

Alite Formation in Micro Volume of Clinker

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Composition, structure and properties of clinker depend on the rate of dissolution of minerals and crystallization of alite.

For the investigation the number of model mixes of $\text{CaO}+\text{C}_2\text{S}+\text{C}_3\text{S}+$ clinker melt were prepared. Sulphate and halogen components were added in to the mixes to modificate clinker liquid phase.

It was fixed that the diffusion coefficient of calcium ions D_{Ca} grows (from $0,36 \cdot 10^{-9}$ up to $21 \cdot 10^{-9} \text{ m}^2/\text{s}$) according to Stocks-Einstein mechanism. Kinetics of alite formation at the reaction between the local system $\text{CaO}+$ clinker melts and $\text{C}_2\text{S}+$ clinker melts can be descrypted by parabola curve that indicates on the diffusive mechanism of alite formation.

In result equation was derivated, which shows that there is the correlation between the time of combination of CaO and the quantity and properties of reactive components.

The allocation in stage of alite formation depend on the range of particle dimensions, sintering temperature and the rate of ion diffusion in the melt. In conclusion can be state that alite formation depends on the composition of oxide-salt melts. Regulation of their properties is reached by the use of the different waste.