Atmospheric Corrosion

W. W. Kirk and
Herbert H. Lawson, editors

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Foreword

This publication, *Atmospheric Corrosion*, contains papers presented at the symposium of the same name, held in Fort Worth, TX on 15-16 Nov. 1993. The symposium was sponsored by ASTM Committee G-1 on Corrosion of Metals. W. W. Kirk of Ivanhoe, NC and Herbert H. Lawson of Lawson Consultants, Inc. in Middletown, OH presided as symposium chairmen and are editors of the resulting publication.

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Overview

From the standpoint of economics, safety, and aesthetics, the importance of atmospheric corrosion and its control is well recognized. More structures and materials are exposed to the atmosphere than to any other environment. It is not surprising, therefore, that a vast body of literature exists on the performance of materials in the atmosphere and the characterization of such environments. (See the previous ASTM symposia covered in the special technical publications (STP) listed at the end of this introduction.) Society interests in the performance of materials in the atmosphere were active well before the formation of Committee G-1 on Corrosion of Metals in 1964. The International Organization for Standardization (ISO) has also been very active in the development of standards for atmospheric testing methods and classification of atmospheres. It seemed a natural follow-up for Subcommittee G01.04 to organize another symposium on Atmospheric Corrosion, held in November 1993 in Dallas, Texas. The 16 papers presented there are included in this STP.

The truly international scope of interest for this symposium was emphasized with three papers each from Sweden and Spain, two from the Czech Republic, one each from the United Kingdom, Canada, and Australia, and five from the United States. All of the basic metals and alloys used in construction: carbon steel, stainless steel, weathering steel, zinc, copper, and aluminum, were included in the subject matter. For many years, an overwhelming desire to predict material performance in the atmosphere has been at the heart of many research programs, two of which are included here in an attempt to model atmospheric corrosion and corrosivity. An ISO program to characterize different atmospheres as to corrosivity toward basic metals is also described in two papers. Increased problems and concern with acid deposition and its effects on corrosion, along with a study of marine corrosion as a function of location and distance from salt water, round out the various subjects covered in this symposium.

Using symposia such as this and those previously held has permitted wide participation and comprehensive coverage of the subject. Two continuing goals of Committee G-1 are "the promotion and stimulation of research" and "the collection of engineering data relating to the corrosion of metals." These are also goals of Subcommittee G01.04 on Atmospheric Corrosion. As indicated by the long-term testing programs discussed herein and in previous literature, it can be anticipated that future symposia on similar subject matter will be necessary. The difficulties in determining and understanding the complexity of atmospheric variables and their interactions are certain to provide interest and concern to the world of engineering.

The editors are grateful to their fellow members of Committee G-1 for their assistance and encouragement in the organization of this symposium and the production of this volume. We appreciate very much the support and guidance of the ASTM publications staff.

Listed below are six STPs resulting from various symposia held since 1956.

- STP 175—*Symposium on Atmospheric Corrosion of Non-ferrous Metals,* 1956
- STP 435—*Metal Corrosion in the Atmosphere,* 1968
- STP 558—*Corrosion in Natural Environments,* 1974
- STP 646—*Atmospheric Factors Affecting the Corrosion of Engineering Metals,* 1978
- STP 767—*Atmospheric Corrosion of Metals,* 1982
- STP 965—*Degradation of Metals in the Atmosphere,* 1987

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