

# **USE OF FOUNDRY INDUSTRY SILICA-DUST IN MANUFACTURING ECONOMICAL SELF-CONSOLIDATING CONCRETE**

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## **SYNOPSIS**

Results of an experimental work conducted on the use of foundry industry silica-dust in manufacturing economical self-consolidating concrete (SCC) are presented in this paper. Class C fly ash was used as a replacement for up to 35% of cement by mass. Silica-dust obtained from an iron foundry, collected by a high-efficiency baghouse, was used as a replacement for 10, 20, and 30% of the fly ash at 2:1 (foundry dust - fly ash) ratio by mass. The extra amount of foundry dust was treated as a partial replacement for sand. Use of foundry dust in SCC resulted in high air content (7 - 10%) and low density of concrete due to reaction between foundry dust and the particular brands of chemical admixtures used. Further, with the increase in foundry dust content containing iron, the color of concrete changed from dark gray to black. For the foundry silica-dust content of 20% and above, the requirement for high-range water-reducing admixture [HRWRA] increased; however, the amount of viscosity-modifying admixture [VMA] decreased up to 33% up to the silica-dust content of 30%. It was concluded that foundry industry silica-dust material can be used for partial replacement of cement, fly ash, and sand in SCC. More extensive work is in progress.