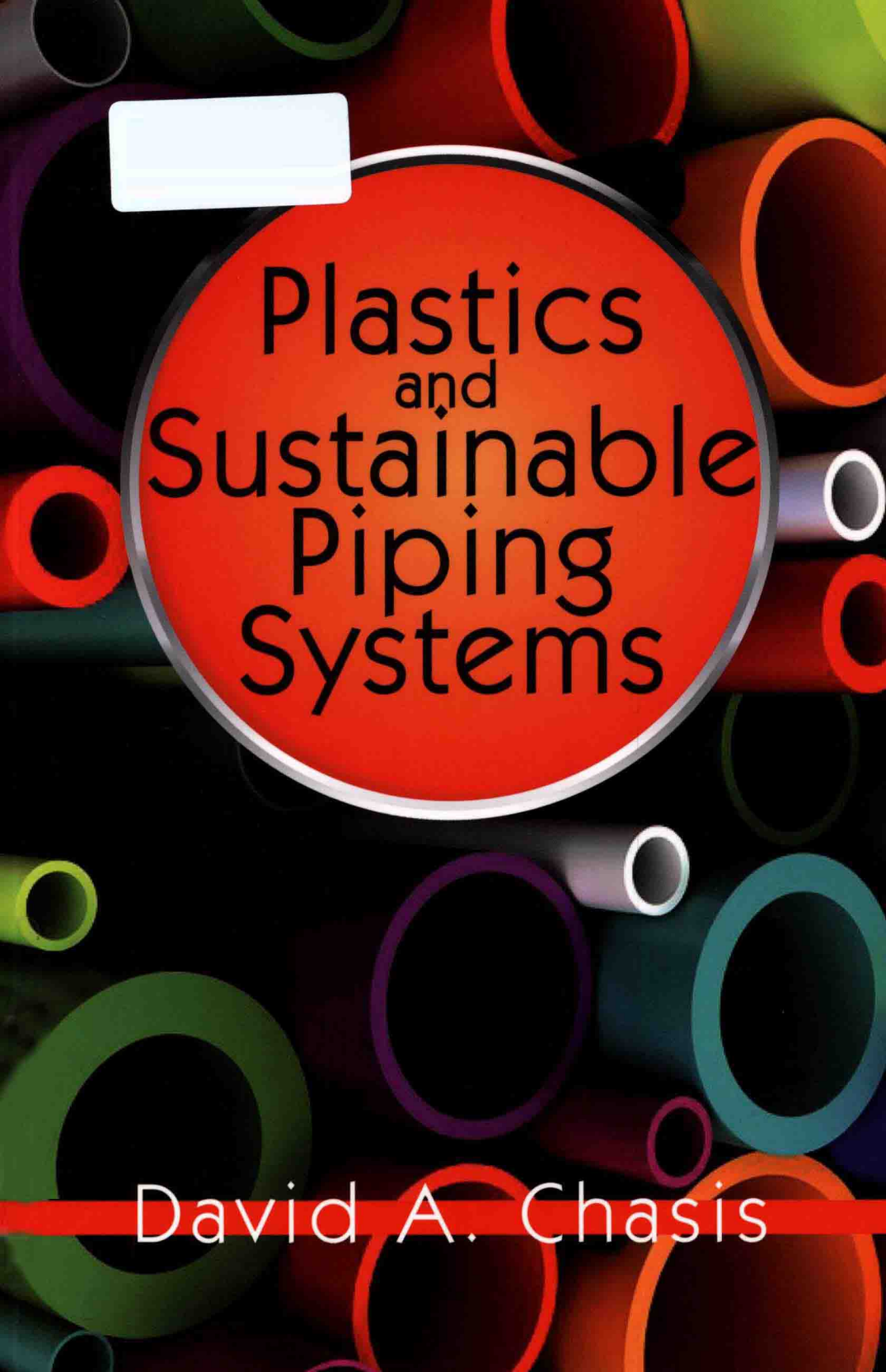
Plastics
and
Sustainable
Piping
Systems
David A. Chasis

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The IAPD is an international association established in 1956 comprised of plastic industry distributors and companies. Their well-known publication, *IAPD Magazine*, is a bimonthly journal which has been a positive force in educating distributors, engineers, installers, and end-users to the features and benefits of plastics. Many of the published articles appearing in the book were first printed in the *IAPD Magazine* as noted. I would like to thank IAPD for giving me permission to include these articles in the publication. Please go to www.iapd.org website for more information on IAPD.

