

Foreword

During drilling, the recirculation and addition of drilling fluid will inevitably interact with stratum fluids and cause continuous chemical changes, which will change drilling fluid properties and lead to changes in ion species and concentration of drilling fluid filtrate. On the one hand, the drilling fluid can dissolve the bottom layer of the soluble shaft wall in varying degrees, on the other hand, the ions in the drilling fluid can also permeate with the ions in the stratum water, thus the ion dynamic exchange occurs in a short time. Therefore, ion chromatography can be used to analyze the changes of ions in drilling fluid filtrate which indirectly react stratum conditions.



In deep exploration, it is one of the drilling difficulties to drill through the gypsum stratum successfully. Ion chromatography can effectively determine the nature of soluble minerals and predict special strata.

Ion chromatography, as a chromatographic technique, is mainly used for the determination of anions and cations in samples to be tested. Because of its good selectivity, high sensitivity, quick and convenient, it has been applied in many fields. In the comprehensive analysis of mud logging site by ion chromatography, through analyzing the variation of several main ion concentrations in drilling fluid, the stratum water production situation can be judged in time, and the stratum characteristics can be judged.

Reagents and standards

1. Sodium hydroxide (NaOH), GR
2. Methanol (CH₃OH), chromatographic pure

Configuration and chromatographic conditions



- Type: CIC-P60
- IC column: SH-AC-4
- Guard column: SH-G-1
- Eluent: 3.6mM Na₂CO₃+4.5mM NaHCO₃
- Flow rate: 1.0mL/min
- Sample size: 25μL
- Detection method: Suppressed conductivity method
- Pretreatment: C18 column

Pretreatment

The drilling mud is placed in the filter press and start the filter press. After waiting for 5 minutes, the filtrated liquid can be obtained. Filtrate the liquid by C18 pretreatment column and 0.22μm filter membrane, then inject the sample.

Test Chromatogram

