

Overview

User experience with elastic-plastic test methods dates to 1981 when the first test standard in this field, ASTM E 813-81, J_{IC} , A Measure of Fracture Toughness, became a part of the ASTM Standards. This original standard provided a starting point for standards development in elastic-plastic fracture mechanics throughout the world. In 1983 the first symposium on User's Experience with Elastic-Plastic Fracture Test Methods was sponsored by ASTM Committee E24 and held in Knoxville, Tennessee. Papers and discussion presented at this symposium was published in *ASTM STP 856* in 1985. The work presented included not only criticism of E 813 but also new and improved test techniques and many suggestions for improvement of elastic-plastic test technology.

This forum of new work and criticism had direct application to the development of a dramatically improved version of E 813 as well as the completion of a second test standard, ASTM E 1152, Determining *J-R* Curves, both of which were first included in the ASTM Book of Standards in 1987.

Much work has continued in the field of elastic-plastic fracture mechanics, and the new work is again having a direct impact on the ASTM test standards. The Second Symposium on User Experience with Elastic-Plastic Fracture Test Methods was held in Orlando, Florida, in November of 1989 to again bring together the experts with experience to share in testing of elastic-plastic and fully plastic materials. Papers presented cover experiences with the test standards, suggestions for improvements and modifications, possible redefinition of the limits of applicability, and applications to a range of materials including polymers. Generally the presentations and discussions at this symposium demonstrate a higher level of satisfaction with the E 813-87 standard than there was with the E 813-81 standard. Many suggestions for improvements were made and will become a basis for a continued evaluation of elastic-plastic test standards.

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