PPFA, an association in which I am a member and a consultant, has been very generous and helpful by being a source of information for many of the articles and photographs appearing in the book. Many of the article drafts have been peered reviewed and greatly improved by the input of PPFA members. There is no association in North America that has done more in getting plastic piping systems accepted and approved in residential and commercial building codes than PPFA. PPFA is also a stalwart force in promoting and defending the use of all thermoplastic piping in the United States and Canada. Please go to www.ppfahome.org website for more information on PPFA.

The article "Plastics Learn Their Roles in Plumbing System Design" has been published in the American

Society of Plumbing Engineers'(ASPE) journal *Plumbing Systems and Design* (journal has since been renamed: *Plumbing Engineer*). ASPE has granted permission to reprint the article in the book. Also, the article "Think Plastics: Thermoplastic Piping Gaining Industry Acceptance" was published in the Valve Manufacturers Association's (VMA) journal, *Valve Magazine*. The VMA has granted permission to reprint the article in the book. My thanks to both of these well-recognized and influential professional associations.

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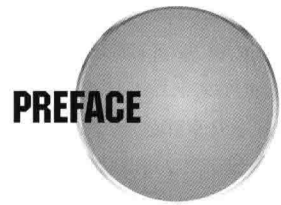
Last, I am greatly indebted to many of the pioneers in the plastic piping industry—especially my late and close friend, Dennis Garber, who was the most passionate person I have ever known regarding the wonders of plastic piping. He was one of the first plastic piping zealots.



Several years ago I was making a sales call on a consulting engineer who specialized in power plant design. Before the meeting, his secretary mentioned that the engineer was hospitalized recently with heart arrhythmias and had a pacemaker implanted. During my sales call, I presented the features and benefits of plastic piping to the engineer. After a lengthy and unsuccessful attempt to convince him to consider plastic piping for intake and outtake lines, as well as water treatment systems, he blew me off; he stated that plastics were inferior to metals and were too "flimsy" and "unproven."

As I left his office, I mentioned his recent implant. I asked him "Do you know what material was used in the manufacture of the device housing that is keeping you alive?" "Plastics!" I said. He never answered and just angrily shooed me out of his office. The point being: too many engineers are mired in old technologies; they are not open to or aware of new and better construction materials. The end result is that the engineer's clients are subjected to less effective and more costly construction.

Plastic is defined as a synthetic material made from a wide range of organic polymers that can be molded into shape while soft, and then set into a rigid or slightly elastic form (definition adapted from Oxford English dictionary). These man-made materials have grown astronomically over the last 100 years, offering many features and benefits throughout such industries as clothing, appliances, transportation, packaging, chemical processing, electronics, and medical. But no industry has benefited more from the advent

of plastics than that of construction, building with such products as wall and floor coverings, window frames, siding, roofing, decking, fences, and piping systems. This book focuses mainly on plastic piping systems.

I was introduced into the plastic piping industry when I moved to Louisville, Kentucky, in 1967 to work for Cabot Piping Systems (now the Chemtrol division of NIBCO INC). My official job title was marketing manager, yet my duties included sales, distribution, product development, and any other quasi-marketing job that was sloughed off for me to finish. Thanks to the cooperation of my Cabot associates and the company's extensive product line, I took to plastics as a duck takes to water.

And for the next forty-five plus years, I have been involved in all facets of the plastic fluid handling product industry including: marketing, manufacturing, distribution, engineering design, customer service, domestic / international product sales, corporate acquisitions, and consulting.

In the late 1960s and early 1970s there was very little published educational information available to engineers, installers, and end-users in the use of plastic piping systems. So I undertook a part-time two-year process to create the "bible" of plastic piping and voilà in 1976 *Plastic Piping Systems* was published. In 1988, the revised edition of *Plastic Piping Systems* came out. Both books were published by Industrial Press, Inc.

