

Mining and Tunneling Products Catalogue



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DIAMOND SEAL®

Absorbent Polymer for Lost Circulation



Description

DIAMOND SEAL is a water-swellable but not water-soluble, 100% crystalline synthetic polymer. DIAMOND SEAL absorbs hundreds of times its own weight in water. It is intended for use primarily as a lost circulation material for horizontal directional drilling.

Applications/Functions

- Lost circulation material for horizontal directional drilling
- Prevent inadvertent returns in river crossing applications
- Stabilize borehole in cobble and gravel
- Stabilize unconsolidated formations

Advantages

- Rapid water absorption
- Effective in mitigating lost circulation
- Economical-small quantity yields large volume
- Easy to use
- Non-fermenting

Recommended Treatment

For slug treatment

- Add ½ to 1 pound (0.25 - .5 kg) DIAMOND SEAL per joint

As a pill:

- Add DIAMOND SEAL at 10 – 20 lb/100 gallons of drilling fluid
- Add DIAMOND SEAL at 12 – 24 kg/m³ of drilling fluid

Treatment for Loss of Circulation or Inadvertent Returns in HDD Operations:

(Prior to pumping, remove all in-line screens in circulating system)

Add the following to existing drilling fluid and displace:

BAROLIFT®	- 0.25 – 0.5 lb/100 gallons (0.3 – 0.6 kg/m ³)
N-SEAL™	- 3 – 5 lb/100 gallons (3.6 – 6.0 kg/m ³)
DIAMOND SEAL	- 10 – 20 lb/100 gallons (12 – 24 kg/m ³)

EZ-MUD® DP

Borehole Stabilizing Dry Polymer



Description

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 continuous wireline coring operations
- Flocculate non-reactive solids in reserve pit at low concentrations
- Reduces torque and drag

Advantages

- 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

EZ-MUD® PLUS

Polymer Emulsion



Description

EZ-MUD PLUS is a high molecular weight version of EZ-MUD with improved properties. EZ-MUD PLUS, a liquid polymer emulsion containing partially hydrolyzed polyacrylamide/polyacrylate (PHPA) copolymer, is used primarily as a viscosifier and borehole stabilizer to prevent reactive shales and clays from swelling and sloughing. The liquid form makes mixing easy. EZ-MUD PLUS is also added to low-solids drilling fluids to increase lubricity and to improve the carrying capacity of air/foam injection fluids.

Applications/Functions

- Stabilize reactive shale and clay formations
- Improve borehole and excavation stability
- 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 reverse pit at low concentrations

Advantages

- Mixes easily with minimum shear in fresh water
- Efficient shale/clay stabilizer and viscosifier
- Non-fermenting
- Cost effective - small amounts produce desired results
- Breaks down chemically with bleach (sodium hypochlorite)
- NSF/ANSI Standard 60 Certified

Notes

- Make-up water used to mix EZ-MUD PLUS should meet the following quality:
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 PLUS 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 PLUS. Do not use perfumed liquid bleach or solid calcium hypochlorite.

HOLEPLUG®

Graded Sodium Bentonite



Description

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

HOLEPLUG is available in two particle size grades:

- HOLEPLUG ¾" (100% of particles pass through ¾" screen; all particles retained on ⅜" screen)
- HOLEPLUG ⅜" (100% of particles pass through ⅜" screen; all particles retained on a ¼" screen)

Applications/Functions

- Highly recommended for use in grouting annulus in all types of wells, particularly environmental monitoring well applications
- Seal above gravel packs
- Plug decommissioned boreholes
- Stemming shotholes
- Seal around conductor pipe
- Seal lost circulation zones
- Shut off artesian flow

Advantages

- Prevents 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
- Prevents vertical movement of fluids in the hole between porous zones
- Forms a permanent, flexible downhole seal
- Allows hole re-entry
- Rehydratable
- NSF/ANSI Standard 60 certified

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 should be poured slowly. Allow approximately two minutes to pour a 50-lb (22.7 kg) bag.



