

Paste Flow and Extrusion

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by J. Benbow and J. Bridgwater, Oxford Series on Advanced Manufacturing, No. 10, Clarendon Press, Oxford, 1993., ISBN 0 19 856338 8

Quite often, we associate the use of extruders as the sole domain of the plastics industry. While the large majority are devoted to plastics compounding and shaping, there are a significant number of machines that are used for processing foodstuffs, ceramics, explosives, and the like. Unfortunately, very little has been published on the design and operation of extruders or the applied rheology for these sorts of materials. The 150 page text by Benbow and Bridgwater attempts to fill that gap for the extrusion of pastes and associated materials. This text would be especially of value to those working in the fields of ceramics processing, or food processing. The approach is very applications driven, with the emphasis being on practical application of the principles of rheology, die design, and screw design put forth by the authors. The text is divided into 11 chapters, including a rather extensive one on worked examples. Earlier chapters cover such topics as paste formulation, the basics of paste rheology and various laboratory evaluation methods, and a brief discussion of various defects caused by flow or phase separation due to flow.

For those who are well versed in extruder and die design, some of the chapters may be somewhat of a review. It is clear from much of the text that the area of paste extrusion remains very much an art and lags behind traditional plastics extrusion design in terms of rigorous application of flow modeling, mixing science, etc.

There is an extensive table of extruder manufacturers presented in Chapter 9, which lists types of extruders offered, materials of construction, maximum lengths, maximum speeds, etc., that should be of value to those unfamiliar with commercial extrusion specification. Overall, this text should be a welcome addition to the extrusion technologist's library, covering a facet of the industry that seldom receives the attention that it deserves. The book may also prove a useful source for research areas for those looking to branch out beyond the realm of plastics processing.

- R. Jerman, Rohm and Haas