

UWM Center for By-Products Utilization
Department of Civil Engineering and Mechanics
College of Engineering and Applied Science

SEMINAR

***The Use of Mixture Design and Shrinkage Reducing
Admixtures to Reduce Shrinkage and Improve Concrete
Durability***

By

Dr. Neal S. Berke

Research and Development Fellow

Grace Construction Products, W. R. Grace & Co, Connecticut

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Room E375, EMS Building, UW-Milwaukee

3200 N. Cramer Street, Milwaukee, WI

Shrinkage is one of the leading causes of concrete cracking. Shrinkage cracking that occurs when the concrete is hardening is known as plastic shrinkage cracking and this can be easily eliminated by lowering the water evaporation rate at the surface or with synthetic fibers at a low-dosage rate. The more difficult shrinkage cracking to eliminate is that due to autogenous and drying shrinkage. In the past the best methods to control shrinkage were to minimize the cement content and keep the overall water as low as possible. However, high performance concretes require lower w/cm to get low permeability, so even though drying shrinkage is reduced, autogenous shrinkage increases.

In this presentation it will be shown how shrinkage reducing admixtures (SRAs) can be used to reduce shrinkage and cracking. Data showing improved resistance to cracking and good durability will be presented. The results indicate that more durable concrete with less cracking can be produced with the use of SRAs.

Dr. Berke's brief biographical information is provided at the back of this page.

To register or for further information, please call Tarun Naik or Rudi Kraus at
(414) 229-4105.

Biographical Sketch

Dr. Neal S. Berke

**Research and Development Fellow Grace Construction Products
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Dr. Neal Berke is a Research and Development Fellow in the Cement and Concrete Products Research section of Grace Construction Products. He is responsible for all durability research on calcium nitrite, microsilica, and shrinkage reducing products. He has conducted research on concrete durability issues for over 20 years and on corrosion for over 25 years.

Dr. Berke is a member of the NACE International, the American Society for Testing and Materials, the American Concrete Institute, the Boston Society of Civil Engineers' Structural Committee, the Electrochemical Society, the American Society for Metals, the Transportation Research Board, and the Metallurgical Society of AIME. He serves on several NACE, ASTM, and TRB committees, and is Chairman of ASTM Committee G01 On the Corrosion of Metals, Chairman of ASTM Committee G.01.14 on the Corrosion of Reinforcing Bars in Concrete, and ASTM Section C.09.03.08 on Corrosion Inhibitors. He has written and presented over eighty papers on his research activities, has over 20 U. S. patents, and is a frequent reviewer for several technical organizations and journals. He received the ASTM Award of Merit and is a recipient of a CANMET/ACI award for Outstanding Contributions in the Area of Corrosion Inhibitors for Use in Concrete.

Dr. Berke has a bachelor's degree in Physics from the University of Chicago and a Ph.D. in Metallurgical Engineering from the University of Illinois at Urbana-Champaign.