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July 2, 1976

B-5

DAL/FILES

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JUL 8 1976
MONTELLO

Mr. John Myers
Union Carbide Corporation
P.O. Box 579
Niagara Falls, New York 14302

Dear John:

We've just gotten a copy of the latest flyer on Flosal. It makes for some very interesting reading. They have elected to push hard on their improved performance. We can tie our "non-OSHA" problems in West Texas, directly to the unfortunate accuracy of their claims.

Let's play "customer" for a couple of minutes. I've got a choice between Flosal and Super Visbestos. Flosal costs about the same; it works better; it's in a more compact,cleaner bag; it looks cleaner out of the bag; and it's readily available. Now tell me why I should buy Super Visbestos. The only answer that's going to make any sense to that customer is one that says he'll get a dust controlled product, in a clean package, that will give equivelant or better performance, and at a competitive price.

This little scenario covers most of the fundamental problems we presented in New York last month. The only new factor (also adverse) is the general education program Drilling Specialties has launched. This can only accelerate the deterioration of our position in the market. We need some "ammunition" to join in the battle and soon.

You may want to pass copies on to Bill and Dick. We've sent one, along with a copy of this letter, to the good Doctor.

PLAINTIFF'S EXHIBIT
UC-710

Sincerely,

MONTELLO, INC.

Kenneth N. Campbell

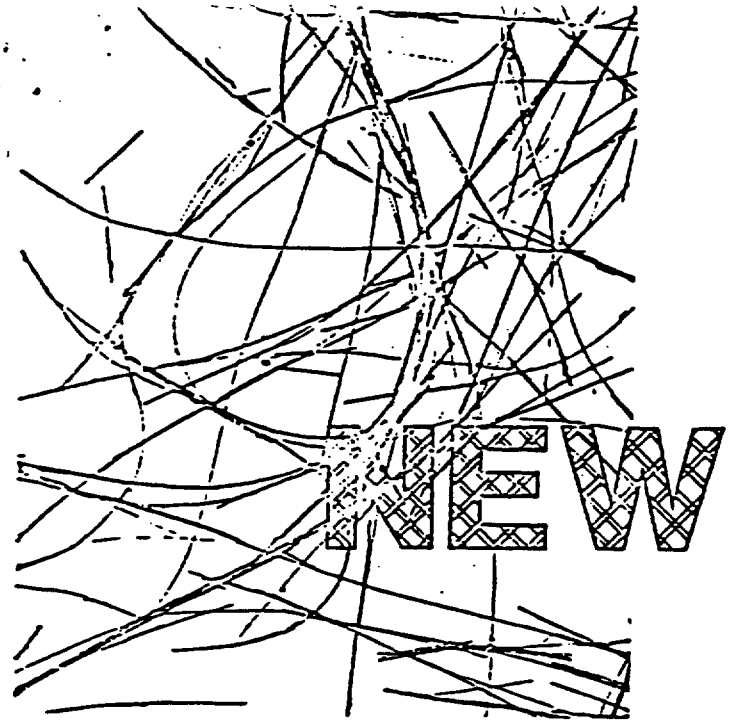
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1981
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NIAGARA FALLS, N.Y.

cc: Harry Rhodes
Harry Wyatt

P.S. Aren't they on "thin ice" not even mentioning asbestos in their flyer?

montello
P.O. BOX 130, SAND SPRINGS, OKLAHOMA 74063 /(918)-245-6661/TWX 910-840-3007



SUSPENDING SOLIDS
LIFTING CUTTINGS
HOLE CLEANING
CARRYING CAPACITY

John –

NEW FLOSAL

MUD ADDITIVE

At Drilling Specialties Company innovation has been the name of the game. In 1964 Drilling Specialties Company introduced to the drilling industry a novel suspending agent trademarked Flosal. Flosal was widely accepted and used from the very beginning. Operators and contractors alike changed their mud programs to include this effective hole cleaning additive.

Today there is an improved Flosal additive. It is safer, more effective and less bulky than the former additive, which accounts for its being the most extensively used additive of its type.

