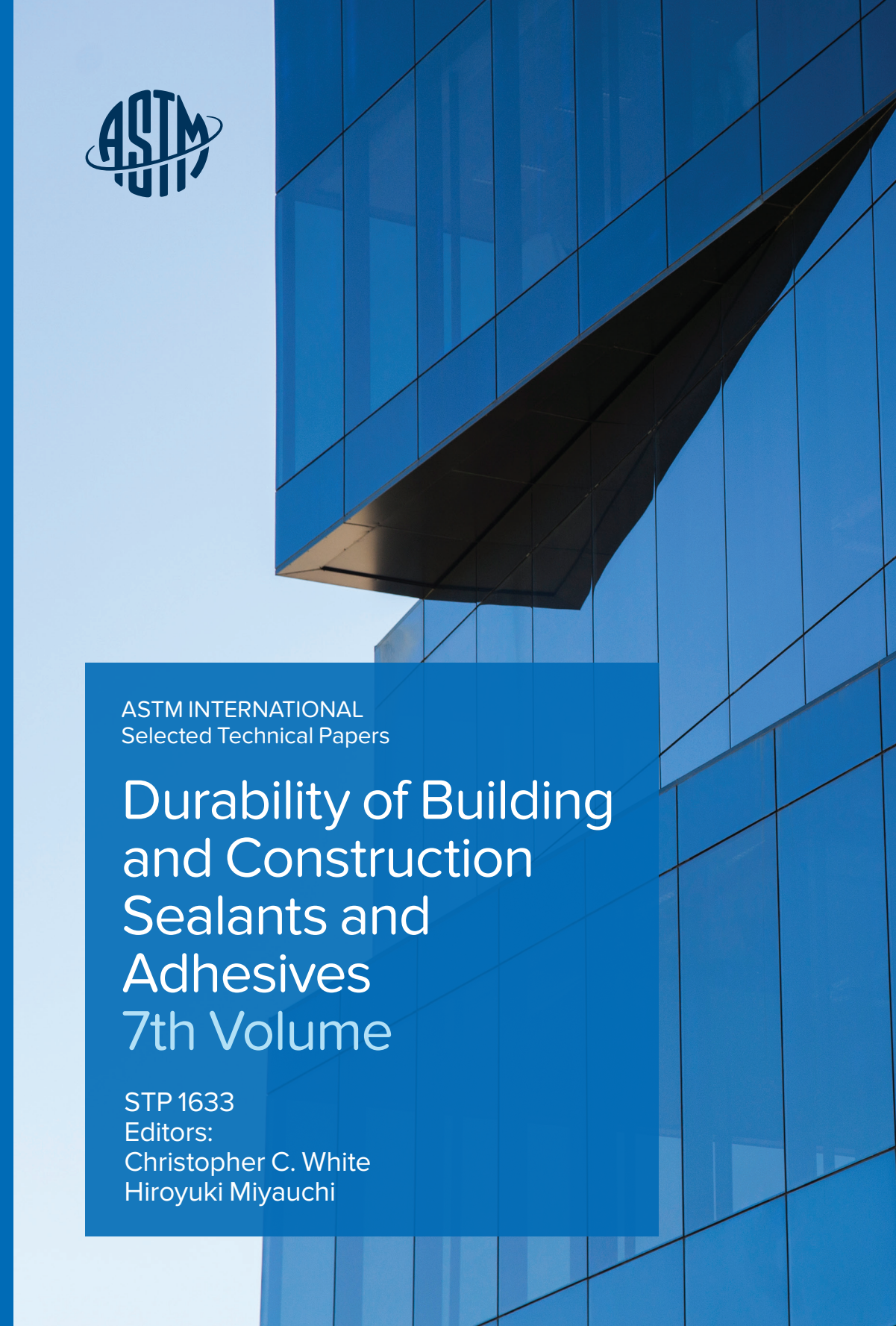

ASTM INTERNATIONAL
Selected Technical Papers

Durability of Building and Construction Sealants and Adhesives
7th Volume

STP 1633
Editors:
Christopher C. White
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Foreword

THIS COMPILATION OF Selected Technical Papers, STP1633, *Durability of Building and Construction Sealants and Adhesives: 7th Volume*, contains peer-reviewed papers that were presented at a symposium held June 15–16, 2022, in Seattle, Washington, USA. The symposium was sponsored by ASTM International Committee C24 on Building Seals and Sealants and Subcommittee C24.01 on Terminology of Building Seals and Sealants.

