

Injection Molding Handbook

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Vorwort

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Preface

The injection molding manufacturing sector, with a total product value of almost \$200 billion per year, is the fourth largest industry in the United States. Today, more than a third of all polymeric materials, approximately 15 billion pounds, are used by the injection molding industry annually.

The *Injection Molding Handbook* is primarily written for engineers, processors, researchers, and other professionals with various levels of technical background. It not only serves as introductory reading for those becoming acquainted with injection molding, but also as an indispensable reference for experienced practitioners. The handbook presents a thorough, up-to-date view of injection molding processing equipment and techniques, with fundamental information on the chemistry, physics, material science, and process engineering. It also covers topics that directly affect the injection molding process, such as injection molding materials, process control, simulation, design, and troubleshooting.

The handbook presents a well-rounded overview of the underlying theory and physics that control the various injection molding processes, without losing the practical flavor that governs the manuscript between its covers. The carefully chosen contributing authors include experts in the field, as well as practitioners and researchers in both industry and academia.

The first three chapters of this handbook present the fundamental background, covering basic process principles and materials. Here, a unified approach is used by pulling in the influence of processing on the properties of a finished product. Chapters 4 through 6 present the injection molding machine, which includes the plasticating and clamping units, as well as the injection mold. Materials handling is introduced in Chapter 7 and statistical process control, as related to injection molding, is presented in Chapter 8. Chapter 9 gives an in-depth overview of special injection molding processes. Product design and injection molding simulation is presented in Chapters 10 and 11, respectively. The last two chapters present extensive process and material troubleshooting procedures that will be useful to anyone in the industry at any stage of process and product design.

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