WHAT IS NEW ABOUT FLOSAL ADDITIVE

Major changes have been made in the processing and bagging of Flosal additive. It is made from distinctively gray colored inorganic fibers that have been pre-wet, compacted and sized according to specifications into flake form which are fast-acting, relatively dust-free and dispersible in water of any salinity. The bag size for Flosal flakes has been reduced 60% from previous bags to 1.11 cubic feet. Table I shows the increased initial effectiveness of Flosal flaked additive fibers in water. Higher initial viscosity is developed without sacrificing stability in ultimate viscosity. This phenomenon is unique with Flosal flaked fibers. The result is fast, but lasting, suspending ability regardless of horsepower or shear power available at the mixing pump.

TABLE I

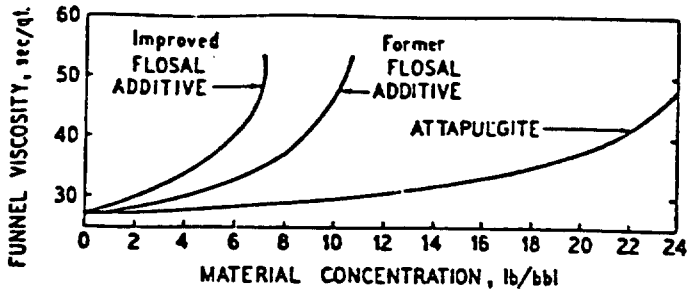
APPARENT VISCOSITY PRODUCED BY FLOSAL ADDITIVE IN FRESH AND SATURATED SALT WATER

Conc., lb/bbl	AV, cp After Stirring on a MM for: 2 min.	5 min.	30 min.
IN FRESH WATER			
Original Flosal			
2	1.5	2	3
4	2.5	3.5	7
IMPROVED FLOSAL			
2	3	3.5	4
4	6	6.5	7
IN SATURATED SALT WATER			
Original Flosal			
2	3.5	4	6
4	6	9	12.5
IMPROVED FLOSAL			
2	6	6.5	7.5
4	10	11	11

HOW AND WHY IT WORKS

How and why the improved Flosal additive works in mud can be shown in the laboratory and in the field. In Graph No. 1 typical funnel viscosities are shown in field brine. Funnel viscosity, however, is not wholly indicative of how the additive works. A latticework of fibers is formed when the flakes are dispersed in fluid. This structure suspends solids and suppresses particle migration. It supports solids of density greater than 1.0 and restrains solids of density less than 1.0. Because the reaction is physical rather than chemical, rheological properties of Flosal containing fluids do not correlate with those of clay fluids. In fact, no commonly used rheology measuring device or formula is accurate in predicting Flosal's capabilities as a carrying agent. However, an apparatus has been devised that demonstrates visually Flosal's lifting ability. In applying the non-Newtonian Power Law to drilling fluids, "n" and "K" values indicate Flosal fluids to be superior to clay fluids for drilling. Yet, even this evidence does not adequately describe Flosal's superior suspending and cleaning ability in field mud. The suspending ability of a clay fluid is not as great as a clay-Flosal fluid at equal viscosities.

The lifting power and ability to overcome slip velocity of Flosal additive compared to bentonite and attapulgite clay can be demonstrated in the apparatus in Figure 1. Chips are released into the mud stream, and their direction and rate of travel are noted. Flosal additive is over 10 times more effective than bentonite in fresh water, and over five times more effective than salt water clay in salt water. In Figures 2 and 3 suspending characteristics of Flosal and salt water clay are compared in saturated salt water. In time, separation of water from solids will occur and the suspension will stratify to some extent. Yet, solids will not settle and compact as clay solids in the clay-salt water cylinder.



