

# MICROSTRUCTURE OF CALCIUM SILICATE HYDRATES DOPED WITH SOME ADMIXTURES

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## ABSTRACT

The microstructure of hydrated calcium silicates formed at ambient temperatures as well as under the saturated water vapour at 200°C was observed by SEM. The lime-quartz mixtures with CaO to SiO<sub>2</sub> molar ratio of 1.00 and 0.83 were prepared. The effect of some admixtures, such as CaCl<sub>2</sub>, AlCl<sub>3</sub>, CrCl<sub>3</sub>, Na<sub>2</sub>CrO<sub>4</sub>, NaOH, Al(OH)<sub>3</sub>, Zn(NO<sub>3</sub>)<sub>2</sub>, Pb(NO<sub>3</sub>)<sub>2</sub> and CdCl<sub>2</sub> was investigated. At CaO/SiO<sub>2</sub> = 0.83 or 1.00 in the samples cured in hydrothermal conditions the transformation of C-S-H to tobermorite was generally observed. The crystallization of xonotlite was generally inhibited by the presence of admixtures and perhaps by use of quartz. At higher content of some heavy metals containing admixtures the formation of well developed C-S-H or tobermorite crystals was hindered in some cases but at lower content of admixtures or with no admixtures the better shaped forms were produced. At the prolonged hydrothermal curing (200°C/48h) the fibrous and acicular crystals were replaced by smooth, large plates, polyhedral or almost circular, forming spherical intergrowths or three-dimensional network. In many samples the simultaneous occurring of different morphologies as well as the transitions between the particular forms were observed.

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