

## 14. Conference and Workshop "Rheological Measurement of Building Materials" FH Regensburg, Germany, March 9th / 10th 2005

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O.Wallevik, IBRI Reykjavik, Island, presented a study of "Some aspects of Rheology of Cement Suspension containing Silica Fume". Silica fume (SF) is a byproduct of producing silicon metal or ferrosilicon alloys. SF consists primarily of amorphous (non-crystalline) silicon dioxide ( $SiO_2$ ). The individual particles are extremely small, approximately 1/100th the size of an average cement particle. Because of its fine particles, large surface area, and the high  $SiO_2$  content, SF is a very reactive pozzolan when used in concrete, and may replace a part of the cement content. Concrete containing SF can have very high strength, and a low permeability for water, air, and chloride. On the other side the high surface enforces plastic shrinkage. On the rheological point of view, SF lowers the viscosity of fresh concrete, increases the yield value, and add some tixotropic effects. So SF may work as a stabilizer in self compacting concrete avoiding sedimentation, as sticking agent in an shotcrete, or as pumping agent.

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