

Roofing
Research
and
Standards
Development: 3rd
VOLUME

Wallace/Rossiter, editors



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Thomas J. Wallace and Walter J. Rossiter, Jr., Editors

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Peer Review Policy

Each paper published in this volume was evaluated by three peer reviewers. The authors addressed all of the reviewers' comments to the satisfaction of both the technical editor(s) and the ASTM Committee on Publications.

To make technical information available as quickly as possible, the peer-reviewed papers in this publication were printed "camera-ready" as submitted by the authors.

The quality of the papers in this publication reflects not only the obvious efforts of the authors and the technical editor(s), but also the work of these peer reviewers. The ASTM Committee on Publications acknowledges with appreciation their dedication and contribution to time and effort on behalf of ASTM.

Foreword

This publication, *Roofing Research and Standards Development: 3rd Volume*, contains papers presented at the symposium of the same name, held in Montreal, Canada on 19 June 1994. The symposium was sponsored by ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials. Thomas J. Wallace of the Naval Facilities Engineering Command in Philadelphia, PA and Walter J. Rossiter, Jr. of the National Institute of Standards and Technology (NIST) in Gaithersburg, MD presided as symposium chairmen and are editors of the resulting publication.

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Overview

The revolution that has occurred in the roofing industry around the world over the last 15 years is well known to all. Many roof systems that incorporate elastomeric, thermoplastic, and polymer-modified bituminous membranes were unheard of in the early 70s, but are commonly used today. Improvements in the chemistry and production technology have enhanced the performance of these materials and made them economically competitive for roofing. Further, the use of glass- and polyester-based fabrics has essentially replaced the traditional reinforcements for built-up roofing membranes. The industry has also seen increased use of sprayed-in-place polyurethane foam systems and the application of liquid materials for protection and maintenance. The arrival of many of the new systems has led to innovative methods of application such as ballasting and mechanical attachment.

The revolution has been beneficial to the industry. Many of the new systems have performed well, and the variety of systems available provides consumers, including building owners, design architects, and roofing contractors with a broad choice from which a particular system may be selected for a given application. Nevertheless, not all of the new systems introduced to the market over the last 15 years have been successful. In fact, any roofing technologist can provide examples of systems that were procurable by consumers a few years ago, but are not available today. A challenge to the members of the roofing community is to provide standards that assist consumers in selecting and using systems that provide long-term satisfaction while addressing current environmental needs. Demands to improve the quality of our environment have meant that some materials and systems, considered environmentally acceptable 15 years or so ago, are not necessarily acceptable today. Consequently, the roofing industry is tasked to replace unacceptable products with a new generation of alternative materials and systems that are not detrimental to the environment.

This challenge has placed strong pressure on ASTM Committee D-8 on Roofing, Waterproofing, and Bituminous Materials to develop standards to assist in the selection, use, application, and maintenance of these systems. Committee D-8 has responded well. Many task groups are working diligently to maintain and upgrade standards previously issued and to develop the new standards that are still urgently needed. These standards include not only specifications for membrane materials, but also test methods for their characterization and practices for their application and evaluation.

The proceedings of three symposia describing the changes that have occurred and the needs for research to support development of standards have been published since the early 1980s: *Single-Ply Roofing Technology*, ASTM STP 790, 1982, edited by W. H. Gumpertz; *Roofing Research and Standards Development*, ASTM STP 959, 1986, edited by R. A. Critchell; and *Roofing Research and Standards Development: 2nd Volume*, ASTM STP 1088, 1990, edited by T. J. Wallace and W. J. Rossiter. But the work of Committee D-8 is far from completed, particularly in the area of providing data and conducting research to support standards development.

The members of D-8 firmly believe in the importance of having a strong technical basis for their Committee's standards. The availability of data can help accelerate the standards development process, because decisions can be made on fact and not opinion. As an example, the consensus of D-8 members is that task groups developing new standard specifications

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provide data supporting recommended requirements for material properties. Without supporting data, the drafts do not proceed forward.

This symposium was conducted under the auspices of Subcommittee D08.21 on Research Needs for Roofing and Waterproofing. This symposium and the papers described in the proceedings illustrate D-8's commitment to developing standards having strong technical bases, which ultimately contributes to improved roof performance.

As in the past, this publication is dedicated to the members of ASTM Committee D-8 who give unselfishly of their time and energy to improve the performance of roofs. The editors express their sincere thanks and appreciation to those many individuals who participated in the organization and conduct of the symposium. R. A. Alumbaugh, W. C. Cullen, R. L. Fricklas, J. M. Goodwillie, D. F. Jennings, J. F. Lindberg, C. F. Mullen, R. E. Norris, D. E. Richards, G. A. Smith, T. L. Smith, and J. R. Wells were D-8 members of the steering committee. D-8 members H. Hardy Pierce and J. F. King were session chairpersons. Dorothy Savini and Pat Barr, both of ASTM, provided for symposium arrangements. Rita Hippensteel, Therese Pravitz, Shannon Wainwright, Kathy Dernoga, and other ASTM staff members directed the review and publication of the papers. Finally, special thanks are given to the authors and reviewers of the papers without whose efforts the symposium would not have been possible.

Thomas J. Wallace

Naval Facilities Engineering Command,
Philadelphia, PA;
symposium co-chairman and editor.

Walter J. Rossiter, Jr.

National Institute of Standards and Technology,
Gaithersburg, MD 20899;
symposium co-chairman and editor.

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