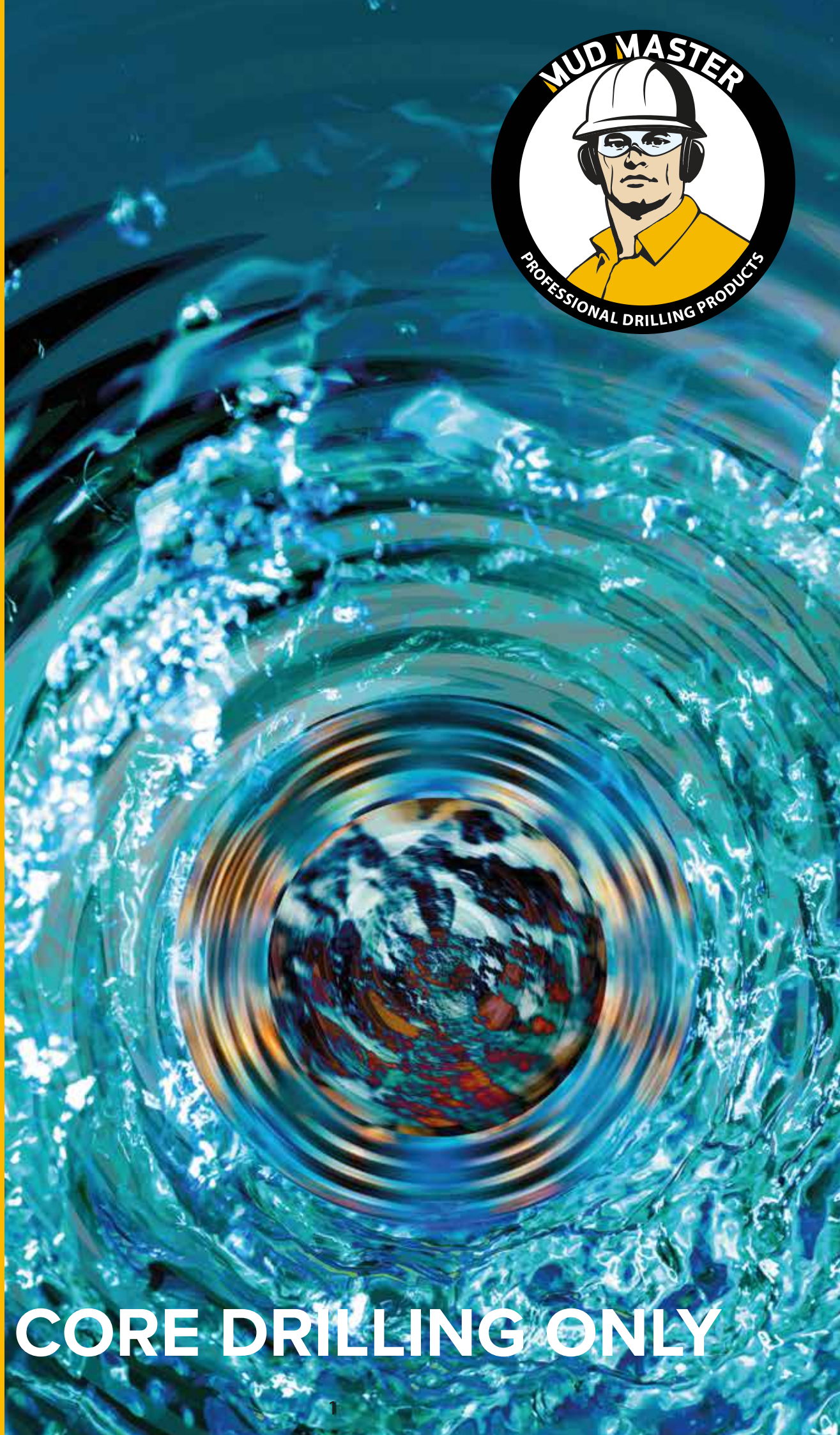
DRILLING FLUIDS



FOR CORE DRILLING ONLY

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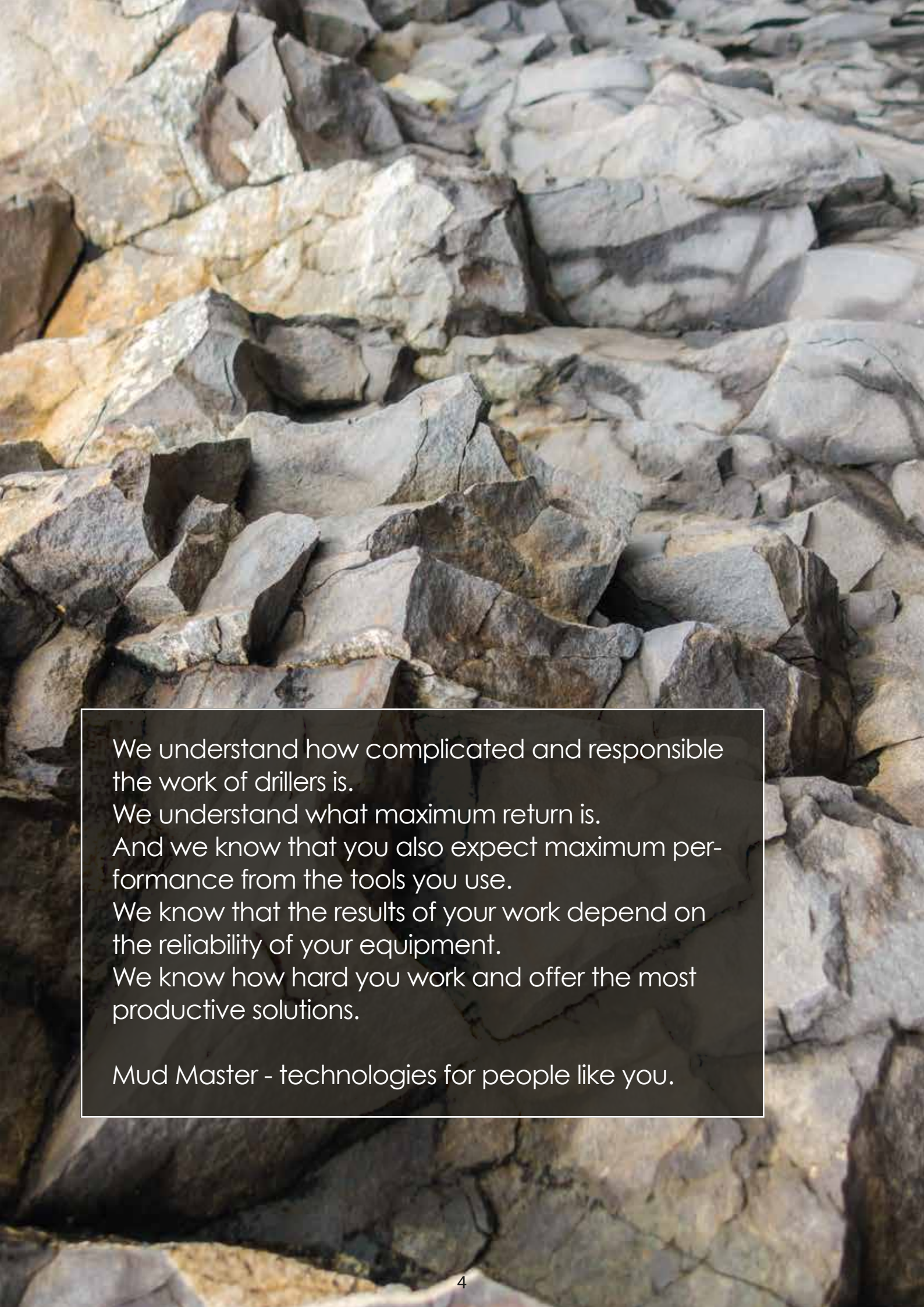

We understand how complicated and responsible the work of drillers is.
We understand what maximum return is.
And we know that you also expect maximum performance from the tools you use.
