

Polymer Devolatilization

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- edited by Ramon Albalak Marcel Dekker 1996

This is unquestionably the best and most comprehensive book on the subject. It is clear that the intent of the book is to provide the practicing engineer with the tools to understand and develop the devolatilization process. It is well organized; starting with a general introduction to devolatilization and chapters on thermodynamics and diffusion. Don't worry, while there are an appropriate bunch of equations they are aimed at the practicing engineer and there is also a rather nice flow chart as to how one should go about estimating diffusional properties.

The next four chapters are devoted to the subject of foams, nucleation, growth, model description of the process as a whole, and a microscopy based phenomenological study of foam devolatilization.

The next six chapters are device specific; they include devolatilization in falling strand and slit devices, and devolatilization in the three main types of extruders used single, intermeshing co rotating twins and counter rotating non intermeshing twin screw extruders.

The next five chapters discuss industrial applications and read like real chemical engineering case studies. They are all detailed and specific. I personally found them very interesting.

The final chapter is one of the longest and discusses in detail methods and issues with volatiles analysis techniques. This provides sufficient detail as to be able to duplicate the methods (equipment models/evaluations including relative price), as well as almost cookbook techniques to ensure consistent analysis.

One of the first things I look at in assessing the reference value of a book is to review the index and the bibliography. The authors and Professor Albalak have done an outstanding job of both. Each chapter has a reference list with good references. In the appendix, there are abstracted references of 61 books, chapters, presentations and papers written since 1983. (That makes it a pretty complete current list.) The index not only references topics, but particular polymer solvent systems discussed in the book. This makes it easy to locate information of interest. The next thing I look for is brevity (unlike this review). Chapters average 15-20 pages, with references, which is about right. There are two additional appendices on solvent/polymer properties that are rather complete.

Two negatives come to mind: the first is the need for a chapter analogous to the very practical treatment of the measurement of residual volatiles on the measurement of physical properties (diffusivity and solubility) with a discussion of the practical issues to be aware of. The second is

price. The book is rather expensive but I believe is well worth the price, especially if you consider that no other reference/ text is really necessary.

- Ken Powell, Becton Dickinson Research Center