Baroid product of choice is appropriate for the given conditions.

Packaging

BENSEAL is packaged in 50-lb (22.7 kg) multiwall paper bags, containing 0.7 ft3 (0.02 m3).

HOLEPLUG®

Graded Sodium Bentonite

HOLEPLUG® naturally occurring Wyoming sodium bentonite clay is a sized and
graded chip material used to seal and plug earthen boreholes.

- HOLEPLUG® is available in graded 3/8" bentonite chips

Applications/Functions

The use of HOLEPLUG sodium bentonite assists or promotes the following:

- Grouting annulus in all types of wells, particularly environmental monitoring
- well applications
- Sealing above gravel packs
- Plugging decommissioned boreholes
- Stemming shotholes
- Sealing around conductor pipe
- Sealing lost circulation zones
- Shutting off artesian flow

Advantanges

- Helps prevent entry of surface water into boreholes
- High swelling potential
- In situ swelling to provide a superior seal with excellent casing stabilization
- Easier to apply than pellets
- Cost effective
- Simple to apply, mixing not required
- Helps prevent vertical movement of fluids in the hole between porous zones
- Helps form a permanent, flexible downhole seal
- Helps allow hole re-entry
- Rehydratable
- NSF/ANSI Standard 60 certified

Typical Properties

- Volume of 50-lb (22.7 kg) sack
- HOLEPLUG : 0.70 ft3 or 0.026 yd3 or 0.020 m3
- Permeability : Permeability 1.5 x 10-9 cm/sec (in fresh water)
- Appearance : Appearance Beige to tan chips

Recommended Treatment

Plugging and Stemming Drill Holes

Due to shipping and handling, a small amount of fine bentonite particles may be present. For optimum results, HOLEPLUG® should be poured over a mesh or screen with ¼" (6.4 mm) openings to "sift out" the smaller particles. The screen should be large enough (approx.1 yd2 or 1m2) to be folded into a "V" shape to allow sifting while the product is being poured into the hole. Also, HOLEPLUG bentonite should be poured slowly. Allow approximately two minutes to pour a 50-lb (22.7 kg) bag.

HOLEPLUG®

Graded Sodium Bentonite

Recommended Treatment (Continue)

- Position the screen with the lower end placed over the borehole
- Slowly pour HOLEPLUG bentonite down the "V" so that fine particles fall through the screen before the larger particles fall into the borehole
- Fill hole as required (above static water level or to ground level)
- Observe all regulatory specifications

Stopping loss of circulation and stabilizing unconsolidated formations

- Pull drill pipe out of hole
- Pour HOLEPLUG bentonite into hole to fill above problem zone
- Drill ahead slowly with reduced pump pressure

Plugging flowing wells

Pour HOLEPLUG bentonite into hole until water flow subsides or hole is filled tosurface.

Treatment Considerations

- Adequate annular space should be present to allow for the placement of HOLEPLUG bentonite into the area of concern without bridging. It is recommended that a minimum annular space of two inches on either side of the outside dimension of the casing be present. This will facilitate the placement of tremie lines and reduce the potential of the HOLEPLUG bentonite bridging during pouring operations. The use of this product should always correspond with applicable federal, state and local well construction guidelines.
- The subsurface environment that the respective bentonite sealing material or grout is to be placed into should always be taken into consideration when selecting the appropriate material to compose the well seal. If the formation water chemistry has a total hardness of greater than or equal to 500 parts per million and/or a chloride content of greater than or equal to 1500 parts per million the use of a bentonite material may not be appropriate for this environment. In the event that questions regarding subsurface environments arise it is always best to consult your local Baroid IDP representative to determine if the Baroid product of choice is appropriate for the given conditions.

Packaging

HOLEPLUG graded bentonite is packaged in 50-lb (22.7 kg) plastic bags.

EZ-MUD®

Polymer Emulsion

EZ-MUD® liquid polymer emulsion contains partially hydrolyzed polyacrylamide/polyacrylate (PHPA) copolymer and is used primarily as a borehole stabilizer to prevent reactive shale and clay from swelling and sloughing. EZ-MUD polymer emulsion is also added to low-solids drilling fluids to increase lubricity, fluid viscosity, and to improve carrying capacity of air/foam injection fluids.