We know that the results of your work depend on the reliability of your equipment.
We know how hard you work and offer the most productive solutions.

Mud Master - technologies for people like you.

DRILLING FLUIDS

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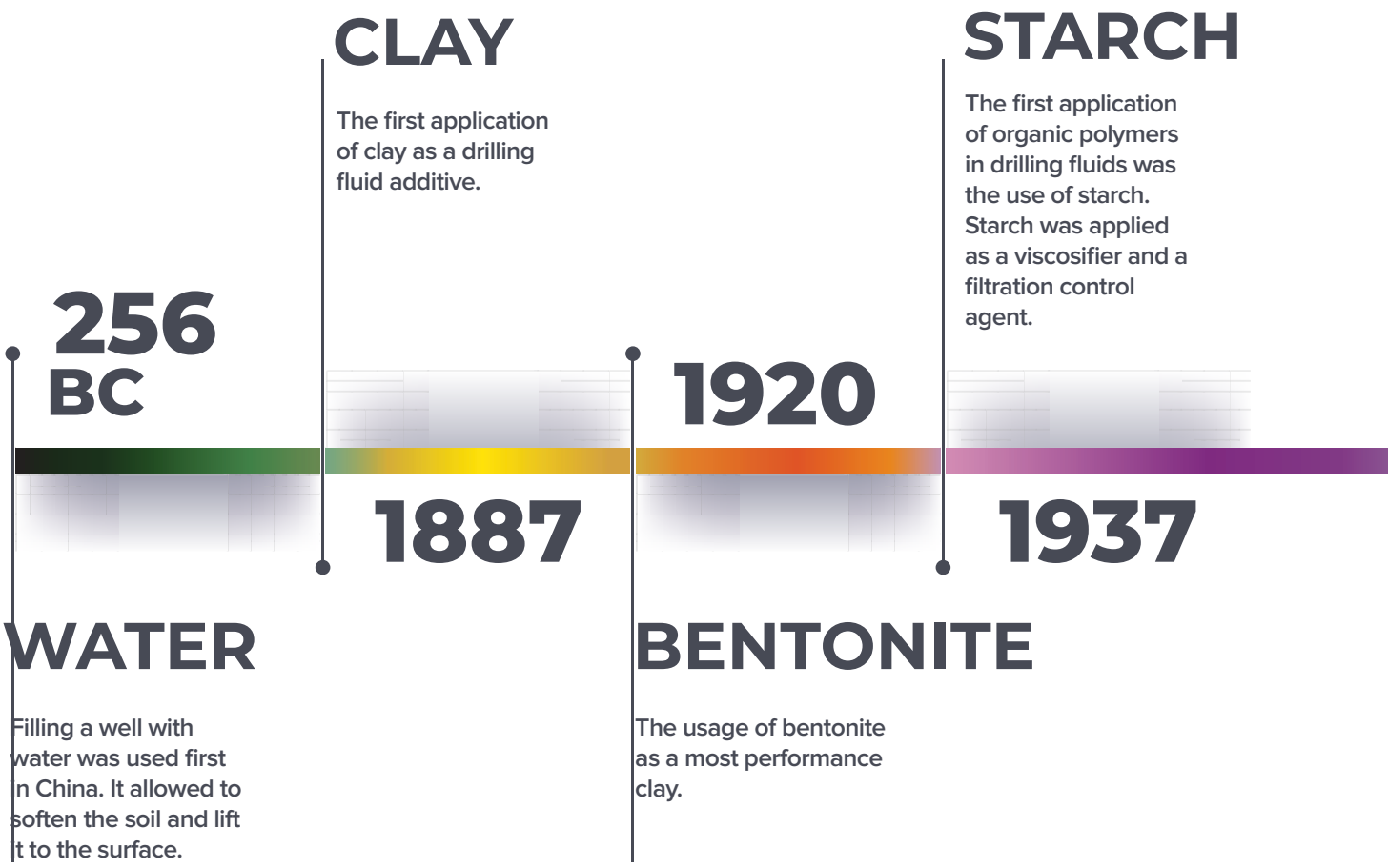
DRILLING FLUIDS EVOLUTION

