

# Handbook of Polyethylene Pipe

## Foreword

Polyethylene piping is a comparatively new piping product. Alternate piping products such as concrete, steel, cast or ductile iron, and even PVC, have long been established within the engineering community. Polyethylene piping, on the other hand, has been utilized for a variety of piping applications for a mere 40-50 years. Despite this relatively short history, the engineering community has embraced the overall toughness and durability of HDPE pipe and the latitude afforded by the variety of installation methods that can be employed using polyethylene pipe to expand its use at a quickening rate.

Today, we see polyethylene piping systems operating in a broad array of installations; from pressure-rated potable water and natural gas lines to gravity sewers, from industrial and chemical handling to telecommunications and electrical ducting; from oil and gas production to marine installations and directional drilling.

This text has been developed to assist designers, installers and owners as they continue to look at the diversity of piping applications and help them recognize that polyethylene pipe is but one more tool available to them in the design and rehabilitation of our nation's pipeline infrastructure.

The material presented in this text has been written in a manner that is easily understood, with an emphasis on organization to provide the reader with ease of reference. It is only our efforts to be as comprehensive as possible with respect to the subject matter that have resulted in such an extensive publication.

The overall work consists of essentially three fairly discreet sections: Introductory Information, Design Considerations and Applications. Each chapter within these sections is written on somewhat of a stand-alone basis. That is, each chapter can be considered a thorough treatment of the subject material of note and the need to reference back and forth between chapters has been minimized to the extent possible. Each chapter is also annotated and industry recognized references, on which specific points are developed, are included at the end of each chapter.

The first section includes basic introductory information which reviews the origins and growth of the polyethylene pipe industry in North America, engineering properties of polyethylene, and safety considerations in the transport, handling and installation of polyethylene piping systems.

The second section, or design section, consists primarily of design considerations and includes chapters on pipe design, joining procedures, and basic information on buried and above-ground installations.

The final section of this text is comprised of a set of chapters that provide the reader with detailed information regarding design considerations, installation techniques and operation of polyethylene pipe in a variety of specific applications, such as directional drilling, marine, conduit, HVAC.

The overall work concludes with an extensive glossary and, of course, an index to provide ease of reference for specific topics of interest. The organization of the subject matter should allow the reader to quickly reference a specific area of interest or, moreover, for the college educator to utilize specific sections of the handbook within the context of a semester curriculum.

## **The Plastics Pipe Institute**

This handbook has been developed as a result of a task group initiative within the Plastics Pipe Institute (PPI). Founded in 1950, the PPI is the major trade association representing all segments of the plastics piping industry. PPI is dedicated to the advancement of polyethylene pipe systems by:

- Contributing to the development of research, standards and design guides
- Educating designers, installers, users and government officials
- Collecting and publishing industry statistics
- Maintaining liaisons with industry, educational and government groups
- Providing a technical focus for the plastics piping industry
- Communicating up-to-date information through our website [www.plasticpipe.org](http://www.plasticpipe.org)

The PPI develops and maintains a substantial body of engineering information and case studies related to the uses of polyethylene pipe in both potable water service, natural gas distribution and other applications.

PPI's engineering staff and members are experts in the design of polyethylene pipe systems and are available to answer your questions regarding HDPE pipe or any other PPI listed piping systems. Technical seminars are also conducted regularly for engineers and specifiers.

This handbook has been developed by the PPI as a service to the industry. The information in this handbook is offered in good faith and believed to be accurate at the time of its preparation, but is offered without any warranty, expressed or implied, including warranties of merchantability and fitness for a particular purpose. Additional information may be needed in some areas, especially with regard to unusual or special applications. In these situations, the reader is advised to consult the manufacturer or material supplier for more detailed information. A list of member companies is available from PPI.

PPI intends to revise this handbook from time to time, in response to comments and suggestions from member companies and from users of the handbook. To that end, please send suggestions for improvements to PPI. Information on other publications can be obtained by contacting PPI directly or by visiting the web site.

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