



POTASSIUM ION CONCENTRATION

When a drilling mud containing potassium chloride (KCl) is used, the primary purpose is to prevent, or at least minimize hydration of water sensitive formations. Inhibition of hydration is provided by the potassium ion, K^+ , which is attracted to negative charges appearing through the flat surface. Therefore, it is extremely important to know the potassium ion concentration at all times in these mud systems. In fact, by monitoring the potassium to chloride ion ratio (K^+ / Cl^-) while drilling the more hydratable formations should coincide with points having a low ratio.

Equipment		Product Code
1.	Hand cranking centrifuge	E83087
2.	2 graduated centrifuge tubes	E83089
3.	750 gm/L sodium perchlorate precipitating solution	EY1190

TEST PROCEDURE

- In order to balance the centrifuge, measure 14 mL of fresh water in the other centrifuge tube and place it into the centrifuge.
- Add 4.0 mL sodium perchlorate to 10.0 mL of filtrate to be tested in the centrifuge tube. A white precipitate, which forms immediately, indicates the presence of potassium.
- Invert slowly for one minute and place in the centrifuge.
- Centrifuge for one minute at a cranking speed of 120 revolutions per minute, (10 revolutions every 5 seconds).
- Remove the centrifuge tube and note the amount of centrifuged precipitate as the FLOC VOLUME in milliliters. Do not discard the centrifuged filtrate at this point.
- Determine the potassium ion concentration from the table below:

Note: For potassium ion concentrations above 55,000 mg/L, save the centrifuge filtrate, clean the tubes, split the centrifuged filtrate evenly into each tube, add 4 mL sodium perchlorate to each tube and centrifuge again. Record the total floc volume as the sum of the original floc volume plus any additional floc volume obtained by double centrifuging.

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Floc Volume (mL)	Potassium Ion Concentration (mg/L)
0	0
0.25	5000
0.50	7500
0.80	10000
1.10	15000
1.30	19000
1.50	24500
1.70	31000
1.90	38000
2.10	45000
2.30	53000
2.50	59000
2.70	65000
2.90	70000
3.10	75500
3.30	81000

5250 mg/L K^+ is approximately 10 kg/m³ KCl