This tutorial is designed to give an idea of the connection between the parameters of drilling fluid, its components, drilling adjustments and rocks, as well as to develop methods for selecting the formulation of the solution depending on geological conditions.

The history of drilling fluids

To better understand the functions of drilling fluids, let's look at the history of the use of drilling fluids in drilling history in general.

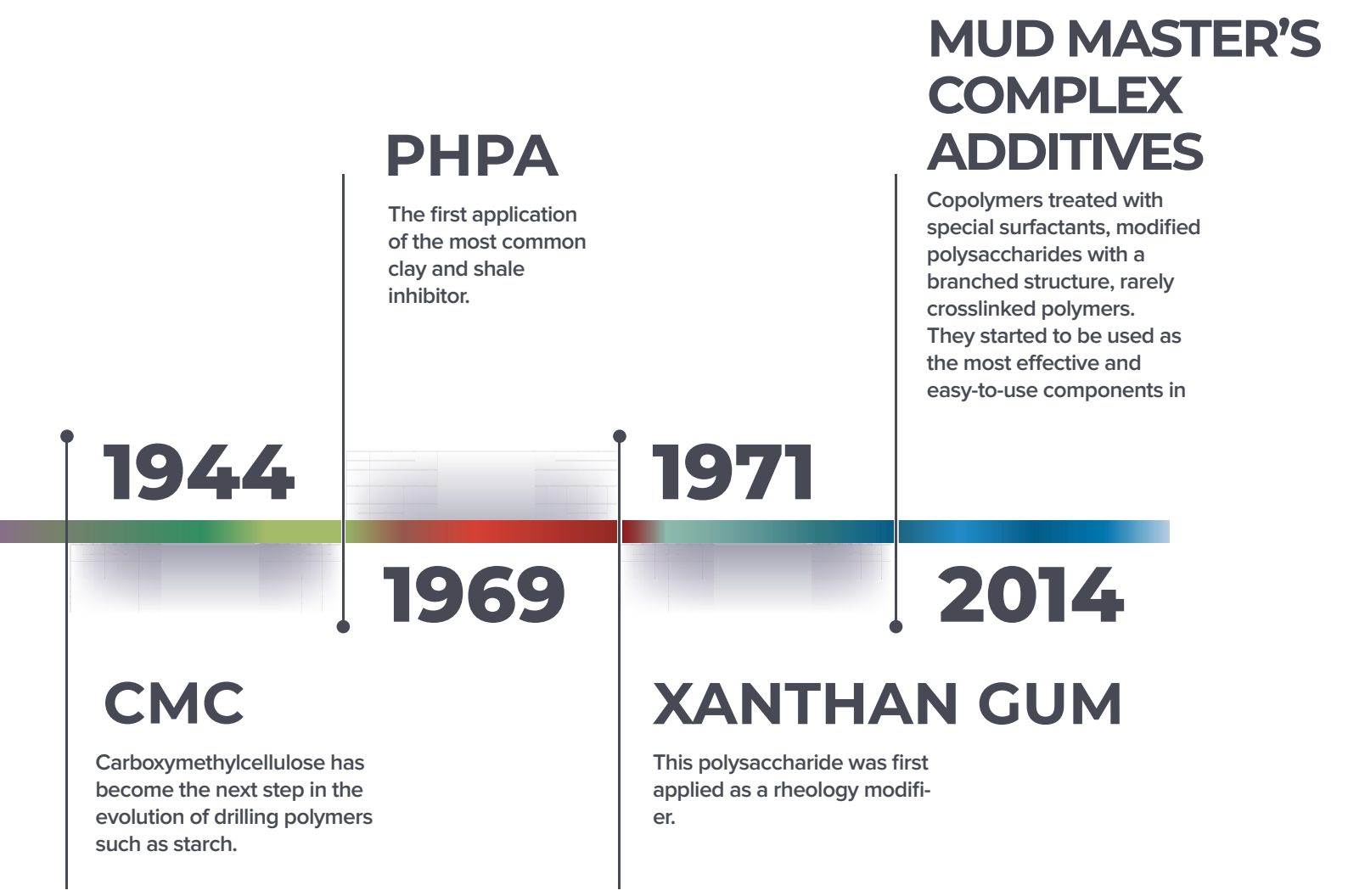
Of course, the specifics of the rocks dictated the same requirements for the properties of the drilling fluid, which provide the main characteristics of rock stabilization in any type of drilling. By looking at the evolution of drilling development and the use of drilling fluids, we can understand how the complexity of drilling has changed and assess how modern and effective components we currently used.