Applications/Functions

The use of EZ-MUD liquid polymer assists or promotes the following:

- Stabilize reactive shale and clay formations
- Improve drilling efficiency in multiple disciplines such as Water Well, Minerals
- Exploration, Geotechnical, HDD and Construction Applications
- Enhance slurry rheological properties
- Alleviate mud rings, bit balling and booting-off in clay formations
- Reduce drill pipe torque and pumping pressure
- Minimize rod chatter in diamond core drilling
- Create "stiff-foam" and maintain foam integrity
- Flocculate non-reactive solids in reserve pit at low concentrations

Advantanges

- Mixes easily with minimum shear in fresh water
- Helps provide effective clay and shale stabilization with lower viscosity
- Helps impart high degree of lubricity
- Non-fermenting
- Breaks down chemically with household bleach (sodium hypochlorite)
- NSF/ANSI Standard 60 Certified

Typical Properties

- Appearance : Thick, opaque white liquid
- Density (Specific Gravity) : 8.4 lb/gal (1.01 g/cm3)
- pH (1 quart per 100 gallons water) : 8.5
- Flash point, PMCC °F, °C : >200 (>93.3)
- Thermal stability, °F, °C : 250 (121)

EZ-MUD®

Polymer Emulsion

Recommended Treatment

Approximate Amounts of EZ-MUD® Polymer Added to Drilling Fluids			
Added to Fresh Water (To formulate a clay-free drilling fluid)	**Quarts/100 gal**	**Pints/bbl**	**Liters/m³**
• To stabilize reactive clay and shale	0.5 - 2.0	0.5 - 1.75	1.25 - 5.0
• To retard rod vibration, reduce torque and pumping pressure	1.0 - 2.0	1.0 - 1.75	2.5 - 5.0
Added to Bentonite Based Drilling Fluids or air/foam injection liquid	**Quarts/100 gal**	**Pints/bbl**	**Liters/m³**
• To retard reactive shale and clay and enhance lubricity	0.5 - 1.0	0.5 - 1.0	1.25 - 2.5
• To improve foam performance and hole conditions	0.5 - 1.0	0.5 - 1.0	1.25 - 2.5

Notes:

- For optimum performance in freshwater applications, the make-up water used to mix EZ-MUD liquid polymer should meet the following quality:

- Total chloride less than 1500 ppm (mg/L)
- Total hardness less than 150 ppm as calcium
- Total chlorine less than 50 ppm
- Water pH between 8.5 - 9.5

- Reduce total hardness of make-up water by adding Soda Ash at 0.5 to 1 pound per 100 gallons (0.6 - 1.2 kg/m3) of make-up water.
- EZ-MUD liquid polymer can be chemically broken down with liquid bleach in regular household concentration (5% sodium hypochlorite). Use one gallon of liquid bleach per 100 gallons (10 liters/m3) of fluid formulated with EZ-MUD liquid polymer.

Do not use perfumed liquid bleach or solid calcium hypochlorite.

Packaging

EZ-MUD liquid polymer is packaged in 5-gal (19-liter) and 1-gal (3.8-liter) plastic containers.

EZ-MUD® DP

Borehole Stabilizing Dry Polymer

EZ-MUD DP is a free-flowing, dry granular synthetic polymer containing partially hydrolyzed polyacrylamide/polyacrylate (PHPA) copolymer. EZ-MUD DP, a water-soluble polymer, disperses and dissolves in fresh water rapidly. When mixed with fresh water, EZ-MUD DP hydrates quickly and forms a clear, viscous fluid. With its high molecular weight and optimum charge density, EZ-MUD DP provides excellent borehole stability through a coating mechanism (encapsulation).

Applications/Functions

- Stabilize reactive clay and shale formations
- Keep trench excavation open during the construction
- Produce high viscosity solids-free slurry
- Enhances rheological properties of a low-solids drilling mud
- Enhance core recovery in continous wireline coring operations
- Flocculate non-reactive solids in reserve pit at low concentrations
- Reduces torque and drag

Advantanges

- Disperses easily with minimal shear
- Efficient shale/clay stabilizer and viscosifier
- Imparts high degree of lubricity
- Compatible with other drilling fluid additives when added in proper sequence
- Non-fermenting
- No petroleum distillates involved
- Breaks down chemically with bleach (sodium hypochlorite)
- NSF/ANSI Standard 60 Certified

Typical Properties

- Appearance : White, free-flowing granular
- pH (0.15% solution) : 7.5
- Density : 1.45 (as packaged)

Packaging

EZ-MUD DP is packaged in 14-lb (6.35-kg) resealable plastic containers.

