Drilling Fluids, Inc.

Commercial Chemical

POTASSIUM CHLORIDE

Description

POTASSIUM CHLORIDE (KCl) is also known as Potash or Muriate of Potash. The product combines potassium (K^+) and chlorides (Cl^-).

Uses

POTASSIUM CHLORIDE provides potassium ions to inhibit shale (clay) swelling and dispersion. POTASSIUM CHLORIDE is used to drill troublesome “gumbo” shales and “dirty” sands. In producing sands the potassium ion prevents the swelling of clays, which might inhibit production of hydrocarbons. POTASSIUM CHLORIDE is a very economical source of potassium ions.

Benefits

POTASSIUM CHLORIDE is used to obtain the potassium ion level needed to maximize the integrity of drill cuttings and to maintain borehole stability. 2% to 6% by weight are commonly used concentrations for drill-in and completion activities. When combined with SALT (sodium chloride or NaCl) for higher densities, it is important to monitor the potassium level to insure that there is twice as much K^+ as Na^+. This 2 to 1 ratio preserves the inhibitive properties of the potassium ion. An ion meter or Atomic Adsorption Unit is required to determine the relative concentration of K^+ and Na^+.

Treatment

POTASSIUM CHLORIDE is readably soluble and can be added through the mud hopper or if necessary directly to a well agitated drilling fluid system. Drilling conditions and system requirements will determine concentration needed. It is suggested that the potassium level be monitored by approved test methods, including the specific ion electrode technique, in order to determine the daily treatment levels to follow. Concentrations of potassium and chlorides should be compared to a Chlorides Chart. Mixing high concentrations of POTASSIUM CHLORIDE requires a smaller starting volume of water. Refer to GEO Drilling Fluids Chlorides Chart.

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POTASSIUM CHLORIDE (cont'd)

Typical Physical Properties

Appearance……..white to reddish brown crystals or granular
Hygroscopic……..yes
Specific gravity……1.98
Solubility in water……24%

Safe Handling Recommendations

Utilize normal precautions for employee protection when handling chemical products. Use of appropriate respirator, gloves, goggles, and an apron is recommended for employee comfort and protection. See Material Safety Data Sheet (MSDS) for this product prior to use.

Packaging

POTASSIUM CHLORIDE is packaged in 50 pound multi-wall bags.

DATA FOR POTASSIUM CHLORIDE SOLUTION

KCl Concentration (% by weight)	Density (ppg)	KCl per finished barrel (ppb)	Percent Volume to Start	Cl- (mg/l)	K+ (mg/l)	KCl (Mg/l)
1%	8.39	3.50	99.46%	4,786	5,278	10,064
2%	8.44	7.07	99.08%	9,608	10,596	20,203
3%	8.50	10.67	98.69%	14,500	15,991	30,491
4%	8.55	14.35	98.29%	19,464	21,465	40,928
5%	8.60	18.03	97.88%	24,498	27,017	51,515
6%	8.66	21.77	97.47%	29,603	32,647	62,250
7%	8.71	25.55	97.04%	34,744	38,316	73,060
8%	8.77	29.40	96.60%	39,955	44,064	84,019
9%	8.82	33.29	96.16%	45,238	49,889	95,127
10%	8.88	37.21	95.70%	50,556	55,754	106,310
12%	8.99	45.23	94.76%	61,440	67,757	129,197
14%	9.11	53.46	93.78%	72,607	80,073	152,680
16%	9.22	61.86	92.77%	84,023	92,663	176,686
18%	9.34	70.47	91.71%	95,758	105,605	201,362
20%	9.46	79.33	90.62%	107,741	118,820	226,560
24%	9.70	97.63	88.33%	120,043	132,387	252,430