Each new component or system implemented provided a solution for certain tasks in the drilling process. This allowed the industry to increase the depth and diameter of the borehole and improve its stability in difficult geological conditions. It also made it possible to drill deviated wells and implement cluster drilling.

In 2014, Mud Master introduced unique drilling fluid systems designed specifically for core drilling.

Let's take a look at the properties of drilling fluids that are needed in our industry and how they differ from the "traditional" ones used in the oil and gas industry for core drilling purposes.




THE CORE DRILLING REALITY
VERY FAR AWAY
TERRIBLE WEATHER CONDITIONS
NO PROPER MIXERS

Exploration core drilling is a unique type of drilling that has both advantages and challenges. One of the distinctive features of this type of drilling is that it takes place at a considerable distance from settlements and infrastructure, often without roads, making it difficult to transport both cargo and personnel. In these cases, helicopters are often the only way of transportation. Due to the remote location of the drilling sites, climatic conditions can significantly affect the drilling process, making all operations dramatically difficult.

The second advantage of core drilling is that it requires a small number of people to operate the drilling process. There are only two people acted: a driller and a helper. This can be seen as both an advantage and a disadvantage. It means that fewer people are needed to perform the drilling operations, which can reduce costs and increase efficiency. However, this advantage becomes a disadvantage when it comes to the drilling fluid preparation process. The helper is responsible for a wide range of tasks related to the operation, including tripping, core extraction other activity and mud preparation. The preparation of a multicomponent drilling fluid, such as that used for oil and gas drilling, is a complex process that requires specialized equipment experience and knowlege. In conditions of lack specialised mixing equipment and extreme climate, it can be difficult to ensure that the fluid is prepared properly. This is especially true when there are only two people available to perform the tasks required.

Also, a critical feature of core drilling is the rotation speed of the drilling tool, reaching up to 1600 RPM and minimum annular gaps of 5-7 mm between the drill strings and the rock due to the close diameter of the outer of the bit matrix and the drill rod. The high speed of rotation of the tool leads to centrifuging of heavy particles on the inside of the drill rods, which makes it impossible to run or pull the core barrel out. In this case sludge solids or weighting agent can have a negative effect and lead to emergency situations.

The small annular gap makes the drilling process demanding to proper borehole cleaning, to avoid wear of the drill rods and the stuck of the drill strings.

Thus, in addition to the already known requirements for drilling fluids from rocks, the requirements of the drilling conditions themselves become critically important, such as the simplicity and speed of drilling fluid preparation, the efficiency of components per kg, the absence of the need to use complex mixing systems, water contaminates tolerance and wide temperature service range.

Given these facts, it is easy to conclude that standard multicomponent drilling fluid systems borrowed from oil and gas drilling will not be effective in exploration drilling due to the complexity, and often the lack of ability to prepare drilling mud with the required properties in the above extreme conditions in which core drilling explorers work.

THE CORE DRILLING REALITY

The helper's work is hard work, it includes an incredibly large range of responsibilities, starting from the preparation of the core barrel and core extraction, to the full support of manual tripping operations. Also, the helper is responsible for the preparation of drilling fluid, the quality of which in most cases directly affects the stability of the borehole, the penetration rate, as well as the life of diamond bit and drill strings.

The core drilling reality is that the probability of human error in the making of drilling fluid tends to 100%, since there are a huge number of factors influencing the result of making: the choice of components, the order of addition of components, the rate of addition, mixing time, control of water addition, water contaminations, water temperature, component compatibility, efficiency assessment and control of drilling fluid parameters.

Especially for the conditions of exploration drilling, Mud Master company constantly develops and improves its drilling additives to minimize the risks of error and maximize drilling productivity.

THE BEST CORE DRILLING SOLUTION

W WE CAN MAKE A HELPER PREPARE A DRILLING FLUID WITH THE REQUIRED PROPERTIES?

–

USE LABOR-SAVING AND EASY-TO-OPERATE DRILLING ADDITIVES

By the labor-saving and easy-to-operate additives, we mean:

- Really problem solving in the drilling process
- Maximum number of functions per component
- Ultra-small quantities
- Minimum list of components
- Rapid dissolving
- No requirement for water treatment
- Minimum requirements for addition and mixing
- Minimum time to get the result

Throughout its history, Mud Master has been developing such solutions for exploration drilling to make your productivity even more efficient.

SYNTHETIC DRILLING FLUIDS: ULTRA MAX

ULTRA Max - SYNTHETIC DRILLING FLUID

For drilling boreholes with geological conditions represented by monolithic rock, hydrophilic clays/shales, unbound rock, sand, crushed rock, MUD MASTER has developed a synthetic polymer solution of the next generation ULTRA.

Due to the latest developments in the sphere of high molecular weight soluble polymers, MUD MASTER was able to improve the ULTRA reagent and introduced a new product - ULTRA Max, which has unique properties:

- The minimum concentration of the reagent is 30 g/mH;
- ULTRA Max raises and develops rheological characteristics;
- ULTRA Max reduces filtration and binds fine-grained rock;
- Reduces logistics costs;
- Has a higher rate of drillinf fluid preparation;
- ULTRA Max is not sensitive to water quality and allows it to be used even on seawater.

The ULTRA Max additive is an innovative drilling fluid system. It provides stability, the necessary carrying capacity and well cleaning.

The stabilization of the borehole walls occurs not due to bentonite particles blocking the pore spaces, but due to the adhesion of rock particles by polymer and the formation of a polymer film at the boundary of the solution and the rock surface.

