Clay-Loxx

Formation Damage Inhibitor

Replacement for Potassium Chloride in
Drilling and Work-Over Fluids

RELIANT TECHNOLOGIES, INC.

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Advantages of using **Clay-Loxx**

- Superior performance versus KCL in the prevention of Clay Swelling and Shale Erosion
- Compatible with most gels, crosslinkers, and breakers
- Will not adversely effect fluid pH
- Superior performance at lower costs than KCl as Proven by Capillary Suction Tests
- Minimizes waste disposal problems
- Can be mixed on-the-fly
- Compatible with other common fluid additives
- No inorganic chlorides
- Extremely low freezing point
- Low surface tension
- Slightly cationic
- Eliminates storage problems
- Superior inhibition as proven by CST and REVERSE PERMEABILITY testing
- Can be used in preflush fluids and all completion fluids
- Can be used with water (Salt or Fresh), brines (up to 21,000 ppm chlorides), acids, and drilling fluids (recommended starting point is ½ ppb in drilling fluids)

Clay-Loxx

General Information

Potassium Choride (KCl) is used at a minimum two percent (2%) concentration, although it is common to use much higher concentrations depending on the clay content and the clay characteristics of the formation being treated. A two percent (2%) solution requires approximately 714 Lbs. of KCl per 100 bbls. of water (15-50 lb. Bags or 13-25 kilo Bags). Because KCl is mined from mineral deposits, its' quality, purity, and consistency varies widely with each lot purchased. The quality of CLAY-LOXX, however, does not vary. In order to obtain the equivalent performance of 2% KCl, only 2 Gals. of CLAY-LOXX is used per 100 bbls. of water.

ONE DRUM OF CLAY-LOXX WILL REPLACE ~ 20,000 Lbs. OF KCl

Replacing bagged KCl with CLAY-LOXX results in large savings for operators in terms of freight savings, warehousing, inventory space, blending manpower costs, on-the-fly savings when local water sources are available, and maintenance costs savings on equipment such as pumps, due to damage caused by the various granular materials in the dry KCl. In the export market, the savings are more dramatic. In terms of oceanic transport costs alone, the cost savings are tremendous.

2 DRUMS OF CLAY-LOXX WILL REPLACE A 40 FOOT CONTAINER OF BAGGED KCl

In air drilling (water misting/air mixture) consumption of surfactants necessary for foaming and stability can be substantially reduced, due to the inherent foaming properties built into CLAY-LOXX.

Because CLAY-LOXX has a specific gravity close to that of water, heavier brine solutions (using fresh or salt water) can be formulated using heavier salts without causing precipitation of the salts to include KCl while getting the necessary clay stabilization.

THE USE OF CLAY-LOXX REPRESENTS A HUGE POTENTIAL FOR SAVINGS

Reliant Technologies, Inc. has a field test kit available to CLAY-LOXX users that will confirm the exact concentration of CLAY-LOXX in water or fluids in less than one minute with a great deal of accuracy. This test is used in the field as well as in the lab where the time is not available to run a long chemical test procedure.

TEST PROCEDURE
CLAY - LOXX ACTIVITY TEST

FIELD TEST:

TO EQUAL A 2% KCL SOLUTION, CLAY-LOXX WILL BE USED AT THE RATE OF 2 GALLONS PER 100 BARRELS WATER. THIS MIX RATIO WILL YIELD A USAGE CONCENTRATION OF APPROXIMATELY 0.0476% OR 476 PPM OF CLAY-LOXX.

1. *MIX AT THE RATE OF 2 GALLONS OF CLAY-LOXX PER 100 BARRELS OF WATER. THIS CAN BE DONE IN A FRAC TANK, TANK TRUCK, VACUUM TRUCK, ETC.*
2. *TAKE A 1 TO 2 INCH TEST STRIP (OBTAINED FROM RELIANT) AND DIP INTO THE BLENDED LIQUID FOR APPROXIMATELY 30 SECONDS.*
3. *THE STRIP COLOR SHOULD CHANGE FROM YELLOW TO A GREEN COLOR SHADE. COMPARED THE TEST STRIP TO THE KIT COLOR CHART. THE READING SHOULD BE BETWEEN 100-150 PPM .*
4. *MULTIPLY THE READING ON THE TEST STRIP X 4 TO GIVE THE CONCENTRATION OF CLAY-LOXX.*
5. *A CONCENTRATION OF APPROXIMATELY 476 PPM WILL BE THE EQUIVALENT OF A 2% KCL SOLUTION.*

LAB TEST:

TO EQUAL A 2% KCL SOLUTION, APPROXIMATELY 0.0476% OR 476 PPM OF CLAY-LOXX IS REQUIRED.