EZ-MUD® DP

Borehole Stabilizing Dry Polymer

Recommended Treatment

Approximate Amounts of EZ-MUD® DP Added to Drilling Fluid System			
Drilling Application/Desired Property	**lbs/100 gal**	**lbs/bbl**	**kg/m³**
Added to fresh water (To formulate a clay-free drilling fluid)			
• To stabilize water-sensitive formations	0.5 - 1.0	0.2 - 0.4	0.6 - 1.2
• To stop rod vibration, reduce torque and pumping pressure	0.5 - 1.5	0.2 - 0.6	0.6 - 1.8
Added to QUIK-GEL® or BORE-GEL® Drilling Fluids			
• To retard reactive shale and clay and enhance lubricity	0.25 - 0.75	0.1 - 0.3	0.3 - 1.0
Added to injection liquid in air/foam drilling applications			
• To improve foam performance and hole conditions	0.5 - 1.0	0.2 - 0.4	0.6 - 1.2

Notes:

- Make-up water used to mix EZ-MUD DP should meet the following quality:

> Total chloride less than 1500 ppm (mg/L)
> Total hardness less than 150 ppm as calcium
> Total chlorine less than 50 ppm
> Water pH between 8.5-9.5

- Reduce total hardness of make-up water by adding soda ash sodium carbonate) at 0.5 to 1 pound per 100 gallons (0.6 - 1.2 kg/m3) of make-up water.
- EZ MUD DP can be chemically broken down with regular household liquid bleach (5% sodium hypochlorite). Use one gallon of liquid bleach per 100 gallons (10 liters/m3) of fluid formulated with EZ MUD DP. Do not use perfumed liquid bleach or solid calcium hypochlorite.

QUIK-TROL® GOLD

Highly Dispersable Filtration Control Additive

QUIK-TROL® GOLD, highly dispersable, polyanionic cellulosic (PAC) polymer, provides ease of mixing and improved filtration control in most water-based drilling fluids. QUIK-TROL GOLD, highly dispersable polymer, when added to an AQUAGEL®, QUIK-GEL® or BORE-GEL® slurry, yields a low filtrate drilling fluid system suitable for drilling in water sensitive formations.

Applications/Functions

- Disperses and hydrates effectively at low shear
- Provides filtration control in water-based drilling fluids
- Promotes borehole stability in water sensitive formations
- Minimizes rotational torque and circulating pressure
- Improves hole cleaning and core recovery
- Enhances foam properties to improve cuttings transport in air/foam drilling

Advantanges

- Effective in fresh, salt and brackish water-based drilling fluids
- Non-fermenting
- NSF/ANSI Standard 60 certified
- Compatible with other Baroid drilling fluid additives

Typical Properties

- Appearance : Off white, granular powder
- pH (1% solution) : 6.0 - 8.0

Recommended Treatment

Using a Venturi Mixer, or into vortex of a high-speed stirrer, add slowly and uniformly to the entire circulating system.

Approximate Amounts of QUIK-TROL GOLD Added to Water-Based Fluids		
lbs/bbl	**lbs/100 gallons**	**kg/m^3**
0.1 – 2.0	**0.25 – 4.75**	**0.3 – 5.7**

QUIK-TROL GOLD is designed for Industrial Use Only

Note: Highly saline waters may require twice as much QUIK-TROL GOLD as fresh water. Preferably, QUIK-TROL GOLD should be mixed in fresh water before it is added to very salty water.

Packaging

QUIK-TROL GOLD is packaged in 5-gal (19-liter) pails containing 40 pounds (18.2 kg) and in 20 lb (9.1 kg) plastic cans containing 10 airtight sealed plastic bags. Each bag contains 2-lb (0.91 kg). QUIK-TROL GOLD is also available in 50-lb (22.7 kg) multiwall paper bags.

PENETROL®

Wetting Agent

PENETROL, a water miscible, non-ionic wetting agent, is designed to counteract the sticking tendencies of clay.

Applications/Functions

- Reduce or eliminate bit balling
- Reduce surface tension of drilling fluid, which allows faster chip removal without continuously grinding the hard shale formations
- Improve drilling efficiency by preferentially coating the bottom-hole assembly and drill string
- Minimize differential sticking
- Increase bit life and reduce drill pipe and bottom-hole assembly wear

Advantanges

- Easy to mix
- Effective in low concentrations
- Compatible with other Baroid drilling fluid additives
- Biodegradable
- NSF/ANSI Standard 60 certified

Typical Properties

• Appearance	: Forest green liquid
• Specific gravity	: 0.98
• pH (1%) solution	: 9.5
• Flash point, TOC, °F, °C	: >300, (149)

Recommended Treatment

Added uniformly through entire circulation system

- 1 to 4 quarts of PENETROL per 100 gallons of drilling fluid
- 2.5 to 10 liters of PENETROL per m3 of drilling fluid

As a slug down drill rods to counteract the sticking tendencies of clay

- 1 to 2 quarts of PENETROL per drill rod
- 1 to 2 liters of PENETROL per drill rod

Alternate application

- Dilute 1 gallon of PENETROL with 10 gallons of water and inject one gallon of mixture per minute into the pump suction
- Dilute 3.8 liters of PENETROL with 38 liters of water and inject 3.8 liters of mixture per minute into the pump suction

Packaging

PENETROL® is packaged in 5-gal (19-liter) plastic containers.