You even have no any mixers to be able to dissolve ULTRA Max

ULTRA Max consumption ranges from 30 to 350 gram/m3. Low concentrations allow small quantities to be delivered to remote facilities, including by air delivery and it significantly reduces transportation costs.

The ULTRA Max is added under the stream when filling the mix pit with water, or under the agitator, within 5-10 minutes it is necessary to distribute the additive over the entire volume of the pit. The rate of complete hydration of the additive is 10 minutes.

The concentration of the reagent for passing unstable intervals is 300-400 g/m3, for ore zones 200-300 g/m3, for cemented rocks 30-150 g/m3.

The use of immersion mixers is optional. ULTRA Max allows you to succesfull drill through dense, monolithic rocks and in slightly bonded permeable ones. For drilling in monolithic, dense impermeable rocks, it is recommended to use 30-150 g/m3 of ULTRA Max reagent. For drilling rocks composed of loams, the recommended concentration is 200-300 g/m3 of ULTRA reagent.

For drilling of loose, loose permeable rocks (sand, sandy loam, coal, etc.), it is recommended to use concentrations of 300-350 g/m3, in these concentrations the synthetic solution forms an impermeable Max film on the surface of the solution/rock phases. Thus, the regulation of the properties of the ULTRA Max system occurs by simply changing the concentration of the reagent and allows you to obtain a drilling fluid that does not contain a solid phase.

Typical ULTRA Max concentrations in seawater solution or saturated brines range from 0.1 kg to 1.0 kg for 1 cubic meter of water.

Geological conditions	
Sand, fine fractured rock	300 - 350 g/m3
Clay, silt, shale	200 -300 g/m3
Monolithic rock	30 - 150 g/m3
Sylvin, halite, sea water	500 - 1000 g/m3

ULTRA Max позволяет использовать соленасыщенный раствор и получать до 100% выход керна в пластах представленных солями

SYNTHETIC DRILLING FLUIDS: TORNADO

TORNADO

TORNADO is a “super-fast” universal one-component drilling fluid.

TORNADO is also a one-component synthetic drilling fluid like ULTRA Max, yet it has one significant advantage and two features:

The speed of drilling mud preparation is only 3-5 minutes, while the viscosity characteristics develop within a few seconds;

Typical concentrations start from 50g/m3

TORNADO is not sensitive to hard water, but its effectiveness decreases in seawater or high-saturated brines.

TORNADO allows us to obtain up to 100% core yield in fine-fractured rocks such as sand, coal, gravel, etc.

Synthetic polymer SAND Rock

SAND Rock is a synthetic polymer that outperforms all rheology modifiers and filtration reducers by at least 4 times in characteristics.

SAND Rock allows you to significantly increase the carrying capacity of both bentonite and polymer drilling fluid. It also provides a reduction in filtration/water loss, which is critical in water-sensitive rocks.

Among other things, SAND Rock dissolves instantly and is practically not sensitive to water pollution as water hardness.

These properties make it ideal for drilling deep holes, deviated boreholes, making a fluid on seawater and making saturated brines.

PLUGGING MATERIAL: X-TEND 400

ELIMINATION OF LOSS AND STABILIZATION OF FRACTURED ROCKS USING ULTRA Max SOLUTION

The synthetic additive like ULTRA Max or TORNADO, are a polymer system with the possibility of using the X-TEND 400 plugging material. If complete or partial loss occurs, it is recommended to use the X-TEND 400.

X-TEND 400 is a crystalline polymer that, upon contact with a fluid, absorbs water, increasing in size up to 350-400 times, plugging cracks in the rock. Unlike other grouting additives, X-TEND 400 has a high adhesive surface, which allows it to form a single impermeable layer.

X-TEND 400 is added to the drilling fluid preparation tank at a concentration of 2-4 kg/m3 before adding the ULTRA Max of TORNADO additives, then ULTRA Max or TORNADO is added at a concentration of 350 g/m3. Then, drilling is performed in the loss zone normally.

TORNADO + X-TEND 400: Stabilization of fractured rocks, 100% core recovery, prevention of drilling fluid loss.

ULTRA MAX/TORNADO + SAND ROCK + X-TEND 400

UNIVERSAL SOLUTION: ULTRA Max/TORNADO + SAND Rock + X-TEND 400

The ULTRA Max/TORNADO + SAND Rock + X-TEND 400 system allows drilling in almost all geological conditions, ensuring the stability of holes in both inert fractured rocks and chemically active, water-sensitive, as well as holes with diameters up to standard size S and depths up to 2000 m.

0,25-0,5 kg/m3	0,25-1,0 kg/m3	0,5-1,0 kg/m3

The process of forming a polymer film using TORNADO + SAND and X-TEND 400 was visible in a rotating unit, and the taken H size core sample from the depth of 780 meters.

