

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

By Tarun R. Naik, Rudolph N. Kraus, Rakesh Kumar, Yoon-moon Chun,
and Bruce W. Ramme

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ABSTRACT

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 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 excess 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. Beyond a replacement level of 10 %, the requirement of chemical admixtures (high-range water-reducing admixture [HRWRA] and viscosity-modifying admixture [VMA]) increased. However, up to 10 %, the admixture demand was reduced or stayed about the same. Foundry industry silica-dust material can be used for the partial replacement of fly ash and sand in a SCC. More extensive work is continuing.