

Introduction

Since the last ASTM Symposium on Impact Testing in 1955, there has been considerable effort expended relative to the merits of impact testing, particularly with regard to the Charpy V-notch test. Yet, the Charpy test continues to play an important part in many materials specifications.

To gain a clearer understanding of what an impact test tells us, many investigations have been conducted. These range from changing the configuration of the notch in the Charpy specimen to designing new specimens and tests for measuring toughness.

In impact testing, for example, the most recent advances are in the areas of instrumentation of Charpy equipment and modification of specimen geometry. Both advances are aimed to provide a clearer understanding of the impact test itself or to attempt to find meaningful correlations between the various fracture toughness criteria or both. Not to be overlooked are those efforts aimed at understanding the effects of test and specimen variables on the resultant test values. Coupled with these efforts have been modifications of the various tests or the implementation of new tests, such as the dynamic tear (DT) test, which now finds considerable application in the pressure vessel field. Fracture toughness investigations have been the cause of considerable discussion since the 1955 symposium.

Due to the interest and response to this year's symposium, four sessions were required, and their classification best expresses the theme of the symposium. In the first session, after the opening paper reviews the role that the various impact tests play in characterizing the toughness of materials, the remaining papers discuss various aspects of the standard Charpy test from the effects of material strength and thickness to the accuracy of the test itself and the factors affecting test results. The second session is directed largely to the use of instrumentation to record load versus time and aimed at measuring the various fracture toughness parameters. The last two sessions deal with the drop-weight and dynamic tear tests. The papers are quite diversified, ranging from applicable equipment, to effects of test variables, to correlations between the various tear tests or the Charpy test or both.

All of the above have contributed to the broadened scope of the current symposium. The end result is an excellent balance between theory and experimental results for the various means of assessing toughness.

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