GRAPH 1

MATERIALS IN 9.2 LB/GAL. FIELD BRINE

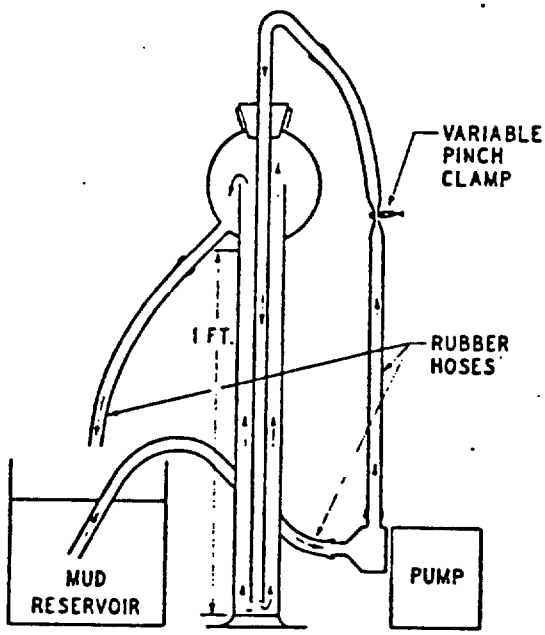


FIGURE 1
CIRCULATING SYSTEM

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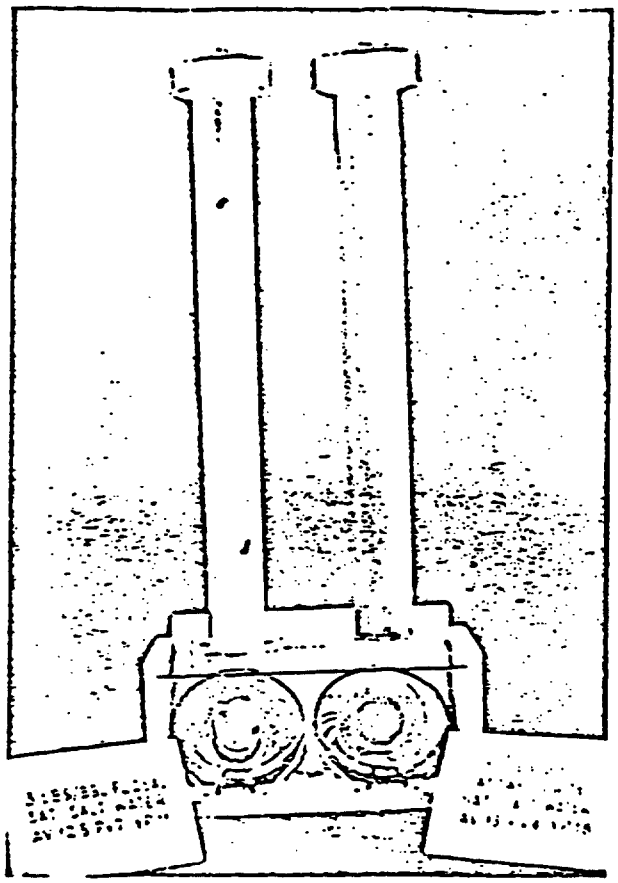


FIGURE 2

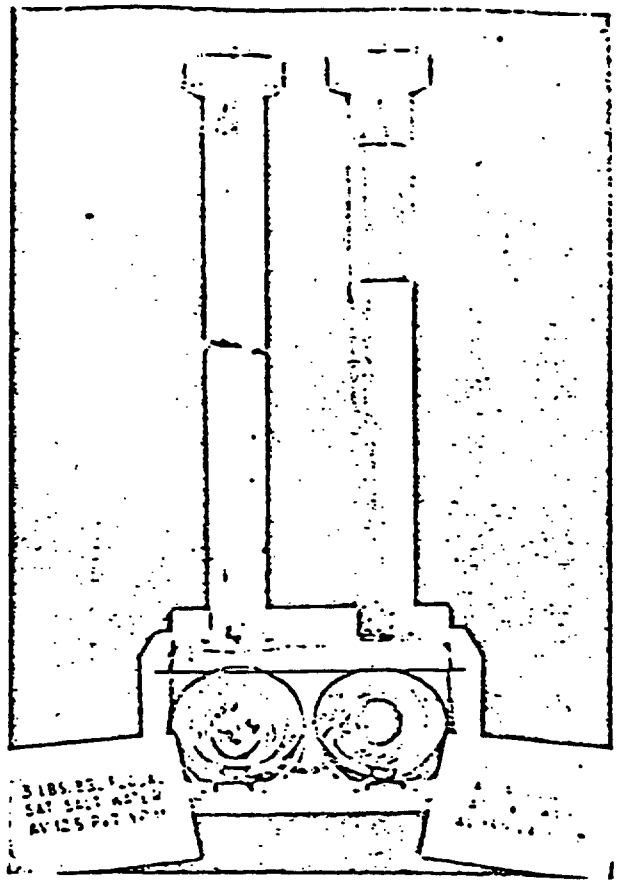


FIGURE 3

FIGURES 2 & 3 — SUSPENDING CHARACTERISTICS OF FLOSAL AND SALT WATER CLAY COMPARED IN SATURATED SALT WATER.

