SIMULATED SERVICE TESTING IN THE PLASTICS INDUSTRY

INTRODUCTION

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One of the early attempts to explain plastics properties occurred in 1944.[2] It was evident then that many plastic materials were not highly flammable, did not melt at the slightest provocation, and possessed a rare combination of properties which made them not only desirable but also essential for the satisfactory operation of many electrical and mechanical devices. In the twenty years between 1944 and 1964 much effort was devoted to writing standard testing methods and specifications so that the materials were no longer laboratory curiosities but became accepted articles of commerce. Many new names were also introduced such as polyethylene, polythene, polypropylene, polycarbonates, epoxies, and styrene alloys. Many of these words are now well known to laymen as well as engineers and technologists.

Needless to say, not all of the plastic products were a success. One or two broken dishpans or toys, however, are easier to comprehend than thousands of miles of completely successful communications cables or tons of successfully protected foodstuffs. In order to eliminate the failures, testing and specifications became more and more rigorous. Users complained of the inadequacy of the tests, and producers, in their zeal, kept repeating that plastics were different and that experience in metals could not be applied to interpretation of tests on plastics. As a result, plastic materials and testing matured. It was no longer possible to answer questions with simple, economical laboratory data.

The differences between plastics and other materials have been so emphasized that some of the similarities have been ignored. From having tests that tell you everything we have come full circle to having tests that tell you nothing. Either of these extremes is in error. The papers in this symposium have been selected to give the average reader a cross-sectional view of the entire industry and to show how simple laboratory tests, combined with technical knowledge, can lead to even better plastic products. The cables are now exposed to the damaging rays of daylight, laminated plastics make successful boats and missiles, and every home has its share of plastic pans and toys.

It has been said that history belongs to everybody but the future only to those who prepare for it. The authors of these papers feel that proper engineering professionalism combined with more complex laboratory techniques will ensure successful performance of products which now exist in imagination only.

Since it is impossible to describe all the art and engineering that have been developed, the authors have selected a few

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[2] Symposium on Plastics, Philadelphia District Meeting, Am. Soc. Testing Mats., Feb. 22-23, 1944.

random samples, representative of the entire industry. It is my opinion that they show the way to more sophisticated product development. Many of the tools they describe have been successfully applied to all materials. With these tools, however, proper interpretation and judgment depend more and more upon adequate background, training, and experience. We may even develop a group of half-breeds such as "metallurgists," although in more refined circles they may become known as the pioneers of interdisciplinary research. The similarity between these papers and others on metals, wood, and ceramics indicates that materials engineering has finally come into its own.

I should like to thank the authors for their contributions. Because of the breadth of the field, it is difficult to discriminate and still retain the theme of the meeting. I believe their approach should inspire others to follow suit.