Plane Strain Crack Toughness Testing of High Strength Metallic Materials

AMERICAN SOCIETY FOR TESTING AND MATERIALS
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PLANE STRAIN CRACK TOUGHNESS TESTING OF HIGH STRENGTH METALLIC MATERIALS

by William F. Brown, Jr., and John E. Srawley

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Foreword

The objective of this report is to present a state-of-the-art survey of the analytical and experimental basis for determination of the plane strain crack toughness of metallic materials. It is anticipated that the information presented will serve as a basis for formulating recommended practices for K_{Ic} testing.

This publication is a cooperative effort of ASTM and NASA. Most of the data contained here were obtained at the NASA-Lewis Research Center as part of a NASA-NRL Cooperative Program for Plane Strain Fracture Toughness Testing. By cooperating with ASTM in publication of this information, NASA is helping to fulfill its obligation to provide the widest practicable and appropriate dissemination of the results from its research activities.

This publication was prepared for ASTM Committee E-24 on Fracture Testing of Metals as the first report of Subcommittee I on High Strength Metallic Materials. The authors are with NASA Lewis Research Center, Cleveland, Ohio. The members of the subcommittee are: G. E. Pellissier (chairman), U. S. Steel Corp.; C. D. Beachem, U. S. Naval Research Laboratory; W. F. Brown, Jr., NASA Lewis Research Center; J. E. Campbell, Battelle Memorial Inst.; T. J. Dolan, University of Illinois; R. H. Heyer, Armco Steel Corp.; J. H. Hodge, U. S. Steel Corp.; G. R. Irwin, U. S. Naval Research Laboratory; J. G. Kaufman, Alcoa Research Laboratory; J. M. Krafft, U. S. Naval Research Laboratory; F. R. Larson, Watertown Arsenal; J. R. Low, Jr., General Electric Co. Research Laboratory; P. C. Paris, Lehigh University; J. E. Srawley, NASA Lewis Research Center; C. F. Tiffany, Boeing Co.; and Volker Weiss, Syracuse University.

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Fracture Toughness Testing and Its Applications, STP 381 (1965), $19.50

Contents

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