Further comparisons of Flosal and clays are shown and described in Drilling Specialties Company's bulletin "The Carrying Capacity of Flosal Viscosifier in Muds."

HOW IT IS USED

SPUD MUD

Spud mud is made by adding 3-4 lbs/bbl. Flosal additive and approximately 10 lbs/bbl. or more bentonite to water of any salinity. For best results pre-hydrate bentonite in fresh water if salt water is used for makeup. Lime or caustic can be used as a flocculant when fresh water is used if desired. Improved Flosal and bentonite maintenance treatments should be in the ratio of 1:3 on a weight basis (two 50 lb. bags Flosal for each three 100 lb. bags of bentonite). This formulation insures hole cleaning even in the viscosity range of 32-33 sec/qt. Both spud mud and upper hole drilling mud containing Flosal and bentonite will lift dense sand, large cuttings, and even rocks and gravel up and over the shaker. See Figure 4.

In the spud mud Flosal is used for carrying capacity and bentonite for wallcake control. In drilling porous formations bentonite is preferable to other clays for building wallcake. Low flat gels are characteristic of the system. The PV/YP ratio should be in the range of 1:2 to 1:3 for maximum cleaning action and minimum hole enlargement. This profile of characteristics is unique in mud and is made possible by the use of the improved Flosal additive.

LOW SOLIDS MUDS

All too often clear fluids fail to clean the hole. On the other hand high solids muds are not the best drilling fluids. In many areas low solids muds are the best choice. Obviously, the most efficient low solids mud is the one which serves the purpose with the lowest concentration of solids. A good low solids drilling fluid has a low plastic viscosity. A good hole cleaning fluid has a relatively high yield point. Low solids with a low PV/YP ratio are not common to muds made with clays alone. By the time the clay concentration is high enough to develop proper

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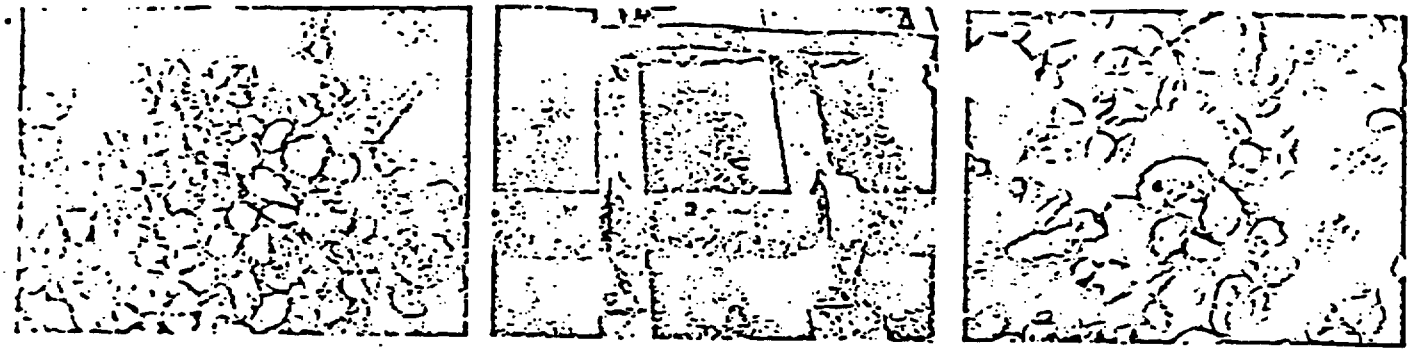


FIGURE 4

yield value the gels, the plastic viscosity and the solids are all too high for maximum drilling rate. This occurs even when beneficiated clays are used. A portion of the mud's clay content must be replaced with Flosal in order to develop a proper PV/YP ratio at minimum solids content. Up to 3 lbs/bbl. Flosal additive makes the proper concentration of properties possible. The use of inert fibers also reduces the need for dispersion and thinning. Flosal additive is especially adaptable to non-dispersed low solids muds.

