

TESTING FORUM

Report Available on Compact Reinforced Composite

Compact reinforced composite (CRC) is the designation for a new type of high-performance composite material which is based on strong, brittle cement bound matrix materials given a high degree of ductility with a high concentration of fine fibers and further reinforced with densely arranged bars.

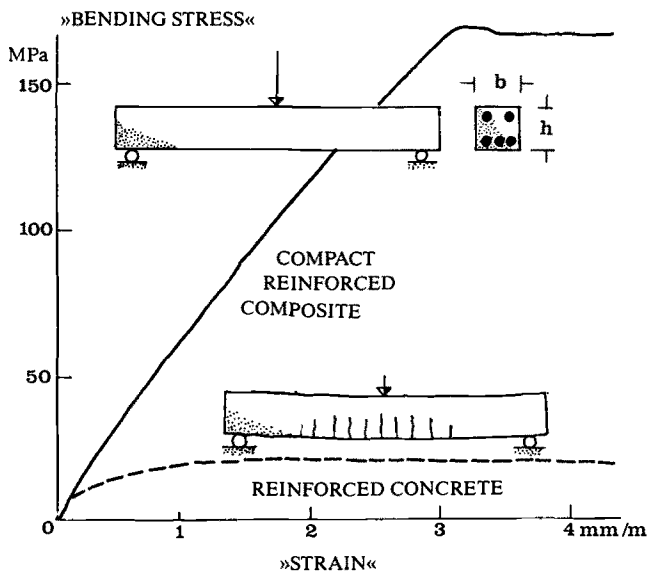
The load capacity in bending is 5 to 10 times that of conventional, good reinforced concrete and almost the same as for structural steel, the formalized ultimate bending stress (normalized bending moment: $M/1/6 bh^2$) being in the range of 140 to 250 MPa. The matrix material remains uncracked under tensile loading right up to the yield limit of the reinforcing steel (tensile strains about 3 mm/m), whereas ordinary reinforced concrete cracks at tensile strains of only 3 to 5% of the yield limit of the reinforcing steel.

CRC is still in its infancy (the principles were demonstrated for the first time in May 1986). Aalborg Portland is interested in cooperation with regard to research and development of CRC technology. CRC is the subject of a patent application notified by Aalborg Portland.

This report, entitled "Compact Reinforced Composite," can be purchased from:

Cementfabrikkernes tekniske Oplysningskontor
AALBORG PORTLAND
Rørdalsvej 44, P. O. Box 165
DK-9100 Aalborg, Denmark
Tlx.: 69646 cemex dk
Fax: 458101186

A figure from the book is shown below.



Copyright © 1987 by ASTM International

Farkas Elected to ASTM Board of Directors

Emery Farkas, vice-president of the Construction Products Division, W. R. Grace & Co., Cambridge, Massachusetts, has been elected to serve on the ASTM Board of Directors for a three-year term.

A native of Hungary with a chemical engineering degree from the Polytechnical University of Budapest, Farkas came to the United States as a teaching fellow at Harvard University. He later attended the Sloan School for Business Executives, Massachusetts Institute of Technology.

Farkas joined W. R. Grace & Co. in 1957, where he served in various capacities, including research, technical services, and now business management. He has been with Grace for 29 years, although he spent two years as senior vice-president of H. G. Protze, a consulting and engineering firm in Boston.

Farkas has been a member of ASTM for over 25 years and currently is a member of Committees C-1 on Cement and C-9 on Concrete and Concrete Aggregates. He also serves on numerous subcommittees of C-1 and C-9. He is the current chairman of C09.74 Subcommittee on International Standards and C01.93 on Papers and Symposia.

In 1981, Farkas received the American Concrete Institute's (ACI's) Henry L. Kennedy Award "in recognition of many years of outstanding technical and administrative services to the institute." He is a former director of the Institute's New England Chapter.

Farkas is immediate past president of the ACI. He is also a member of ACI's Committee 201, Durability, and served for four years as chairman, Educational Activities Committee. He is also a fellow of ACI.

Farkas is a registered professional engineer and holds several patents related to chemicals for the cement and concrete industries.

Sikes Named to Post

David C. Sikes has been named director of the newly expanded west coast operations of the Skokie, IL, based Construction Technology Laboratories, Inc. (CTL). He will be based at CTL's Los Angeles office. In his new assignment, Sikes will direct programs of the Los Angeles and Seattle-Tacoma, WA, area offices and will be responsible for expanding the company's services in the western U.S. A member of the CTL staff for almost ten years, Sikes most recently served as director of the concrete materials/technical services dept. He is a member of Committee C-9 on Concrete and Concrete Aggregates.