MUD MASTER
PROFESSIONAL DRILLING PRODUCTS

DRILLING ADDITIVES

SUPER BIZON

HIGHLY EFFECTIVE BENTONITE MIXTURE BASED ON HIGH PURITY SODIUM MONTMORILLONITE

- Fast viscosity
- Lubricating properties
- Well flushing and cleaning
- High rheological properties, viscosity changing
- Deviating boreholes drilling
- High fractured and unconsolidated formations
- Wide range of plugging materials is acceptable

Market standard is a sack per cubic meter which is 25 kg/m3 gives following properties:

V=55-60 sec
YP=30-35 lb/100ft2
Gels=15/18 lb/100ft2
Filtration=13 ml

RED BIZON

MEDIUM VISCOUS BENTONITE MIXTURE BASED ON HIGH PURITY SODIUM MONTMORILLONITE

- Fast viscosity
- Lubricating properties
- Well flushing and cleaning
- High rheological properties, viscosity changing
- Deviating boreholes drilling
- High fractured and unconsolidated formations
- Wide range of plugging materials is acceptable

Market standard is a sack per cubic meter which is 25 kg/m3 gives following properties:

V=50-55
YP=25-30 lb/100ft2
Gels=12/15 lb/100ft2
Filtration=14 ml

ULTRA MAX

The innovation you need.

ULTRA Max is a deeply redesigned one-component drilling fluid effectively provides borehole cleaning and stabilization in a variety of geological conditions. ULTRA Max builds a film on the surface of small particles and fine fractured rocks, preventing filtration through the borehole wall without the bentonite use. ULTRA Max develops unsurpassed viscosity from the smallest concentrations ever, providing excellent cuttings carrying capacity. ULTRA Max has unique characteristics of resistance to salts up to saturated NaCl solution up to 30% wt and hard water up to 1000 ppm total hardness, which allows ULTRA Max to be used for the preparation of drilling fluids based on brines for drilling permafrost zones and formations composed of sylvite and halite salts.

Advantages

Extremely low concentration to achieve high viscosity;

Building unique film on the surface of fine fractured unconsolidated formations for borehole stabilization;

Unique treated that provides instant wetting with no "FISH EYES" effect;

NaCl (kg/m3)	Concentration ULTRA MAX (kg/v3)	Marsh Funnel Viscosity API (sec)	Density solution (kg/m3)
0	0,05	39	1,000
0	0,1	50	1,000
5	0,3	52	1,000
10	0,3	51	1,000
15	0,3	51	1,010
20	0,3	50	1,013
25	0,3	50	1,016
50	0,3	49	1,030
100	0,5	55	1,060
150	0,5	50	1,100
200	0,5	47	1,120
300	0,7	43	1,176

Recommended treatment:

Check water hardness of make-up water. If hardness higher 250 ppm use Soda Ash.

Slowly add the polymer powder from the bag to the water stream or mixer.

Mix for 10-15 minutes.

Formation	Concentration
Monolith	0.05-0.1kg/m3
Clay/Shale	0.2-0.25 kg/m3
Fine fractured rock	0.3-0.35 kg/m3
High-density rock	0.35-0.5 kg/m5

TORNADO

THE EASIEST WAY TO HASSEL-FREE DRILLING

TORNADO is a fastest soluble one-component drilling fluid effectively provides borehole cleaning and stabilization in a variety of geological conditions. TORNADO builds a film on the surface of small particles and fine fractured rocks, preventing filtration through the borehole wall without the bentonite use. TORNADO develops unsurpassed viscosity from the smallest concentrations ever, providing excellent cuttings carrying capacity. TORNADO is highly resistant to divalent metal ions and works in hard water with a total hardness of up to 1000 ppm, which allows TORNADO to be used for preparing drilling fluids in the presence of only hard water sources.

Concentration TORNADO (kg/m3)	Marsh Funnel Viscosity API (sec)
0,075	33
0,15	40
0,25	52
0,5	75
0,75	90

Recommended treatment:

Check water hardness of make-up water. If hardness higher 250 ppm use Soda Ash.

Slowly add the polymer powder from the pail to the water stream or mixer.

Mix for 5-15 minutes.

Formation	Concentration
Monolith	0.75-0.15 kg/m3
Clay/Shale	0.2-0.35 kg/m3
Fine fractured rock	0.35-0.7 kg/m3
High-density rock	0.5-0.7 kg/m5

FEATURES & BENEFITS

Extremely low concentration to achieve high viscosity;

Building unique film on the surface of fine fractured unconsolidated formations for borehole stabilization;

Unique treated that provides instant wetting with no “FISH EYES” effect;

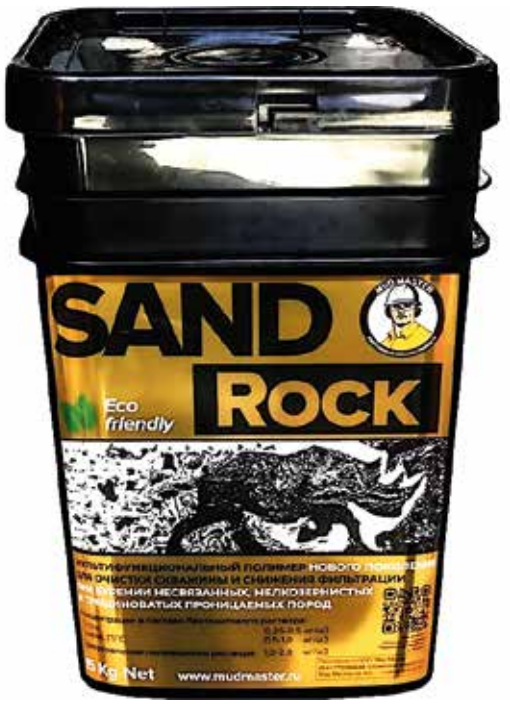
Package

PACKAGE

TRONADO comes in 15 kg resealable plastic pails with 30 plastic bags per 500 grams.

SAND ROCK

SAND and ROCK are not a problem with unique SAND ROCK product. SAND ROCK is a multitasking additive that significantly increases rheology and provides incomparable filtration control in bentonite-based drilling fluids.
Only 0,025% of SAND ROCK increase Yield Point in 5-7 lb/100ft² of sodium bentonite solutions.



