

1. Record Nr.	UNINA9910782557103321
Titolo	High-performance construction materials [[electronic resource] ] : science and applications / / editors, Caijun Shi, Y.L. Mo
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific, 2008
ISBN	1-281-94814-4 9786611948146 1-61344-050-2 981-279-736-X
Descrizione fisica	1 online resource (448 p.)
Collana	Engineering materials for technological needs ; ; v. 1
Altri autori (Persone)	ShiCaijun MoY. L
Disciplina	624.1/8
Soggetti	Building materials - Research Composite materials - Research Structural engineering - Research Strength of materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface; Contents; Biographical Sketch for each Author; Chapter 1; Chapter 2; Chapter 3; Chapter 4; Chapter 5; Chapter 6; Chapter 7; Chapter 8; Chapter 9; Chapter 1 Introduction Caijun Shi and Y. L. Mo; 1.1 Historical Development of Construction and Uses of Construction Materials; 1.1.1 Stone age habitats; 1.1.2 River valley civilizations - The first steps in permanence; 1.1.3 Construction in ancient Egypt; 1.1.4 Construction in the Greek Era; 1.1.5 Construction in the Romans times; 1.1.6 The early industrial age (18th-19th Century) 1.1.7 Constructions in the 20th century - High rise steel structures/buildings1.1.7.1 High rise steel structures/buildings; 1.1.7.2 High rise concrete buildings; 1.2 Recent Construction - High Performance Construction Materials; 1.3 Design Codes and Specifications for Use of High Performance Construction Materials; 1.4 Organization of This Book; References; Chapter 2 High Performance Concrete Caijun Shi, Y.L. Mo and H.B. Dhonde; 2.1 Introduction; 2.1.1 Historical development; 2.1.2 Definitions of HPC; 2.2 Constituents

and Mixture Proportions of HPC; 2.2.1 Constituents of HPC  
 2.2.1.1 Cement; 2.2.1.2 Supplementary cementitious materials; 2.2.1.3 Aggregate; 2.2.1.4 Chemical admixtures; 2.2.1.5 Water; 2.2.2 Mixture proportions for HPC; 2.3 Properties of High Performance Concrete; 2.3.1 Workability; 2.3.2 Strength; 2.3.3 Stress-strain relationship and modulus of elasticity; 2.3.4 Shrinkage; 2.3.5 Creep; 2.3.6 Durability of HPC; 2.3.6.1 Introduction; 2.3.6.2 Permeability; 2.3.6.3 Transport of chloride ion in HPC; 2.3.6.4 Chemical resistance; 2.3.6.5 Frost resistance; 2.3.6.6 Wear resistance; 2.3.6.7 Fire resistance  
 2.4 Self-Consolidating Concrete; 2.4.1 Introduction; 2.4.2 Constituents and mixing proportions; 2.4.3 Testing of SCC; 2.4.3.1 Introduction; 2.4.3.2 Slump flow/VSI (filling ability/deformability and stability); 2.4.3.3 J-Ring (passing ability); 2.4.3.4 L-Box (passing ability); 2.4.3.5 Column segregation (stability); 2.4.4 Self-Consolidating Fiber Reinforced Concrete (SCFRC); 2.4.5 Properties of hardened SCC; 2.4.5.1 Mechanical properties; 2.4.5.2 Deformation; 2.4.5.3 Bonding with aggregate or reinforcements; 2.4.5.4 Long-term durability; 2.4.5.5 Aesthetics  
 2.5 Specifications and Guidelines for HPC; 2.5.1 Structural design of HSC; 2.5.2 Performance specifications for HPC; 2.5.3 Guidelines and specifications for SCC; 2.6 Applications of HPC; 2.6.1 Introduction; 2.6.2 High rise buildings; 2.6.3 Bridges; 2.6.4 Application of SCC; 2.7 Summary; References; Chapter 3 High Performance Fiber Reinforced Cement Composites Antoine E. Naaman; 3.1 Introduction; 3.2 Definitions; 3.2.1 Fiber reinforced cement (FRC) composites; 3.2.2 High Performance Fiber Reinforced Cement (HPFRC) Composites; 3.2.3 Stress at first cracking  
 3.2.4 Maximum post-cracking stress or composite strength

## Sommario/riassunto

This book describes a number of high-performance construction materials, including concrete, steel, fiber-reinforced cement, fiber-reinforced plastics, polymeric materials, geosynthetics, masonry materials and coatings. It discusses the scientific bases for the manufacture and use of these high-performance materials. Testing and application examples are also included, in particular the application of relatively new high-performance construction materials to design practice. Most books dealing with construction materials typically address traditional materials only rather than high-performance m