

研究报告

高放废物玻璃固化过程中玻璃组成对硫酸盐溶解度的影响

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摘要 为了解决含有较高硫酸根浓度的高放废液在熔制过程中产生分离的黄色第二相(简称黄相)的问题,首先需要了解硫在硼硅酸盐玻璃中的行为,尤其是硫酸盐溶解度与玻璃组成的关系。通过实验建立了多组分玻璃体系中硫酸盐溶解度与玻璃组成参数间的模型公式,得出了硫酸盐溶解度与玻璃中的非桥氧浓度成线性关系,与 $x_2(\text{O}^-)/x(\text{O}^0)$ (O^0 ,桥氧)成对数关系。

关键词 [硼硅酸盐玻璃](#); [硫酸盐溶解度](#); [玻璃组成](#)

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Dependence of Sulfate Solubility on Waste Glass Composition During the Vitrification of High Level Wastes

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Abstract Borosilicate matrices are widely accepted as containment of high level wastes on account of its good chemical durability and endurable formation temperatures. However, the yellow second phase (yellow phase) will be produced during melting if the high level liquid wastes contain high concentration sulfate, which harms the performances of vitrification form. To resolve the yellow phase problems, it is necessary to understand sulphur behaviors in the borosilicate waste glasses, especially the relation between sulfate solubility and glass composition. A large amount of experiments have been done to explore the relation. The experiment results show that the relation between the glass composition parameter $x(\text{O}^-)$ and sulfate solubility is linear and the relation between the glass composition parameter $x^2(\text{O}^-)/x(\text{O}^0)$ and sulfate solubility is logarithmic.

Key words [borosilicate](#) [glass](#) [sulfate](#) [solubility](#) [glass](#) [composition](#)

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