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Comments, criticisms, and suggestions are invited, and should be forwarded to ASM International.

ASM International staff who worked on this project include Steve Lampman, Acquisitions Editor; Bonnie Sanders, Manager of Production; Carol Terman, Jill Kinson, and Nancy Hrivnak, Production Editors; and Scott Henry, Assistant Director of Reference Publications.

Library of Congress Cataloging-in-Publication Data

Handbook of workability and process design / edited by George E. Dieter, Howard A. Kuhn, Lee Semiatin.

p. cm.
Updated and expanded ed. of: Workability testing techniques. 1984.
ISBN 0-87170-778-0

TA460.H3195 2003
671.3—dc21
2003052197

ISBN: 0-87170-778-0
SAN: 204-7586

ASM International®
Materials Park, OH 44073-0002
www.asminternational.org

Printed in the United States of America

Multiple copy reprints of individual articles are available from ASM International, Technical Department.
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Preface

Workability is a vital aspect of the processing of materials, having roots in both material behavior and process design. Whether a part can be produced by plastic deformation without cracking or the generation of other defects is of important economic consequence. Because of the complex nature of the workability of metals, there is no single test that can be used to evaluate it. Several laboratory tests have been developed that are useful in screening materials for workability, but in other instances, very specialized tests that are specific to the process are commonly used.

The Handbook of Workability and Process Design is an update and expansion in scope of Workability Testing Techniques that was published by the American Society for Metals in 1984. This original work was developed by the Metal Working Group of ASM to provide a readily available description and interpretation of the most common workability tests in the deformation processing of metals. Prior to its introduction, this information was widely scattered in the literature. The nearly 20 year life of this book bears witness to the value and acceptance of the concept behind this project.

At the time of the formulation of Workability Testing Techniques, the use of finite element methods (FEMs) for the modeling and simulation of metal deformation processes was in its infancy. In the ensuing 20 years, the use of FEM analysis for process design has become rather commonplace. Therefore, in contemplating this revision and update, the editors decided to expand the scope to incorporate process design, especially as influenced by FEM analysis. By doing this, the Handbook of Workability and Process Design takes on a more mathematical flavor than its predecessor while still retaining a balance with its original intent. Thus, the chapters that describe the various workability tests continue true to the original intent of providing practical workability testing techniques that can be used by the inexperienced practitioner.

We appreciate the contributions from the many experts who have contributed to this Handbook. Also, special thanks go to Steve Lampman, of the ASM staff, who not only provided editorial guidance throughout this project but also expertly provided the chapters that describe the basics of forging, rolling, extrusion, and wire-drawing.

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