New Quarterly Journal on Cement Announced

Palladian Publications Ltd have announced the publication of a new international quarterly journal, *Advances in Cement Research*. The first issue was published in October 1987. The journal focuses on the fundamentals of cement science and provides a forum for dissemination of the results of current research, for review papers collecting and interpreting available experimental information, technical notes, research and conference news and book re-

TESTING FORUM

views. It is produced to the highest technical and editorial standards: all papers are reviewed by the Editorial Advisory Board and the journal is typeset with high quality reproduction of micrographs and other half tones.

Advances in Cement Research is of interest to researchers in the field of cement and cement-based materials, in universities and polytechnics, government and commercial laboratories, cement manufacturers and users.

The scope of *Advances in Cement Research* includes:

1. Cement manufacture and materials.
2. Hydration of cement and cement components.
3. Properties and durability of cementitious materials and systems.
4. Interaction of cements with other materials.
5. Analysis and testing.
6. Special cements and applications.

The members of the Editorial Advisory Board are:

Professor F. P. Glasser, University of Aberdeen, Scotland
Professor G. Frigione, University of Calabria, Italy
Dr. Jan P. Skalny, W. R. Grace & Co., Columbia, Maryland
Professor Dr. Ivan Odler, Technical University, Clausthal, Germany FR
Professor Shigekazu Udagawa, Chiba Institute of Technology, Tokyo, Japan
Professor Sidney Mindess, University of British Columbia, Vancouver, Canada

Among the papers in the first issue were:

1. "The Rheological Behaviour of Non-Shrinking Cement Paste" by P. F. G. Banfill and L. R. Rudzinski.
2. "Modification of the Ferrite Phase in Cements by Manganese Substitution" by F. Puertas and F. P. Glasser.
3. "Some Applications of Conduction Calorimetry to Cement Hydration" by J. Bensted.
4. "A Method for Predicting Alkali Ion Concentrations in Cement Pore Solutions" by H. F. W. Taylor.

Other papers planned for inclusion in the first or second issues deal with: continuous monitoring of cement hydration; XRD studies of portlandite; the role of iron oxide in the formation of Portland clinker; fracture process zone and crack growth in fibre-reinforced cementitious materials; condensed silica fume and the steel-cement paste transition zone; consolidation model for bleeding of cement paste. (Subject to change.)

The Editor welcomes original papers from all parts of the world on any aspect of cement science. Instructions for contributors are available on request from The Editor, J. N. Clarke, *Advances in Cement Research*, Palladian Publications Ltd, 11 Grosvenor Crescent, London SW1X 7EE, England.

Advances in Cement Research (ISSN 0951-7197) is published four times a year (October, January, April, July). The first issue (Vol. 1, No. 1) was published in October 1987. Subscription rates for Vol. 1 are:

£50.00 UK.
\$100.00 Overseas, surface mail, including Eire.
\$150.00 Overseas, air mail.

Subscriptions to *Advances in Cement Research* may be entered by sending your remittance, made payable to Palladian Publications Ltd, to: The Circulation Manager, Palladian Publications Ltd, 11 Grosvenor Crescent, London SW1X 7EE, England. A specimen copy is available on request.

ASTM Publishes New STP on Cement

A book entitled *Uniformity of Cement Strength* has just been published by ASTM. The book, STP 961, provides the factors that are important in the production of uniform concrete. It is the result of the first step in an effort to improve the uniformity of concrete produced at a single source.

The papers presented in this publication document the first approaches to record the results achieved by the use of a relatively new ASTM standard, adopted in 1979 and entitled ASTM Method for Evaluation of Cement Strength Uniformity From a Single Source (C 917-82).

This standard is intended for use where the purchaser desires information on the strength uniformity of a hydraulic cement produced at a single source. The information imparted about improvements in the uniformity should significantly aid in the concrete production process.

Seven papers comprise the contents of this book covering research conducted here in the United States, Saudi Arabia, Belgium and India. The subjects addressed include:

1. Cement strength uniformity.
2. Statistical analyses of specification mortar cube test.
3. Uniformity in compressive strengths of cement and concrete.
4. Application of CCRL data in cement standards.
5. Detecting inherent heterogeneities in cement strength.
6. Quality of cements in India.
7. Variability of cement strength in Saudi Arabia.

