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Book review

Handbook of Thermal Analysis of Construction Materials
V.S. Ramachandran, Ralph M. Paroli, James J. Beaudoin, Ana H. Delgado, November 2002, 702 pp., Hardcover, Retail US$ 145.00, ISBN: 0-8155-1487-5

This handbook covers thermal analysis of most types of materials used in the construction industry except wood, but including cement, concrete, gypsum, organic construction materials, adhesives and paints.

After devoting the first chapter to brief descriptions of the various types of thermal analyses and their operation, such as DTA, TG, TMA, DMA, DEA and conduction calorimetry, which have been used to characterise each construction material, the following 15 chapters are each individually devoted extensively to a particular aspect of the construction material. The chapters follow a logical sequence in that the first deals with cement and the final one with paint.

After discussing the components and production of portland cement in Chapter 2, the formation and hydration of this cement and the components which may appear, all well illustrated by various types of thermal analysis curves, are discussed in Chapter 3. Details of admixtures including mineral admixtures and their effect on the setting of cement are discussed in Chapters 4–6. Chapter 4 is an introduction to accelerators, water reducers, and retardants, as well as plasticisers, and this is followed in Chapter 5 by the use of accelerators such as calcium chloride. Chapter 6 deals with water reducing and retarding admixtures and Chapter 7 with superplasticising admixtures. Fly ash and similar supplementary cementing materials are fully handled in Chapter 8.

After an introduction to non-portland cement binders and concrete in Chapter 9, the next seven chapters deal with non-portland setting cements, gypsum and products, clay-based products, organic products, sealants and adhesives, roof materials, and finally paints.

The book, as its title suggests, covers all aspects of the materials used in the construction industry. All chapters are well illustrated with diagrams and many thermal analysis curves together with a large number of references at the end of each chapter. This handbook is recommended to chemists dealing with materials of construction and who require to know more detail of the behaviour of each individual material when in use. It provides a greater insight into the chemistry of the various materials used in the construction industry.

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