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## REVIEW

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### Concrete Making Materials

*Reviewed by Richard D. Walker, professor and head of the Civil Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg, Va.*

**REFERENCE:** Popovics, S., *Concrete-Making Materials*, McGraw-Hill, New York, N.Y., 1979, 370 pages.

This excellent reference book is made even more valuable by an almost unbelievable set of references at the end of each chapter. In depth and completeness the citations provide a wealth of material for self-study. Shortcomings in the text are few. There is a good balance between the science of portland cement (about 156 pages) and the application of combining portland cement with aggregate and water to make concrete (about 200 pages). Each chapter skillfully leads the reader from elementary presentations to precise references for more intensive study. Although the author is usually

brief and to the point, detail is provided where needed. For example, even though the hydration process of portland cement is complex, it is carefully described in simple and accurate perspective.

Additional topics covered include the production of cement, nonstandard cements, water (and its effects on concrete), admixtures, and mineral aggregate. Concerning aggregates, many pages are devoted to chemical reactions, gradation requirements, and properties that effect frost resistance, strength, workability, and the like.

No book is perfect, and the chapter on the handling and selection of aggregates is a bit brief. However, this is a topic that requires a book by itself. In total, *Concrete-Making Materials* is a significant contribution to the literature. The information is scattered over thousands of obscure publications, and the author has done a superb job in putting it together. The book is on the college level and would be useful for courses in concrete and materials. In addition, it should serve as an invaluable reference for the practicing engineer and researcher.

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## TESTING FORUM

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### Committee C-9 News

#### New Standards for Preplaced Aggregate Concrete

Eight new standards for preplaced aggregate concrete (PAC) were approved for mail ballot at the recent meeting of Committee C-9 on Concrete and Concrete Aggregates in San Diego. Prepared by Subcommittee C09.02.08 on Concrete for Radiation Shielding, to fill a need for high-density shielding concrete in nuclear power plants, the standards also cover PAC made with normal weight materials. In addition to a specification for grout fluidizer, they include methods of test for the properties of both the grout and the finished PAC.

Preplaced aggregate concrete, made by filling the voids in coarse aggregate already in the forms with a low water/cement ratio grout, has been used in difficult concrete placements for some 40 years. Originally employed for structural concrete repair because of its low drying shrinkage properties, PAC has also been used in the construction of bridge piers, the embedment of hydroelectric turbines and draft tubes, concrete placement in heavily reinforced

members and block out backfills, and for concrete in high-density nuclear shielding.

The report was presented by Bruce A. Lamberton, president of Construction Techniques, Inc., and subcommittee chairman for the past two years.

#### Proposed Test Method

Subcommittee C09.03.13 on Methods of Testing Concrete for Resistance to Abrasion submitted a final draft for C-9 committee ballot on a new standard test method for "Abrasion Resistance of Concrete on Mortar Surfaces by the Rotating-Cutter Method." This standard is in addition to the existing standard test methods documented in C 418-76, Test for Abrasion Resistance of Concrete by Sandblasting, and C 779-76, Test for Abrasion Resistance of Horizontal Concrete Surfaces, which are also under the jurisdiction of this subcommittee.

Subcommittee section C09.03.08.07 is preparing specifications and test methods on shotcrete admixtures. A first letter ballot is scheduled for the fall meeting.

# Cement, Concrete, and Aggregates

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# ASTM Committee C-1 on Cement

## Scope

The development of specifications, methods of test, recommended practices, and definitions of terms for hydraulic cements, including portland, natural, pozzolanic, masonry, and slag cements, and modifications of the foregoing, and combinations during manufacture thereof; the investigation of the properties of hydraulic cements and the promotion of improvement and Uniformity of testing of these materials; joint sponsorship, with ASTM Committee C-9 on Concrete and Concrete Aggregates, of the Cement and Concrete Reference Laboratory, a cooperative project of the Government and ASTM.

## Officers

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# ASTM Committee C-9 on Concrete and Concrete Aggregates

## Scope

The assembling and study of data pertaining to the properties of portland cement concrete and its constituent materials, including the study of effect of characteristics of materials and mixtures upon the properties of concrete; the development of methods of test for concrete and for the constituent materials of concrete (except cement), as well as for certain related materials, such as materials used in curing; the formulation of standard specifications for the constituent materials of concrete (except cement) and for concrete itself (subject to suitable interpretation of the term "concrete"). The scope of Committee C-9 does not include the field of design and construction of concrete structures except insofar as references need to be made to construction methods in special cases of concrete as "over-the-counter" materials.

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