Cement, Concrete, and Aggregates

Table of Contents

Volume 9, 1987

Number 1, Summer

Comparison of Slump Cone and V-B Tests as Measures of Workability for Fiber Reinforced and Plain Concrete— P. BALAGURU AND V. RAMAKRISHNAN	3
Mechanical Properties and Workability of Superplasticized Concrete—SUKHVARSH JERATH AND LINDSAY C. YAMANE	12
Finite-Element Analysis of the Pullout Test Using a Non-linear Discrete Cracking Approach—ALAN K. HELIER, MARY SANSALONE, NICHOLAS J. CARINO, WILLIAM C. STONE, AND ANTHONY R. INGRAFFEA	20
The Inhibition of Chloride-Induced Corrosion in Reinforced Concrete by Calcium Nitrite—JAMES M. GAIDIS AND ARNOLD M. ROSENBERG	30
Factors Affecting the Reactivity of Fly Ash from Western Coals—HARRY A. HARRIS, JIMMIE L. THOMPSON, AND THOMAS E. MURPHY	34
Effect of Chemical Admixtures on Portland Cement Hydration—IVAN ODLER AND SAMIR ABDUL-MAULA	38
<i>Technical Note:</i> History and Use of Blended Cements in Turkey—ERBIL OZTEKIN AND TAYFUN CIMILLI	44
<i>Technical Note:</i> Application of the Rapid Chloride Permeability Test to Evaluation of Penetrating Sealers for Concrete— DAVID WHITING	49
<i>Discussion:</i> Discussion of "A New Statistical Method for Prediction of Concrete Strength from In-Place Tests" by W. C. Stone and C. P. Reeve—ROGER SYM	51
<i>Testing Forum</i>	52

No. 2, Winter

Comparative Study of the Microstructures of Normal and Very High-Strength Concretes—SHONDEEP L. SARKAR AND PIERRE-CLAUDE AITCIN	57
Mechanical Properties and Freezing and Thawing Resistance of High-Strength Concrete Incorporating Silica Fume— V. MOHAN MALHOTRA, KERRY A. PAINTER, AND ALAIN BILODEAU	65
An Experiment to Investigate Chloride Intrusion on Construction Joints in Concrete—TOM DENES AND ALAN D. BUCK	80
Cost-Effective Control of Concrete Quality Using Small Specimens of Mortar Extracted from Concrete—COLIN D. JOHNSON AND GORDON J. SMITH	82
Shrinkage and Creep of Concrete Containing 50% Lignite Fly Ash at High Temperatures—KARIM W. NASSAR AND AKTHEM A. MANASEER	95
High-Strength Semi-Lightweight Concrete with Up to 50% Fly Ash by Weight of Cement—COLIN D. JOHNSTON AND V. MOHAN MALHOTRA	101
Significance of Interrupted Testing on the Freeze-Thaw Resistance of Fly Ash Concrete by ASTM C 666 (Method A)— BRIAN W. LANGAN AND MICHAEL W. WARD	113
KC ₈ A ₃ : X-Ray Diffraction Characterization of the Compound and Comparison with NC ₈ A ₃ and C ₃ A—RONALD F. GEBHARDT	117
Statistics of Shrinkage Test Data—FOLKER H. WITTMANN, ZDENEK P. BAZANT, FERMIN ALOU, AND JIN-KEUN KIM	129
The Rate of Absorption of Aggregates—DOUGLAS N. WILSON	154
<i>Discussion:</i> Discussion on "Factors Affecting the Reactivity of Fly Ash from Western Coals" by H. A. Harris, J. L. Thompson, and T. E. Murphy—W. HARRY BUTLER	159
<i>Book Review</i>	160
<i>Testing Forum</i>	161

(215) 299-5462
TWX: 710-670-1037

1988 MEMBERSHIP APPLICATION

OPTIONAL METHOD OF PAYMENT:


AMERICAN EXPRESS

MASTERCARD

[illegible]

AMX VALID DATE

EXPIRATION DATE

SIGNATURE

APPLICATION IS MADE FOR MEMBERSHIP IN ASTM:

MEMBER

AN INDIVIDUAL OR AN INSTITUTION (EDUCATIONAL, PUBLIC LIBRARY, OR A SCIENTIFIC ENGINEERING, OR TECHNICAL NON-PROFIT SOCIETY) SUBSCRIBING TO THE PURPOSES OF THE SOCIETY PROVIDED IN THE CHARTER AND BYLAWS.

