

Preface

In the distant past, construction solutions were validated empirically through several years of experience, whereas with the onset of further industrialization of the construction process, it was recognized within the construction community that a performance-based selection of materials, components, and systems was required if innovation was to be fostered and progress in the construction domain achieved. However, it was equally apparent to those promoting such novel approaches that the selection on the basis of understanding of performance requirements could only be met if the results of research and development were made available and indeed exploitable by practitioners.

Given the availability of new construction solutions, these days ever evolving in the construction domain, and these offering greater levels of construction complexity, there is perhaps a presupposition that their performance over time can be readily estimated on the basis of a knowledge of material properties and the ability to simulate the performance of the individuals parts of a complex system. In fact, only an in-depth knowledge of the area of durability allows the prediction of performance over time and from this, the designation of suitable solutions for the most complex problems affecting the built environment. In addition, the adoption of innovative technological solutions can only truly be undertaken with assurance to provide the expected performance over time with appropriate and focused research; the costs of a non-durable alternatives are simply too high.

The purpose of this book, *Durability of Building Materials and Components* is to provide a collection of recent research works to contribute to the systematization and dissemination of knowledge related to the long-term performance and durability of construction and, simultaneously, to show the most recent advances in this domain. It includes a set of new developments in the field of durability, service life prediction methodologies, the durability approach for historical and old buildings, asset and maintenance management, and on the durability of materials, systems, and components. The book is divided into several chapters that intend to be a resume of the current state of knowledge for the benefit of professional colleagues.

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<http://www.springer.com/978-3-642-37474-6>

Durability of Building Materials and Components

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2013, VIII, 274 p., Hardcover

ISBN: 978-3-642-37474-6