SAND ROCK as a property enhancer for bentonite drilling fluids. Adding 0,25-0,5 kg/m3 to a 2,5% Bentonite solution allows to increase viscosity, rheology and reduce filtration which are the main requirements for borehole cleaning and stabilization in unconsolidated and fractured formations.

Adding 0,5-2,0 kg/m3 to polymer drilling fluids allows to increase Yield Point numbers to a bentonite drilling fluid level.

Typical concentrations

As bentonite drilling fluid additive:
SAND, COAL – 0,25-0,5 kg/m3
FRACTURED ROCK, GRAVEL – 0,5-1,0 kg/m3

USE AS BASE OF POLYMER DRILLING FLUID 1,0-2,0 kg/m3

Please note:
The use of make-up water with pH = 8-9 significantly reduces the dissolution time.

Advantages

Extremely low concentration to achieve high carrying capacity and borehole stability in unconsolidated formations;

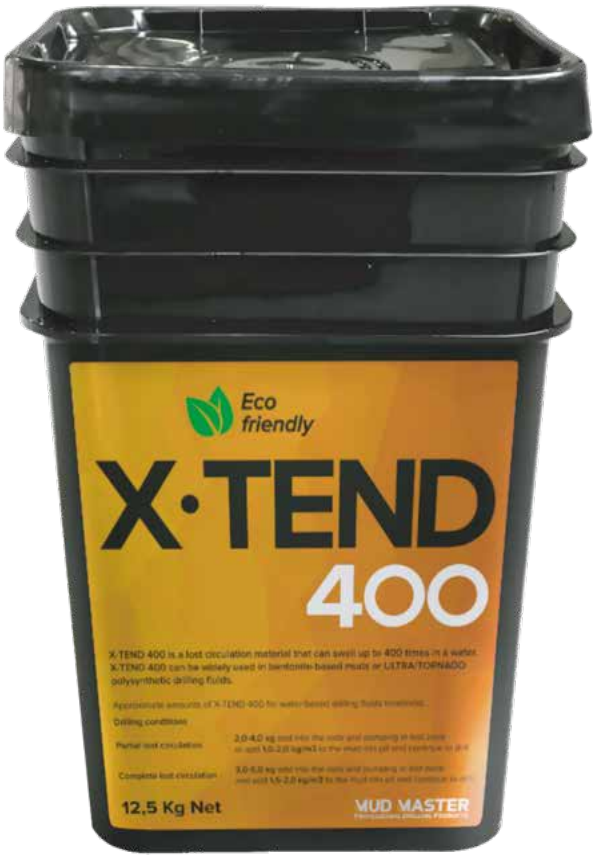
Unique treated that provides instant wetting with no "FISH EYES" effect;

Achieving high YP numbers and carrying capacity even without bentonite.

X-TEND 400

X-TEND 400 IS A MULTIFUNCTIONAL LOST CIRCULATION AGENT AND BOREHOLE WALL STABILIZER

X-TEND 400 is a multifunctional lost circulation agent and borehole stabilization agent for unstable fractured formations. X-TEND 400 absorbs water up to 400 times its own weight. The polymer has a unique sticky adhesive surface, due to which it not only blocks the pores in the rock, but also forms an impermeable polymer barrier, thereby restoring circulation. The soft structure of the material allows it to be added to the drilling fluid and freely pumped directly to borehole during the drilling process.



APPLICATION

When using bentonite or polymer mud to pass through fracture zones, X-TEND 400 is added to the make-up water before drilling mud is prepared at a concentration of 1-3 kg/m3, then drilling additives are added.

To eliminate faults zones, 0.5-3.0 kg of X-TEND 400 pre-mixed with oil is added to drill rods with when core barrel is removed, then it is injected to the bottom.

Package

X-TEND 400 comes in 12,5 kg resealable plastic pails.

FLOTEK

THE BASE YOU GET TO STARTED

FLOTEK is high anionic charged high molecular weight multipurpose polymer specifically designed for core drilling purposes.

FLOTEK provides rapid viscosity development, cuttings removal and proper borehole cleaning, torque reduction and wellbore stabilization in active clays and shales.

FLOTEK is very performance agent that can be used as main component of clay-free drilling fluids with reasonable concentrations.

ADVANTAGES

- High viscosity developing.
- Low concentrations.
- Superior clay and shale stabilization.
- Proper borehole cleaning.
- Effective torque reducer.
- Prevents clay balling.

The best way to avoid polymer lumps during treatment is to use a Venturi hopper. Add polymer to the Venturi hopper slowly or into the stream as the pit fills with water.

- As the main component of clay-free drilling fluids, concentrations vary between 0.1-0.7 kg/m3, depending on the target viscosity.
- If using for clay and shale stabilization, concentrations vary between 0,3 – 0,7 kg/m3.

APPLICATION

Typical concentration for using FLOTEK as water-based polymer clay-free drilling fluid:

Conditions	Recommended concentration
Sand, fractured formations	0,5–1,0 kg/m3
Clays and shales	0,3–0,5 kg/m3
Solid formations	0,1–0,25 kg/m3

PACKAGE

FLOTEK comes in 25 kg plastic bags.

GREEN LUBE

ECO-FRIENDLY NATURAL LUBRICATION FOR THE BEST FRICTION REDUCTION

GREEN LUBE is a unique drilling fluid lubricant based on the most effective heavy fraction of natural oil but easy soluble in water due to a very special emulsifier.

