Polyhalite generally formed in the early diagenetic stage. It is formed by the brine which rich in K⁺ and Mg²⁺ and adverse reaction with the gypsum, anhydrite, glauberite (Pierre, 1985; Peryt et al., 2005; Leitner et al., 2013; Schorn et al., 2013. And in the laborator, polyhalite can be produced by the solution mixing reaction of gypsum (Freyer and Voigt, 2003). The polyhalite causes disputes mainly lies in whether the presence of the primary polyhalite (Hryniv et al., 2007; Schorn et al., 2013; Biehl et al., 2014). Sichuan Basin is one of the most important marine potash basin in China. Polyhalite which together with anhydrite, have been founded in the Jialingjiang Formation and leikoupuo fomating at Nongle (east of the basin), and it may be formed by the brine which rich in potassium magnesium ions replace the gypsum (Lin and Ying, 1998).

In the paper, the sample is from a drill which located in the eastern Sichuan Basin. Sedimentary characteristics, mineral type, the main ions have been anysised. The results show that the primary polyhalite distribute in the halite crystal, and secondary radial polyhalite in intergranular transformed by gypsum. This paper has obtained following result.

(1)The halite with polyhalite is always orange and a certain degree of crystallization. This phenomenon may affected by the fresh water, the halite have some solution, The orange show the environment is oxidation, The crystallization environment may be in shallow deposition.

(2)The polyhalite is primary which distribute in the halite crystals inside as a granular and columnar. Because polyhalite and anhydrite always distribute together, presumably the anhydrite precipitation in front, the bine was in rich in K⁺ and Mg²⁺, even some sylvite have deposited. The gypsum precipitation desalination water caused by Ca²⁺ and mixed with original brine, and form a small amount of primary polyhalite in halite, the gypsum precipitated between the halite intergranular.

Although the polyhalite in the halite is rich, sylvite only can be found by the SEM, which has a direct relationship with the special environment of China. The orange halite formed in the shallow saline lake which the concentration speed is fast, while the environment is dry and hot. But the climate change is so frequently. These small saline lake is easy influenced by fresh water, affected the formation of the soluble potash deposit.

**Key words:** polyhalite, halite, Jialingjiang Formation, Triassic, Sichuan Basin

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**References**