FLUSH CLEANING

Fast, economical hole cleaning can be accomplished by mixing a small concentrated batch or pill of improved Flosal with or without bentonite. The mix is circulated through the hole to flush it clean. Ten or more sacks of Flosal can be used alone, or a 50-100 bbl. pill of 1-4 lbs/bbl. Flosal and 10 lbs/bbl. bentonite can be used. Flush cleaning with Flosal is especially effective when drilling with water. As many flushes as necessary can be used to insure cleaning and to prevent slippage and regrinding of cuttings. The flush can be recirculated or removed with the cuttings as desired.

SAMPLE MUD

Geologists need and demand better formation samples than those sometimes brought to the surface by water or solids-free drilling fluids. One to two lbs/bbl. Flosal added to these fluids will not only bring up larger cuttings but will also prevent "stringing out" of samples. Figure 5 shows the sampling results of adding Flosal to a clear drilling fluid.

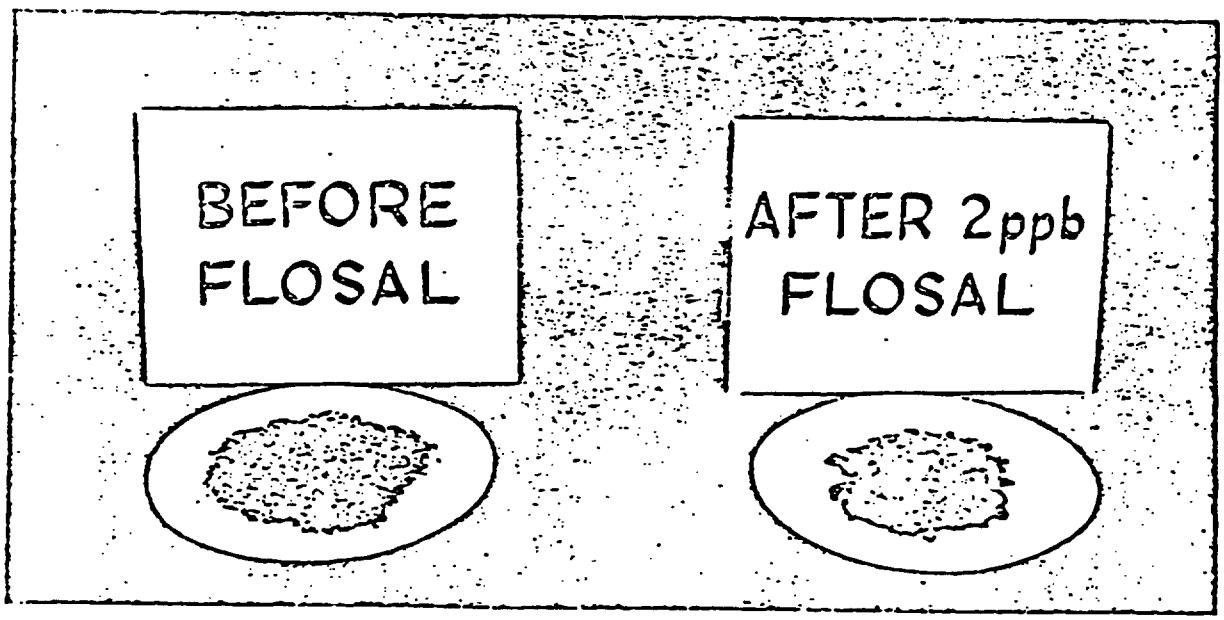


FIGURE 5

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LARGE DIAMETER HOLES

In drilling large diameter holes annular velocities are often low. In drilling or reaming holes 24 to 48 inches and larger the annular velocity may be as low as 10 ft/min. or less. Hole cleaning is solely dependent upon the carrying capacity of the mud. The latticework structure formed by Flosal additive in mud supports cuttings and cavings in this low fluid velocity environment. Mud with a minimum of 3 lbs/bbl. Flosal and a funnel viscosity of 40-45 sec/qt. will clean large diameter holes.