1. *TAKE A SAMPLE OF CLAY-LOXX FROM STORAGE TANK OR DRUM*
2. *PUT 250 ML OF WATER IN A SMALL JAR OR CONTAINER*
3. *PIPETTE 0.125 ML (500 PPM OR 0.05%) OF CLAY-LOXX INTO THE WATER.*
4. *SHAKE COMBINED FLUIDS*
5. *DIP TEST STRIP FOR 30 SECONDS AND COMPARE COLOR TO CHART FOR CONCENTRATION READING*
6. *SHOULD READ BETWEEN 100-150 PPM . MULTIPLY THE READING ON THE TEST STRIP X 4 TO GIVE THE CONCENTRATION OF CLAY-LOXX.*
7. *THE MIXTURE SHOULD HAVE A CONCENTRATION OF APPROXIMATELY 500 PPM OF CLAY-LOXX*

Clay-Loxx Mixing Chart

	2% KCl	4% KCl	6% KCl	8% KCl	24% KCl
1000 bbls	20 gal	40 gal	60 gal	80 gal	240 gal
750 bbls	15 gal	30 gal	45 gal	60 gal	180 gal
500 bbls	10 gal	20 gal	30 gal	40 gal	120 gal
300 bbls	6 gal	12 gal	18 gal	24 gal	72 gal
210 bbls	4.2 gal	8.4 gal	12.6 gal	16.8 gal	50.4 gal
175 bbls	3.5 gal	7 gal	10.5 gal	14 gal	42 gal
150 bbls	3 gal	6 gal	9 gal	12 gal	36 gal
140 bbls	2.8 gal	5.6 gal	8.4 gal	11.2 gal	33.6 gal
130 bbls	2.6 gal	5.2 gal	7.8 gal	10.4 gal	31.2 gal
120 bbls	2.4 gal	4.8 gal	7.2 gal	9.6 gal	28.8 gal
110 bbls	2.2 gal	4.4 gal	6.8 gal	8.8 gal	26.4 gal
100 bbls	2 gal	4 gal	6 gal	8 gal	24 gal
80 bbls	1.6 gal	3.2 gal	4.8 gal	6.4 gal	19.2 gal
75 bbls	1.5 gal	3 gal	4.5 gal	6 gal	18 gal
50 bbls	1 gal	2 gal	3 gal	4 gal	12 gal
40 bbls	0.8 gal	1.6 gal	2.4 gal	3.2 gal	9.6 gal
30 bbls	0.6 gal	1.2 gal	1.8 gal	2.4 gal	7.2 gal
25 bbls	0.5 gal	1 gal	1.5 gal	2 gal	6 gal

PRODUCT DATA SHEET

CLAY - LOXX

GENERAL CHARACTERISTICS:

Liquid substitute for potassium chloride (KCL)

DESCRIPTION AND USES:

*prevents clay swelling and migration
*used with water, brines, acids and drilling fluids
*compatible with most gels, crosslinkers and breakers
*will not adversely effect fluid Ph
*superior performance at lower costs than KCL
*minimizes waste disposal problems
*can be mixed on-the-fly
*compatible with other common fluid additives
*no inorganic chlorides
*extremely low freeze point
*low surface tension
*slightly cationic
*eliminates storage problems
*superior inhibition as per CST and REVERSE PERMEABILITY testing
*use in pre-flush fluids and all completion fluids

METHODS OF APPLICATION:

CLAY-LOXX can be mixed with water or other process and treatment fluids in a tank truck, blend or storage tank or on-the-fly.

~ 1/2 gal…CLAY-LOXX …per 1,000 gal water
2 gal…CLAY-LOXX …per 100 barrels water

PHYSICAL PROPERTIES:

APPEARANCE	Dark Yellow to Light Orange Liquid
SPECIFIC GRAVITY	~ 1.0
LBS/GAL	~ 8.3
POUR POINT	< 40 deg. F
WATER ABSORPTION	Complete
ACID ABSORPTION	Complete
FLASH POINT	>200 deg. F

SHIPPING AND HANDLING

CLAY-LOXX is shipped in bulk, 55 gallon drums, and in 5 gallon pails
CLAY-LOXX material safety data sheet is available upon request.