In the past 25 years, I have authored four dozen articles on plastics, many of which have been published in industry journals. In addition to printed media, I have been involved in creating and presenting dozens of seminars, webinars, and tutorials to hundreds of curious and open-minded engineers, contractors and large end-users. In 2010, I also created a website to offer free internet access to users who want the latest in plastic piping information:
www.sustainablepipingsystems.com

The idea for this book came to me when there were over 12,000 visits last year to my website, most requesting information on plastic piping. I thought that if I could edit and assemble many of the articles I wrote in a one-source document, it would benefit those who want to find answers to their questions regarding plastics and plastic piping systems—hence, the creation of *Plastics and Sustainable Piping Systems.*

The book contains 46 articles divided into three sections. The first section, *General Plastics*, comprises articles that address the present, past, and future of plastics in general. Many of the articles explain, defend, and promote the use of plastics in the world, offering several examples of why plastics should be the environmentalist's best friend.

The second section, *General Plastic Piping*, concentrates on plastic piping areas such as applications, joining methods, and the environment. Almost all the piping materials listed are thermoplastic (plastics that can be easily recycled and transformed by applying heat and then cooled with the end product having the same physical properties of the original material). (There is no coverage in the book of thermoset piping materials such as fiberglass reinforced polymers. Thermosets are plastics that, once formed, cannot be recycled back into its original form.)

The final section, *Plastic Piping Materials and Products*, focuses on particular fluid-handling product groups such as valves, pipes, fittings, and fabrications as well as product-specific piping material systems. These articles are more likely to answer many of the questions the reader may have on a particular plastic piping product or system.

Several of the published articles have been re-edited to deliver more grammatically and technically correct information. Also, charts and photos have been added to some of the

articles to better improve the reader's knowledge and understanding of the presented data.

Except where noted, the information presented in the articles is the sole responsibility of the author and does not necessarily represent the views of any other author, company, or industry association.

David A. Chasis
Austin, Texas
May 2014

PART 1

General Plastics

GENERAL PLASTICS

The following articles promote the benefits of plastics by presenting current and historical facts as well as anecdotal cases:

1. *Celebrating 100 Years and Going Strong* lists the many positive changes plastics have brought to the world after the first all-synthetic plastic was introduced in 1907 by Leo Baekeland.

2. *Chemicals and Plastics* makes a solid case for the concerns addressed by the chemical and plastics industry in following its mandate to provide tested and safe products to the public.

3. *The China Study* article highlights aspects of the comprehensive scientific study done by T. Colin Campbell and his son in China, showing that lifestyle and diet — and *not* man-made chemicals — are the largest contributors to human disease and poor health.

4. *Defining Bioplastic Terminology* explains the many material terms used in industry that begin with the prefix "bio."

5. *The History of North American Plastic Piping Distributors* informs the reader how the phenomenon of special plastic industrial distributors grew the market for plastic piping materials in North America.

6. *Internet...Cure or Blessing for Plastics* outlines tools and strategies for using the Internet to promote and defend plastics.

7. *Pearls of Plastic* addresses an anti-plastic article authored by Brian Walsh in his 2010 article published in the magazine *Time*.

8. *Plastic Piping Systems and the Internet* lists and describes several helpful websites that furnish user-friendly, up-to-date, accurate information on plastic piping systems.

9. *Plastics and PETA* summarizes how plastics have contributed in preventing the slaughter of hundreds of thousands of animals.

10. *Potable Water for a Honduran Village* describes how a group of profit and not-for-profit organizations worked together to provide potable water for a small village in Honduras.

11. *PVC Pipe Used for Non-Piping Applications* discusses and displays more than a dozen examples of PVC pipe being used to build decorative products, furniture, storage solutions, recreational games, and other creative products.

12. *Transformation from a Radical to a Rational Environmentalist* is a review of the book *Confessions of a Greenpeace Dropout: The Making of a Sensible Environmentalist* by Patrick Moore, co-founder and former activist of Greenpeace.

13. *Vinyl and the Planet of the APES* exposes the pseudo-scientific attacks against plastics from a group labeled by the author as the Anti-Progressive Extremists Society or APES.

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