GREEN LUBE is used as the most effective drilling fluid lubricant when drilling high angle deviated boreholes, mud motors using and drilling abrasive formation to reduce torque and prevent drill strings damage.

Approximate recommended consumption rates for GREEN LUBE material when added to water-based drilling fluids	
Conditions	Concentration L/m3
When added to bentonite or polymer drilling fluids to reduce torque.	1-5
When plugging fractures and eliminating lost circulation to reduce torque in problematic intervals and deviated wellbores	Add 2-10 liters directly into the drill strings

Recommended treatment:

Slowly add the lubricant from the pail to the water stream or mixer.

Mix for 5-15 minutes until the drilling fluid turns milky shade.

PHYSICAL PROPERTIES

Appearance: Thick brown liquid
Odor: Pungent smell of pine

FEATURES & BENEFITS

- Environmentally friendly.
- Effective at low concentrations.
- Reduces torsional and axial loads on the drill bit.
- Provides lubrication of drill rods and casing in tight tolerance boreholes.
- Reducing heat generation on the surface of the drill bit.
- Minimizes the possibility of sticking due to pressure differences

PACKAGE

GREEN LUBE comes in 20 L resealable plastic buckets.

RED FOX

PURE NATURAL CORE BARREL LUBRICANT

RED FOX is high concentrated water - free natural linseed soap paste that prevents jamming and disruption of unconsolidated core when entering the core barrel.

Only applying a thin layer 3-5 mm of RED FOX to the core lifter and lifter case surface before every run ensures easy and safe core retrieval process .

FEATURES & BENEFITS

- High concentrated and water-free.
- Biodegradable.
- Rinses easily from samples.
- Minimize wear on the inner tube.
- Lubricates the core lifter.
- Facilitates the core sliding into the inner tube.
- Doesn't freeze and can be used as low as -50°C.
- Doesn't separate or melt at high temperatures.

PHYSICAL PROPERTIES

Appearance: Brown-yellow paste

CHEMICAL PROPERTIES

Solubility: Sparingly soluble

pH: 9.5-11.5

PACKAGE

RED FOX comes in 20 kg resealable plastic buckets .

GRIZZLY

SUPERIOR ADHESION AND VIBRATION REDUCING

GRIZZLY is a high adhesion rod grease. GRIZZLY is applied as the most effective rod grease to dampen vibrations when complete loss of fluid happened. GRIZZLY provides superior drill string damage prevention.
The grease has wide range of temperature resistance.

Recommended treatment:

Apply a thin layer of the grease to the surface of the drill string every trip.

PHYSICAL PROPERTIES

Appearance: Thick brown paste

Odor: hydrocarbon

FEATURES & BENEFITS

- Superior adhesion to drill string.
- Water resistance.
- Reduces torsional loads.
- Provides vibration damping of drill string when complete loss of fluid.
- Reducing heat generation on the surface of the drill string.
- Minimizes the possibility of sticking due to pressure differences.

PACKAGE

GRIZZLY comes in 17 KG resealable plastic buckets.

HYDRO SHOCK

HYDRO SHOCK IS A MULTIPURPOSE LIQUID AGENT FOR PREVENTING CRITICAL LOSSES OF DRILLING FLUID

HYDRO SHOCK is a multifunctional lost circulation agent applicable for strengthen borehole walls in unstable fractured formations. HYDRO SHOCK absorbs water up to 100 times its own volume to turns into a solid hard to flow mass. The polymer has a unique sticky adhesive surface, due to which it not only blocks the pores in the rock, but also forms an impermeable polymer barrier, thereby restoring circulation.

APPLICATION

Use only when loss of fluids. Stop drilling and pull the core barrel out. Depending on the loss rate apply from one to ten capsules into the drill strings. Pump them to the bottom of the borehole while rotating until the pressure increases and keep pumping for 3-5 minutes.
Repeat, if needed.e.

PACKAGE

HYDRO SHOCK comes in 20 kg resealable plastic buckets packed in plastic pills.

ULTRA CLAY

The best way to rid of clay.

ULTRA CLAY is a most concentrated polymer dispersant in fluffy powder form that provides excellent borehole cleaning when drilling very active clay formations, as well as prevents balling and sticking.

ULTRA CLAY also provides superior mud and sediment clay removal from the producing formations.

Using ULTRA CLAY solution can help to eliminate differential sticking of drill strings.

CONDITIONS	Concentration ULTRA CLAY (kg/m3)
STANDARD CLAY (GREEN, YELLOW, A LITTLE STICKY)	0.5
ACTIVE CLAY (BLUE-GREEN, RED, STICKY)	1.0
VERY ACTIVE CLAY (GUMBO, BLACK CLAY, VERY STICKY)	1.5-2.0
FILTER CAKE REMOVAL	5.0
STICKING ELIMINATION	5.0-10.0

Recommended treatment:

Check water hardness of make-up water. If hardness higher 250 ppm use Soda Ash.

Slowly add the polymer powder from the pail to the water stream or mixer. Mix for 5-15 minutes.

To eliminate sticking or remove filter cake.

It is necessary to quickly raise and slowly lower the drill strings using a surge and swab during mixture flushing to provide a depression effect, 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.

Advantages

- Extremely low concentration to achieve clay dispersion.
- Helps increase well yield and capacity.
- Helps reduce development time.
- Contains no phosphates.
- Unique treated that provides instant wetting with no "FISH EYES" effect.

Package

ULTRA CLAY comes in 12 kg resealable plastic pails.

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