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Book Reviews

Cement Chemistry by H. F. W. Taylor, Published by Thomas Telford Publishing, 1 Heron Quay, London E14 4JD. 480 pp, £65.00. ISBN 0 7277 2592 0, November 1997.

One of the unprecedented features of concrete construction in the last three to four decades has been the premature deterioration of concrete observed in a wide range of structures such as bridges, marine structures, tunnels, parking garages and railway sleepers. This has given rise to much growing public concern with the durability of concrete as a construction material. This in turn, has resulted in widespread recognition amongst engineers and designers that we need to have a much better understanding of the characteristics and microstructure of the material in order to be able to design and construct more durable concrete structures. This second edition of *Cement Chemistry* by one of the foremost authorities on the subject is therefore to be greatly welcomed as an authoritative and up-to-date treatise on the basics of cements, their properties and durability characteistics.

Although the book would primarily appeal to cement chemists and material scientists, concrete technologists and engineers will find valuable, fundamental information on cement and concrete which will enable them to get a better picture of the relationship between the properties and durability of concrete and the role of the manufacturing process of the material and its constituents. The book contains twelve chapters four of which are devoted to Portland cements, their constituent phases, the chemistry of cement manufacture and the properties of the Portland clinker and cement. This is followed by four other chapters which deal with the hydration of the constituent phases and their influence on the hydration of Portland cement and the structure and properties of the material in the fresh and hardened states.

Composite cements incorporating pozzolanic and cementitious mineral admixtures have now become a widely accepted scenario of the construction industry, and similarly, calcium aluminate, expansive and other cements have specialist applications in construction. Two chapters discuss these materials and their properties in considerable depth. No book on cement chemistry can be complete without discussing chemical admixtures, which have become part of the concrete material in much the same way as pozzolanic/cementitious supplementary materials, and these and the special uses of cements are discussed in detail in another chapter. Concrete and its durability are then covered extensively in the final chapter.

In the present context of world population growth, the desire for increased industrialisation and urbanisation, and the changing attitudes in the society on ecological issues, durability of enginerring materials and environmental pollution, the construction industry needs to relook and rethink on the fundamentals of concrete as a construction material. This book provides the foundations for that understanding of concrete and its development for the next millenium. It is scientific, comprehensive and a definitive guide on a wide and complex subject.

Appraisal and Repair of Reinforced Concrete by R. Holland, Published by Thomas Telford Publishing, 1 Heron Quay, London E14 4JD, 150 pp. £30.00, ISBN 0 7277 2583 1.

With the widespread epidemic of concrete deterioration that has been found in almost all types of concrete structures ranging from bridges and marine constructions to car parks, roads, and residential/commercial buildings, repair and rehabilitation and deteriorating, damaged or otherwise structurally inadequate load-bearing elements has become a major structural engineeering activity. Repair and rehabilitation work can however, be effective and technically sound only if the earlier diagnostic studies and appraisal are based on sound principles of engineering mechanics and a thorough understanding of materials and performance characteristics of repaired structurers. This book provides this basic information in the form of practical systematic, step by step guidance