Application Amounts

Amounts of HOLEPLUG® Required for Plugging Applications

Hole Diameter (inches)	Hole Volume (ft ³ / ft)	Pounds HOLEPLUG Needed to Fill One Foot	Feet Filled by One Bag HOLEPLUG	Bags HOLEPLUG Needed to Fill 100 ft
2	0.022	1.6	32.6	3.2
2.5	0.034	2.4	20.5	5.0
3	0.049	3.5	14.3	7.0
3.5	0.067	4.8	10.4	9.6
4	0.087	6.3	7.9	12.6
4.5	0.110	7.9	6.3	15.8
5	0.136	9.8	5.1	19.6
5.5	0.165	11.9	4.2	23.8
6	0.196	14.1	3.5	28.2
6.5	0.230	16.6	3.0	33.2
7	0.267	19.2	2.6	38.4
7.5	0.307	22.1	2.3	44.2
8	0.349	25.1	2.0	50.2
8.5	0.394	28.4	1.8	56.8
9	0.442	31.8	1.6	63.6
9.5	0.492	35.4	1.4	70.8
10	0.545	39.2	1.3	78.4
11	0.660	47.5	1.1	95.0
12	0.785	56.5	0.89	113.0
15	1.227	88.3	0.57	176.6
18	1.767	127.2	0.39	254.4
20	2.182	157.1	0.32	314.2
25	3.409	245.4	0.20	490.8
30	4.909	353.4	0.14	706.8

PENETROL®

Wetting Agent



Description

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
-

Advantages

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

POLY-BORE™

Borehole Stabilizing Dry Polymer



Description

POLY-BORE is a free flowing, water-soluble, easy mixing, 100% dry granular polymer. POLY-BORE is a very high molecular weight partially hydrolyzed polyacrylamide (PHPA) polymer. When mixed with fresh water, a small quantity of POLY-BORE provides a clear, solid-free, viscous borehole stabilizing fluid for use in drilled shaft, auger drilling, horizontal directional boring, trenching excavation and reverse circulation (RC) rotary drilling. POLY-BORE is not designed to be used in conjunction with bentonite based fluids.

Applications/Functions

- Provide a clay-free boring fluid
 - Stabilize reactive clay and shale formations
 - Enhance core recovery in continuous wireline coring operations
 - Provide high cohesiveness to bind excavated sandy soil and gravel
 - Facilitate the removal of drilled spoils from augers and increase excavation rate
 - Maximize load transfer for drilled shaft application
-

Advantages

- Disperses easily with minimal shear
 - Efficient shale/clay stabilizer and viscosifier
 - Does not require solids control unit to clean the slurry
 - Promotes stable and gage borehole
 - Results in maximum skin friction and ultimate end bearing capacity for a drilled shaft
 - Non-fermenting
 - No petroleum distillates involved
 - Breaks down chemically with bleach (sodium hypochlorite)
 - NSF/ANSI Standard 60 certified
-

Recommended Treatment

Drilling

- Add 0.5 to 1 pound of POLY-BORE dry polymer per 100 gallons of fresh water (0.6 - 1.2 kg/m³) slowly through the hopper. (See Mix Instructions below)

Mix Instructions

- 15 to 20 minutes to allow POLY-BORE to hydrate
- Measure the funnel viscosity of the polymer slurry and adjust according to required specifications

Notes:

- 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.

QUIK-GEL®

Viscosifier



Description

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

Applications/Functions

- 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

Advantages

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

Recommended Treatment

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

Approximate Amounts of QUIK-GEL® 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 Information

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)

QUIK-GEL GOLD™

Viscosifier



Description

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

- Viscosify freshwater-based drilling fluids
- Mix with fresh water to form a low-solids drilling fluid for general drilling 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

Advantages

- 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

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 Information

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.

CORE-LUBE™

Core Tube Lubricant



Description

CORE-LUBE is a natural, linseed-based soft soap used as a core tube lubricant on diamond core drills.

Applications/Functions

- Facilitate the core sliding into the inner tube
 - Lubricate the core lifter
 - Minimize wear on the inner tube
 - Formulate a non-polluting water-based solution for cleaning inner tube components and rig equipment
-

Advantages

- Improves core recovery
 - Extends length of core run in broken ground
 - Lengthens useable life of downhole wireline components
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Recommended Treatment

As aid in core recovery

- A handful or saturated swab of CORE-LUBE may be smeared inside the bottom of the inner tube before it is inserted into the drill rods. Also, a liberal amount may be applied to the core lifter parts.

As a cleaning solution for drill rig components

- Mix one quart of CORE-LUBE with 50 gallons of water or 5 litres of CORE-LUBE per m³ of water.
-

Packaging

CORE-LUBE is packaged in 25-lb (11.4 kg) resealable plastic pails with wire bail handles.



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