The use of Flosal along with bentonite, Driscose® or Drispac® is desirable, if not absolutely necessary, to suspend cuttings and to support the walls of the well bore in large diameter holes. This application is applied to reverse circulation as well as to conventional circulation in the drilling of storage wells, mining shafts, offshore platform legs, building foundations and other excavations where the upward velocity of the fluid is extremely low.

SEEPAGE LOSS

Flosal additive can be used to overcome seepage loss when using water or clear fluids in drilling or workover operations. One to five lbs/bbl. Flosal are usually used alone or with Drispac polymer, or bentonite for sealing porous formations. In drilling muds the flaked fiber provides particles large enough to plaster over the porous zone. This initiates a filtercake for screening out other particles that form a seal. Drispac polymer is preferable to clays because it is water soluble, acid dissolvable and less injurious to productive zones.

CEMENTING

Improved Flosal in water or mud makes a very effective flush fluid for hole cleaning prior to running casing or liners. Cuttings and debris can sometimes plug off tops of liners in the hanger, causing poor cement jobs. The flush fluid is mixed in the same manner as the fluid described in flush cleaning.

Flosal slurries containing 5 lbs/bbl. or more in water can also be used as spacers between mud and cement. The spacer slurry is easy to prepare, inexpensive, inert and effective in cleaning mud and cuttings from the hole prior to cementing. It does not contaminate either the mud system or the cement slurry.

WORKOVER AND COMPLETION

Flosal is usable in workover and completion operations because it provides viscosity and lifting power to almost any type of liquid. Flosal is normally used with Drispac polymer to formulate a near solids-free workover fluid. Being at least 50 times larger than clay particles, the fibers mat across a formation face rather than penetrate it. Drispac polymer seals the space between the fibers and reduces waterloss. Improved Flosal is inert, but acid soluble. Drispac polymer is also acid soluble. A Typical workover mud is made with 5 lbs/bbl. Flosal and ¾ to 1 lb/bbl. Drispac in field brine. The resulting funnel viscosity is 35-40 sec/qt. and the API waterloss is 10-20 ml. See Drilling Specialties Company Flosal/Drispac brochure No. 221.

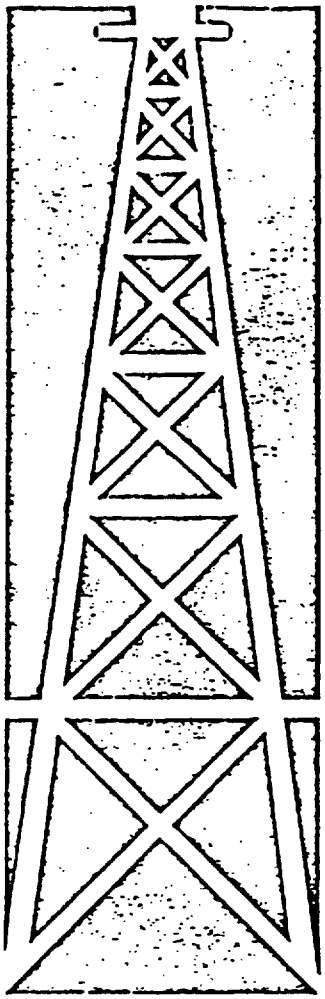
PACKER FLUIDS

Because of its suspending ability, its inertness and its resistance to temperature, degradation and gelation, Flosal additive is an excellent conditioner for packer fluids. Flosal additive will not settle and compact in time like clays.

REMEMBER THIS ABOUT IMPROVED FLOSAL ADDITIVE

- *DISPERSIBLE FLAKE FORM*
- *FASTER ACTING, LONGER LASTING*
- *RELATIVELY DUST-FREE*
- *IN SMALLER BAG*
- *INERT, BUT ACID SOLUBLE*
- *WORKS IN ALMOST ANY LIQUID*
- *MAKES LOW SOLIDS, HIGH CARRYING CAPACITY MUDS POSSIBLE*
- *PROVIDES LATTICEWORK SUSPENSION*
- *DOES NOT COMPACT BY SETTLING*
- *COMPATIBLE WITH ALL MUD ADDITIVES*

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PROD® POLYMER
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DIACEL® D
DIACEL® LWL
DIACEL® A

DRILLING SPECIALTIES COMPANY
BARTLESVILLE, OKLAHOMA 74004

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