

Mud-Save

HIGH PERFORMANCE L.C.M.

DESCRIPTION

Mud-Save is a precisely graded and inert lost circulation material made from granular thermoset rubber.

It is available in three grades:

Mud-Save M (Medium: 6-20 mesh) for fractured formations.

Mud-Save F (Fine: 10-100 mesh) for permeable unconsolidated formations.

Mud-Save SF (Super Fine: 100 - 325 mesh) for depleted formations.

ADVANTAGES

- Compatible with all types of water - based and oil-based muds.
- Works in low concentrations (**M** and **F**: 5-20 lb/bbl **SF**: 2-30 lb/bbl).
- Outperforms conventional and specialty L.C.M.'s.
- **NON-TOXIC** and **SAFE** to use: $LC^{50} > 1,000,000$ ppm.
- Used in the most severe downhole conditions.
- Reduces drill string torque and differential sticking.
- Will not appreciably affect the rheology of muds.
- Will not affect the pH of water - based muds.
- Will not affect the electrical stability of oil - base muds.
- Has less tendency to channel than other L.C.M.'s.
- Preferentially oil wets.
- No special equipment required for mixing pills.

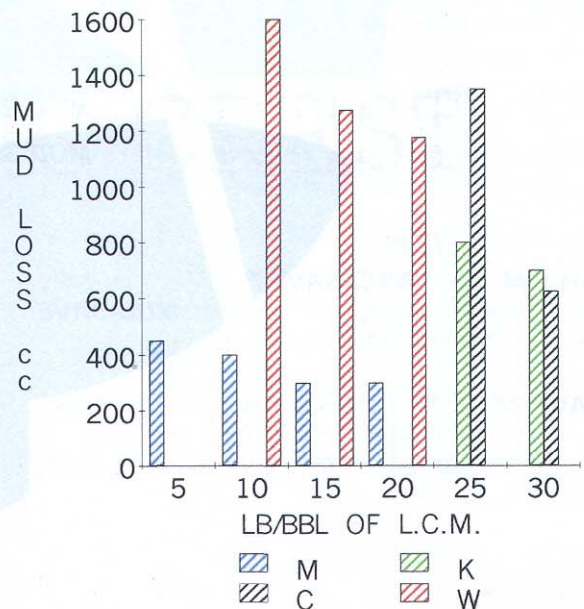
PERMEABILITY PLUGGING TEST*

Oil Base Mud, 13.5 ppg, (bbl)	1		
VEN-FYBER 201 , (lb/bbl)		5	
MUD-SAVE SF , (lb/bbl)			5
Properties after hot rolling 16 hrs. @ 350 F			
Plastic Viscosity, cps.	53	52	55
Yield point, lb/100 ft. ²	8	4	2
10 sec. Gel Strength, lb/100 ft. ²	2	1	2
10 min. Gel Strength, lb/100 ft. ²	4	2	2
Electrical Stability, volts	360	240	300
P.P.T. Results w/2 Darcy Aloxite Disk @ 350 F & 2500 PSIG			
Spurt Loss, (cc)	97	89	20
Filtrate Loss, (cc)	12	11	9
P.P.T. Value , (cc)	121	110	38
Cake Thickness, 32nd inch	28	25	16

*Testing performed by independent lab.

API SLOT TEST - 9.3 PPG WATER-BASE MUD

Slot: 0.13" X 1-3/8" @ 1000 PSI



M - MUD SAVE M
C - COTTON SEED HULLS

K - KWIK SEAL
W - WALNUT COARSE

FEATURES

Particle Strength - **MUD-SAVE** granules have high compressive, tensile and shear strength which can withstand high differential pressures while bridging fractures to form stable plugs.

Deformable Nature - **MUD-SAVE** granules will deform to fit inside the fractures and micro-fractures of the formation matrix resulting in stable internal plugs. These desirable internal plugs are not easily dislodged by mud flow or drill pipe movement.

TYPICAL PROPERTIES

COMPOSITION.....Granular Thermoset Rubber
 COLOR.....Black
 SPECIFIC GRAVITY.....1.3
 pH.....8.0
 THERMAL STABILITY.....+700 F (360 C)
 BULK DENSITY.....35-45 lb/ft²
 SOLUBILITY.....Water: Insoluble but dispersible with surfactant. Oil: Insoluble but readily dispersible.

RECOMMENDED CONCENTRATIONS AND APPLICATIONS

APPLICATION	CONCENTRATION (LB/BBL)				WT. RATIO
	SIZE PILL	MUD-SAVE M	MUD-SAVE F	MUD-SAVE SF	
FOR COMPLETE LOSSES (+500 bbl/hr)	150 bbl	15-20 lb/bbl			
	150 bbl	17 lb/bbl	8 lb/bbl		2 : 1
	150 bbl	15-20 lb/bbl	+ 2-5 lb/bbl of Cellophane Flake		4 : 1
FOR PARTIAL LOSSES (10-500 bbl/hr)	100 bbl		20 lb/bbl		
	100 bbl		15 lb/bbl	15 lb/bbl	1 : 1
FOR SEEPAGE LOSSES (1-10 bbl/hr)	50 bbl			10-15 lb/bbl	
	50 bbl		5-10 lb/bbl	5-10 lb/bbl	1 : 1
TO PREVENT SEEPAGE LOSSES, DIFFERENTIAL STICKING, REDUCE TORQUE AND DRAG	50 bbl	Sweep the hole as needed		5-30 lb/bbl	
		Maintain in the entire mud system		2-10 lb/bbl	

The maximum recommended concentration of **MUD-SAVE M** is 25 lb/bbl. Any increase over the maximum may result in a reduction in its performance.

MIXING PROCEDURES

MUD-SAVE M and **MUD-SAVE F**: Mix normally through the hopper. Keep the mud and **MUD-SAVE** mixing in the pill tank until it is spotted.

MUD-SAVE SF: Mix normally through the hopper. When mixed in a water-based mud, add 0.5 - 2 lb/bbl of drilling detergent (or other water-wetting agent) for easier mixing.

SPOTTING PROCEDURES

Use low pumping rates and low pressures to spot pill opposite the loss zone. When losses are severe, take 5-10 minute breaks while pumping the pill to allow **MUD-SAVE** to seal the large fractures.

All of **Mud-Save SF** will pass through a 100 mesh screen. Once the depleted zone has been sealed, replace 200 mesh screens on flow-line cleaners to screen out remaining **Mud-Save SF**.

PACKAGING

MUD-SAVE M and **MUD-SAVE F**.....50 lb. multi-walled paper export bags; 50 bags/pallet.
MUD-SAVE SF.....40 lb. multi-walled paper export bags; 50 bags/pallet.

AVAILABILITY

MUD-SAVE is available from full service mud companies and specialty product suppliers. Please contact **ecofluids, inc.** for further information on availability, case histories, testing, M.S.D.S. and LC⁵⁰ data.