

# Plastics in Our World: Four Authors' Perspectives

by Drew Schwartz

I own a performance plastics distribution company and I like to read. But I don't like it when performance plastics gets portrayed as an industry that is neglectful of our responsibility to the health of life on this planet.

So, I'd like to recommend four of my favorite books about plastics. I'm going to tell you why they're all good reads. I believe that each of these books is useful to us as performance plastics professionals who need to be familiar with the environmental arguments in favor of our products.

## *Junkyard Planet: Travels in the Billion-Dollar Trash Trade,* by Adam Minter



IAPD Environmental Committee Chairman Allan Harari recommended this book to me. *Junkyard Planet* is a look at the history and practice of junk (which is one of those words, like its synonyms trash and scrap, which can serve as either a noun or a verb).

Adam Minter grew up as the son and grandson of scrapyards owners in Minneapolis, MN, USA. He planned to do something else when he grew up, so he became a journalist, primarily based in China. One of the odd journalist questions he always wanted to answer for himself was, "What happens to Christmas tree lights

after they get put in a recycling bin?" So, the books starts there. Minter develops the story about Christmas tree light recycling to illustrate how China uses the United States as a kind of raw materials mine.

The book contains a very good chapter entitled Plasticland about a place in the Hebei province of China called Wen'an County. Wen'an County has about 450,000 residents and something on the order of 20,000 small-scale family-owned workshops devoted to recycling plastics. And in Wen'an County, recycling plastics means buying scrap batches of mixed plastic from overseas and sorting, grinding, washing and sometimes extruding new shapes of plastic, all in an unregulated and environmentally irresponsible fashion.

Overall, I thought that the strengths of this book were:

- The author is a good storyteller.
- This book creates a vivid picture of where recycled plastics and metals wind up after they leave our businesses and curbsides.
- The author's background as a third-generation scrap dealer gives his stories a lot of authenticity.

The only shortcoming of this book that I found was that it isn't exclusively about plastics; a lot of the story is focused on metals.

## *Plastic: A Toxic Love Story,* by Susan Freinkel

This book is all about plastics and how we live with the materials. The author decided to spend a day without touching anything made from plastics. But she didn't make it too far. She only makes it about 10 seconds, because both

the light switch and the toilet seat in the bathroom were made of plastics. So, she changed the experiment into a list-making exercise and that day she wrote down 196 different plastic items that she touched. Of course, many of these things were consumer-grade products, such as plastic packaging. The next day she continued list-making with a similar tally of everything she touched that wasn't at least partially made of plastics. The non-plastics list only made it to 102 items.

This led to some reflection and a list of questions, which she attempts to answer in the book. Those questions include:

What are plastics? Where do plastics come from? How did we get so many plastic items in our lives without really trying? What happens to plastics after we put them into a recycling bin? Does plastic really get recycled after being picked up curbside? How much of the plastics that the typical American discards ends up in the ocean? Should we stop using plastic shopping bags? Is there a future for plastics in a sustainable world?

To explore the answers to these questions, the book is organized into separate chapters about eight common, everyday, relatively non-durable objects that are usually made from plastics, including the comb, the stackable cafe chair, the Frisbee, the intravenous solution bag, the disposable lighter, the grocery bag, the soda pop bottle and the credit card.

Two of my favorite factoids in the book were:

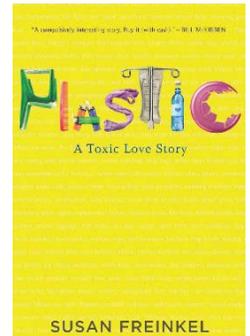
1. In the 19th century plastics were actively promoted as a way to replace ivory from elephant tusks (for use in billiard balls) and to replace hair comb materials (that were coming from hawksbill turtle shells).
2. The rapid growth of plastics after World War II had a lot to do with their utility as a way to use the ever-increasing stream of petroleum refining byproducts.

