Sustainability Aspects of New Admixtures and Supplementary Cementitious Materials for Durable Concrete [†]

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† Presented at the 1st International Conference on Smart Materials for Sustainable Construction—SMASCO 2019, Luleå, Sweden, 10–12 December 2019.

Abstract: s the global population is growing and changing the globalization direction towards large city areas the needs for the development of infrastructure and housing will increase. In order to have a safe and sustainable construction the infrastructure needs to be not only sustainable but also durable. In some cases, the concrete is subjected to severe environments, e.g., elevated or high temperatures, de-icing salts, seawater exposure or acidic environment, which means increased demand to extend the service life beyond what is prescribed in the design codes. The sustainability of concrete infrastructures is highly dependent on the durability. A longer service life with low repair work reduces the greenhouse gas emissions. Various admixtures and cement supplementary materials may increase the durability of the concrete. However, it is also important to consider the embodied impact and safety issues concerning innovative nanomaterials as well as application of slag and fly-ash in concrete and their future availability on the market. Here we present an overview on the latest developments on the durability and sustainability of climate-optimized concrete.

Keywords: climate-optimized concrete; sustainability analysis; slag; fly-ash; nanomaterials