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6 Water6.1 Introduction; 6.2 The crucial roles of water; 6.3 Water and fresh concrete rheology; 6.4 Water and hydration; 6.5 Water and shrinkage; 6.6 Water and alkali/aggregate reaction; 6.7 Internal curing; 6.8 Use of special waters; References; 7 Superplasticizers; 7.1 Introduction; 7.2 Definitions; 7.3 Dispersion of cement particles; 7.4 Compatibility and robustness; 7.5 Utilization of superplasticizers; 7.6 Commercial superplasticizers; 7.7 Polysulfonates; 7.8 Polycarboxylates; 7.9 Practical use of superplasticizers; 7.10 Concluding remarks; References; 8 Natural aggregates
8.1 Introduction8.2 The SSD state: the reference state for aggregates; 8.3 Influence of the mechanical properties of the coarse aggregate on the corresponding concrete properties; 8.4 Partial substitution of a normal weight aggregate by a saturated lightweight aggregate; References; 9 Aggregates derived from industrial wastes; 9.1 Introduction; 9.2 Recycled concrete; 9.3 Other industrial wastes; 9.4 Other waste materials; References; 10 Entrained air; 10.1 Introduction; 10.2 Myths of entrained air; 10.3 Beneficial action on the workability of fresh concrete
10.4 Beneficial action against damage

Sommario/riassunto

"Production of Portland cement is responsible for about seven percentof the worlds greenhouse gas emissions. The pressure to make the production of concrete more sustainable, or "greener", is considerable and increasing. This requires a wholesale shift in processes, materials and methods in the concrete industry. Pure Portland cement will need to be replaced by more complex binary, tertiary or even quaternary binders, including other types of cementitious materials. We can expect an increasing use of high performance concrete, primarily because of its high sustainability anddurability. Much more attention will have to be paid to the proper curing of the concrete if we want to improve its life expectancy. Presenting the latest advances in the science of concrete this book focuses particularlyon sustainability, durability, and economy. It explores the potential for increased sustainability in concrete from the initial mixing right through to its behaviour in complex structures exposed to different types of loads and aggressive environments."--Provided by publisher.