The strengths of this book include:

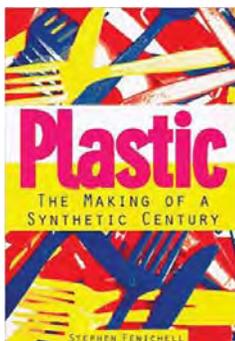
- It's a very good historical overview of plastics.
- The author acknowledges the advantages and disadvantages of our huge consumer demand for plastics.
- There's a good chapter explaining what the recycling category numbers on plastic products indicate and where they come from.
- There's an excellent notes section at the back of the book.

The minor shortcoming of this book is that no full-scale solutions to our huge reliance on consumer plastic products were identified or examined; although the epilogue section does describe a highway bridge in New Jersey, USA, made out of plastic parts extruded from recycled milk jugs.

To me, this book is the most animated of the four books and presents the best environmental arguments for those of us in the performance plastics business to use when confronted with skeptics.



### Plastic: The Making of a Synthetic Century, by Stephen Fenichell



This book provides a nice history of the development of the plastics industry. It is arranged in the order of development of distinct types of plastics. It starts with a material I had never heard of called Parkesine (the first plastic trade name in 1862) and works its way through the 19th and 20th century development of performance plastics such as Plexiglas and Teflon. These stories are told from the point of view of the lead investigators. For example, there is a chapter devoted to the curious career of Dr. Leo Baekeland and his quest to perfect Bakelite in a converted horse stable on his Hudson Valley, NY, USA estate. There is another chapter about the life of DuPont's Dr. Wallace Carothers and his methodical synthesis of nylon, followed shortly by a tragic end to his life.

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The strengths of this book include:

- It contains inspiring biographical sketches about interesting polymer scientists and businessmen.
- It gives a comprehensive view of the history of plastics and how various ones became commercially successful.
- It has descriptions of the chemistry behind the resin types discussed in the book.

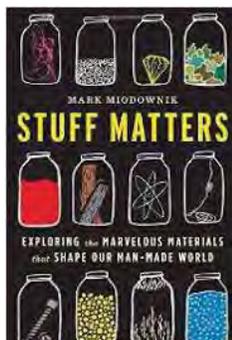
The last two chapters of the book, entitled respectively, The Seat of the Plague and Sympathy for the Devil, contain some thought-provoking sections about the ways plastics' image problems surfaced in the 1960s and 1970s and what was on the horizon to respond to these snags in the 1980s and 1990s (this book's copyright date is 1997).

The shortcomings of this book include:

- There is so much information here that it is not a quick read.
- The book itself is less available from booksellers than the other three books, but I did find a copy at my local public library.
- I think that this book may be the most useful one for many performance plastic professionals since it's chock full of stories about how the products we distribute and fabricate as IAPD members came into existence. This is also the one I am most likely to reread next.

### Stuff Matters: Exploring the Marvelous Materials That Shape Our Man-Made World, by Mark Midownik

Like *Junkyard Planet*, this book is not just about plastics. Rather, the author wrote it as a survey of different classes of "stuff" in order to show what is interesting about materials science. To do this, the book is organized into a series of chapters with titles such as Indomitable, Trusted and Fundamental. The chapter titles were selected to describe something about the nature of the way we might think about the different material type in each chapter. For example, the chapter called Invisible is about glass. The chapter called Refined is about porcelain. And the chapter called Imaginative is about plastics. The thing I like about this book is that Dr. Midownik demonstrates that plastics are just the latest in a series of materials that humans have developed uses for over the past several thousand years.



The strengths of this book include:

- It gives a lot of useful information about the materials that we as performance plastics professionals are constantly competing against, such as glass and metals.
- The chapter about plastics is quite favorable toward the need for performance plastics in our modern society.
- There is a discussion of nanomaterials and how they are becoming more common in the manufacturing economy.
- There is a chapter entitled Delicious about the material science behind milk chocolate.

I thought the only shortcoming of this book was that it isn't strictly about plastics.

This book is going to be useful and interesting to the largest audience of all four books since it covers the broadest swath of materials. I would particularly recommend it to young people who are considering engineering or any of the other STEM fields as a career.

While these four books may not make it onto any summer vacation reading lists, they all provide an interesting perspective. I hope this brief introduction to each one will inspire you to check them out and give you more insight into the materials that so many of us spend so much of our lives working with.

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