Thermo. Titr. Application Note No. H-018

Title:	**Determination of Chloride in Drilling Fluids**

***Scope*:**	Determination of chloride in oil well drilling fluids

***Principle*:**	Acidification of the sample with 2mol/L HNO_3 and titration with 0.1M $AgNO_3$. Some emulsified samples with heavy oil loadings may require addition of a hydrocarbon solvent such as mineral turpentine to achieve adequate phase separation.

Reagents:	0.1M $AgNO_3$ solution Concentrated HNO_3 Mineral turpentine or kerosene

Method:	Basic Experimental Parameters:	
	Data rate (per second)	10
	Titrant delivery rate (mL/min.)	1
	No. of exothermic endpoints	1
	Data smoothing factor	40
	Procedure: It has been found that with some drilling fluids, the matrix is very oily and immiscible with the acidified fluid in the beaker. Low results with poor reproducibility can be obtained. Weigh accurately approximately 1g of thoroughly homogenized drilling fluid into a clean, dry titration vessel. Add a spin bar, 10mL of mineral turpentine (obtainable from a hardware store) 10mL of deionized water, and 5mL 2 mol/L HNO_3. Titrate to a single exothermic endpoint with 0.1M $AgNO_3$.	

Results:

Sample	Chloride as %$CaCl_2$ w/v
A	3.05, 2.99, 2.85
B	3.89, 3.85, 3.84
C	2.13, 2.13, 2.11
D	1.87, 1.89, 1.94

Calculation:

$$CaCl_2\ g/L = \frac{((Titre - blank) \times FW\ CaCl_2 \times M\ AgNO_3 \times 100)}{(sample\ mass, g \times 1000)}$$

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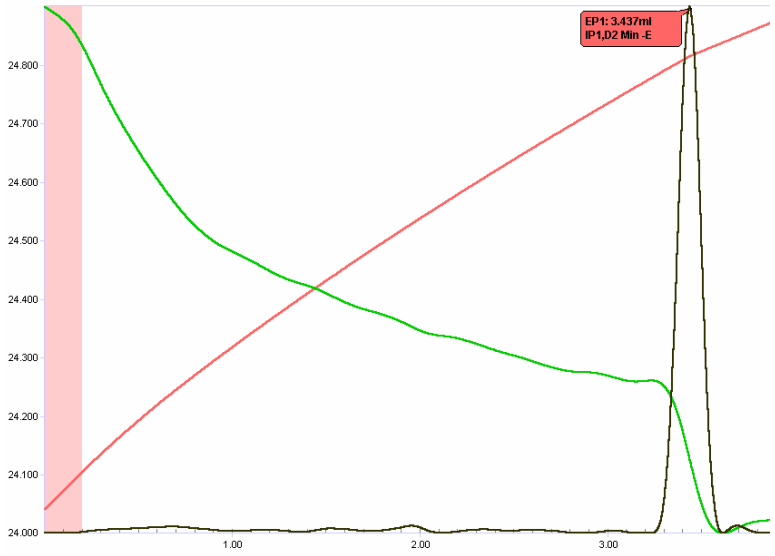
Thermometric Titration Plot:



Legend:

Red = solution temperature curve

Green = first derivative curve

Black = second derivative curve