BOOK REVIEWS

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Plastics Engineering Handbook of The Society of the Plastics Industry, Inc., 3rd ed. A. F. RANDOLPH, Ed. Reinhold, New York, 1960. lii + 565 pp. $15.00.

An engineering handbook is a vast compilation of catalogued information embodying the combined knowledge of an industry. Considering the hazards involved in putting together so extensive a work, the editors, under the sponsorship of the Society of the Plastics Industry, should be commended in having presented this well arranged reference. Originally published in 1947, *Plastics Engineering Handbook* was immediately accepted as the most authoritative and useful source of information on the plastics industry. Since that time it has kept pace with new developments. In 1954, a second edition was met with a similar reception. Now, six years later, a third revised and expanded edition, in a larger, double-column format is presented.

The subject matter is divided into 26 chapters. Chapter 1 on nomenclature is new. Considering the immense number of new words that the plastics industry has added to our language, this chapter becomes the authority for commonly used (industrial) plastics words, and the stepping-stone by which they eventually enter our dictionaries.

Each section has been carefully screened to remove outdated material. Widely accepted and improved methods, standards, and charts appear in this third edition. Chapters 2 through 6 augment the material on compression molding contained in the previous edition. They present the latest techniques, materials, and machinery used by compression molders. Chapter 7 is a readable, up-to-the-minute summary of injection molding. However, since the machinery used in this process often combines a screw for preplasticizing the material, it would seem to be placed better if it was in closer proximity to chapter 9, on extrusion. Interposed between the chapters on injection and extrusion is one on preforming, drying, and preheating. This chapter describes in detail the methods for briquetting and preheating thermoset materials, and, not quite as adequately, heating and drying of thermoplastics. Sharper division between the discussion of the techniques might make reading easier for the uninitiated. It would also help him to distinguish the differences underlying the treatment of the two materials.

The chapter on extrusion and extrusion machines has been radically revised to include the latest information on film, sheet, and laminating methods. It covers in general terms blow-molding, wire covering, and extrusion/injection molding.

Other important changes occur in the thermoforming section. Conspicuous by its absence in this section is pressure forming, although photos of the equipment used in this process are shown.

The section on reinforced plastics is well handled. A bibliography ends the chapter and enlarges it to cover all phases of the work.

Newly added is the chapter on cellular plastics: an up-to-date monograph on foamed and expanded materials.

The section on casting, although revised, supplies little on its own that is new to the art. The reader should keep in mind that casting and embedding, and potting (the latter two are discussed in a later chapter) are closely interrelated, relying largely on the same techniques. Therefore, the two chapters comprise a unit on interchangeable techniques.

Added to the section on mold design and dies are the "T" dies used in extruding sheet and film. Also newly listed, is a typical blowing die used to produce expanded tubing and a die for extruding pipe. Still another addition is the crosshead die used in wire covering extrusion. This subject has been brought up to date with a description of hot runner-type molds and many intricate mold cooling arrangements. Many of the designs show the adaptation of torroid type, O-ring packing used for sealing off one compartment of the mold from others. Electroforming of molds, a method which has displaced hobbing in some specialized applications, is also included.

In the chapter on machining, finishing, and decorating, the editors might have included a broader insight into the metallizing process rather than relegate it to the batch process only. This process, used to coat plastic film and other continuous substrates, has shown more rapid growth in recent years than the batch process. New to this chapter is a description of the du Pont spin welding technique with drawings showing the end configurations required in the process. This is a method for sealing rigid and semirigid thermoplastic containers by the heat of friction.

Innumerable changes have taken place in this third edition. So many, in fact, that in some cases what is included is rather a cursory or general description of processes that are now commonly used in the plastic industry.

The shortcomings noted in this review are slight in light of what is accomplished and could undoubtedly be picked up in a future edition. As often happens with compilations, where each chapter is written by a number of specialists, each interested in his special phase of technology, some chapters are excellent and others leave much to be desired.

This book is a valuable reference for the plastics engineer, patent attorney, and all others interested in the fundamental principles of plastics processing.

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