CON DET®

Wetting Agent

CON DET, a proprietary blend of anionic surfactants, is specially formulated for use in fresh water, salt water, and in low-solids drilling fluids as a wetting agent.

Applications/Functions

- Keep the drill bit clean
- low breakup of cuttings in the annulus while being pumped to the surface
- Counteract the sticking tendencies of clays, thereby reducing wall packing, bit balling, booting-off, and formation of mud rings
- Promote settling of cuttings at the surface in low solids fluid systems

Advantanges

- Effective in low concentrations
- Easy to mix with water
- Biodegradable
- Compatible with other Baroid products

Typical Properties

- Appearance : Clear red liquid
- Specific gravity : 1.03
- pH (1 % solution) : 8.9
- Flash point, PMCC °F, °C : 210 (99)
- Pour point, °F, °C : 28 (-2.2)

Recommended Treatment

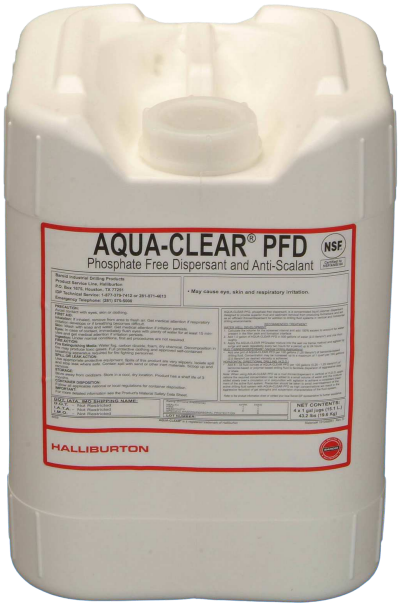
Approximate Amounts of CON DET Added to Fresh or Salt Water			
Desired Condition/Result	**Amount/ 100 gal**	**Amount/ bbl**	**Liters/m^3**
To promote bit cleaning and to settle cuttings	2 – 4 pints	1 – 2 pints	2 – 5 liters
To reduce stickiness of clays	1 – 6 quarts	1 – 3 quarts	5 – 12 liters

Packaging

CON DET® is packaged in 5-gal (19-liters) plastic containers.

AQUA-CLEAR® PFD

Phosphate-Free Dispersant



AQUA-CLEAR® PFD concentrated liquid polymer dispersant provides superior mud and sediment removal from the producing formation and gravel pack. This product is also a highly effective mud thinner. AQUA-CLEAR PFD dispersant contains no phosphates.

Applications/Functions

- Can disperse mud, sediment and clay from the producing formation and gravel pack in the screened interval.
- Can reduce viscosity and gel strength of drilling fluids

Advantanges

- NSF/ANSI Standard 60 certified
- Helps reduce development time
- Helps increase well yield and capacity
- Safe to use on most plastics, rubber and metals
- Non-fermenting
- Can reduce pumping costs

Typical Properties

- Appearance : Straw colored liquid
- Specific gravity : 1.2 to 1.4
- pH (neat) : 6.5 to 7.5

Recommended Treatment

As a Well Development Aid

- Determine volume of water in screen area and double the calculated volume to account for water in gravel pack and formation interface or determine the static volume of water and add 50% excess.
- Once the water volume is determined, calculate the required treatment volume of AQUA-CLEAR PFD by the following formula:

> AQUA-CLEAR PFD (gal or L) = 0.002 x Water Volume (gal or L)

This equates to one gallon of AQUA-CLEAR PFD for every 500 gallons of water (0.2% by volume) or 2.0 liters of AQUA-CLEAR PFD for every cubic meter of water.

- Mix thoroughly before introducing into well.
- The preferable application method utilizes a tremie line with the product applied into the screened area.
- If necessary, the AQUA-CLEAR PFD/water solution may be poured into the well.
- Mixture should be thoroughly blended in well, then agitated using a surge and swab, jetting, or other developmental technique repeatedly every two hours for a period of up to 24 hours.
- Pump to waste until turbidity clears up and then connect well to distribution system.

As a Mud Thinner

- Start by adding one pint of AQUA-CLEAR® PFD to 500 gallons of mud. Increase concentration until desired viscosity is achieved.

TOHOMA

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