Symposium Chairs and STP Editors:

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Overview

The objective of the symposium was to provide a forum for the global sealant and adhesives community to continue the discussion on the durability of structural and weatherproofing sealants and adhesives. This gave the community a chance to present current research and research needs, as well as standards development opportunities and needs.

The topics for this symposium and the papers included in this volume focus on the aspects of sealant durability, which include: outdoor exposure, characterization, finite element modeling, monitoring of critical properties, development of accelerated testing, relating accelerated testing to in-service performance, and modeling of sealant durability.

Sealant and adhesive durability is not something you think about every day. It is a topic where you assume that the knowledge just exists. All of the contributors to this volume—the authors, editors, reviewers, and program chairs—realize that this is in no way a settled topic. It is an active area of research.

The 12 papers contained in ASTM International's STP1633 were presented at the 7th Symposium on the Durability of Building and Construction Sealants and Adhesives held in June 15–16, 2022, in Seattle, Washington. This symposium was sponsored by ASTM Committee C24 on Building Seals and Sealants in conjunction with the 2022 June standards development meeting of the Committee. Committee C24 has global influence on standards for building sealants used in commercial and multiuse buildings. Committee C24 holds the US Technical Action Group (TAG) to ISO 59/SC 8 Building sealant. Developing and developed countries look to the building sealant standards written by ASTM and ISO groups to accept as their own standards or make modifications from them.

Sealants and adhesives are used in applications and joining material for joints in structures across the entire world. These materials and technologies function to adhere and seal even as technologies of the structure evolve over time. Also, the performance of sealants and adhesives has a significant impact on the actual design life of the entire structure. As such, there is a significant responsibility for the entire process of design, materials, construction, maintenance and demolition related to sealant performance.

Sealants and adhesives are required to adhere to a multitude of different materials that compose the building envelope, and must have appropriate structural strength and durability against the environmental stresses such as temperature, ultraviolet rays, rainwater, and extreme weather events.

When the building was constructed initially, someone selected a sealant material. The owner really does not care which material was selected; they really care that the function the material represents, keeping the building sealed, is maintained for a period. Since detailed knowledge of the sealant durability is not currently known, it is almost impossible to choose a material that is economically efficient at keeping the building sealed for the period.

Manufacturers are constantly working to improve the formulations they would like to sell. One limiting factor is that establishing the durability, and hence the liability that new formulation represents is a long and expensive process. This greatly limits the number of new formulations that can be brought to market. Knowledge of the sealant durability would allow innovation in new materials into the marketplace.

Facades of high rise buildings are measured in the tens of thousands of square meters or hundreds of thousands of square feet. All of this built environment is negatively affected by poor sealant durability.

This book is the seventh volume concentrating on sealant durability on the international platform. The editors are greatly honored to have been able to produce such a valuable document for the building industry with the collaboration of the outstanding authors, ASTM technical staff, reviewers, and members of the international standards community. These dedicated professionals write, argue, produce and maintain standards so that the structures from the humblest housing to the most iconic structures are safe and conformable.

The symposium co-chairs, Dr. Christopher C. White and Prof. Hiroyuki Miyauchi, express our sincere gratitude to ASTM staff for all their contributions to planning throughout the many months preceding the symposium and the STP1633 publication. This volume and symposium development were significantly affected by the global COVID pandemic. Furthermore, this STP would not have been possible without the attentiveness and countless hours volunteered by our peer reviewers to ensure that all of the manuscripts were suitable for publication. Finally, special thanks are given to the authors and reviewers of the papers for their outstanding efforts in writing and reviewing that make the symposium and the STP possible. We trust that you will find it full of fascinating state of the art research. It is our sincere hope that these selected technical papers contribute significantly to the further advancement of the study of sealant durability.

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