☐ ORGANIZATIONAL

AN INDIVIDUAL, BUSINESS, GOVERNMENTAL, RESEARCH, OR PROFESSIONAL ORGANIZATION, OR TRADE ASSOCIATION, OR SEPARATE FACILITY THEREOF SUBSCRIBING TO THE PURPOSES OF THE SOCIETY PROVIDED IN THE CHARTER AND BYLAWS.

PLEASE PRINT ALL INFORMATION CLEARLY. DO NOT EXCEED THE CAPACITY OF EACH LINE.

	LAST										FIRST										INITIAL	
NAME																						
COMPANY NAME																						
JOB TITLE																						
FACILITY																						
STREET																						
P.O. BOX																						
CITY											STATE				ZIP							
PHONE	()			-	EXTENSION														
COUNTRY																						
PARENT COMPANY (IF DIFFERENT FROM ABOVE)																						

OFFICIAL REPRESENTATIVE (ORGANIZATIONAL MEMBERSHIP ONLY)

	LAST										FIRST										INITIAL			
NAME																								
TITLE																								

IF HOME ADDRESS TO BE USED FOR MAILINGS PLEASE COMPLETE BELOW (AFTER COMPLETING ABOVE).

[illegible]

PLEASE SEND INFORMATION ON THE FOLLOWING COMMITTEES:

BENEFITS AND FEES FOR 1987

MEMBER - ANNUAL FEE

\$ 50.00

1 JANUARY - 31 DECEMBER

ORGANIZATIONAL - ANNUAL FEE

\$350.00

1 JANUARY - 31 DECEMBER

ANNUAL BOOK OF ASTM STANDARDS

- ONE FREE VOLUME - BOOK OF ASTM STANDARDS
- UNLIMITED NUMBER OF VOLUMES AT MEMBER PRICES
- SPECIAL QUANTITY PRICES ON INDIVIDUAL BOOKS AND STANDARDS

- **REDUCED RATES FOR COMPLETE SETS OF STANDARDS AND SECTIONS**
- **ONE ANNUAL SUBSCRIPTION TO STANDARDIZATION NEWS**
- **MEMBER DISCOUNT ON OTHER PUBLICATIONS**

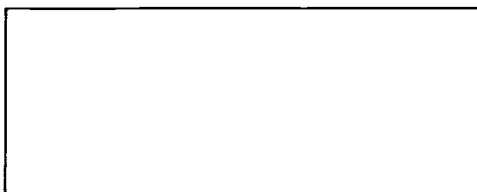
MAIL TO: ASTM ATTN: MEMBER SERVICES

8/86 PRINTED IN USA

MOVING?

To insure uninterrupted service on your *JTE* subscription, please notify us at least six weeks before you move.

1. Attach your address label from a recent issue in the space provided opposite. (If label is not available, be sure to give your old address, including Zip Code.)



2. Print your name, membership no., and address below. (Be sure to include Zip Code.)

3. Mail entire notice to: ASTM
Subscription Dept.—JTE
1916 Race St.
Philadelphia, PA 19103

Name _____ Membership No. _____

New Address _____

City _____ State _____ Zip Code _____

(please print or type the above information)

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 and using 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

Chairman: R. E. Philleo, 7420 Annanwood Court, Annandale, VA 22003

Vice-Chairman: R. E. Galer, United States Gypsum Co., Res. Center, Libertyville Facilities, 700 North Highway 45, Libertyville, IL 60048

Secretary: R. A. Hines, Missouri Portland Cement Co., 7711 Carondelet Ave., St. Louis, MO 63105

Membership Secretary: Karl Hauser, Edward C. Levy Co., 9300 Dix Ave., Dearborn, MI 48120

ASTM Committee C-9 on Cement 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.

Officers

Chairman: J. M. Scanlon, Jr., U.S. Army Engineer Waterways Experiment Station, CH/CONC Tech. Div., P.O. Box 631 (WESSC), Vicksburg, MS 39180

Vice-Chairman: R. J. Schutz, Protex Industries, 1331 West Evans Ave., Denver, CO 80223

Secretary: R. D. Hooton, Ontario Hydro Research, 800 Kipling Ave., Toronto, Ont., Canada M8Z 5S4

Membership Secretary: J. S. Pierce, 8815 West Quarto Circle, Littleton, CO 80123