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| Project Title: | The Effect of Crystalline Admixtures on Self-Healing Behavior of Engineered Cement Composites |
| Project Coordinator: | Assist. Prof. Dr. Süleyman Bahadır KESKİN |
| Project Abstract: | Many studies related to self-healing in cementitious composites have been encountered in recent years in order to increase the sustainability of building materials and to reduce maintenance and repair costs. Within these studies in the literature, high performance fiber reinforced cementitious composites are specified as the most suitable materials that can exhibit self-healing properties. Because, unlike conventional concrete, they enable micro-crack formation under different loadings with the potential of self-healing. Moreover, the high amount of binder material in these composites positively affects the healing performance. Among the high-performance fiber reinforced cementitious composites, Engineered Cementitious Composites (ECC) stand out as a building material with a self-healing performance. In addition, autonomous self-healing properties of these composites have been developed by using different methods and components. Crystalline admixtures are used in different types of cementitious composites by being included in both autogenous and autonomous self-healing mechanisms. However, in previous studies, the crystalline admixtures have not been used by including it in the self-healing mechanism of ECC. Within the scope of this project, it is aimed to improve the self-healing performances of ECC mixtures, which are frequently used in the literature and which possess autogenous healing performance, especially by using crystalline admixtures. Such self-healing mechanisms are important in terms of preventing the durability problems in buildings that may occur in the structural members in the long term caused by cracks formed during the early age. When considered, it is possible to decrease the maintenance-repair costs and to extend the service life of the structures with this way. During this project, two different ECC mixtures containing high mineral additives and frequently encountered in the literature will be redesigned and produced by using crystalline admixtures. Then, the self-healing performance of these mixtures will be determined using various destructive and non-destructive test methods. As a result of the project, the effect of adding crystalline admixtures on the self healing performance of ECC mixtures will be understood. |
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