

---

---

**Method for evaluation of tensile  
properties of metallic superplastic  
materials**

*Méthode de détermination des caractéristiques de traction des  
matériaux métalliques superplastiques*

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 20032:2013](https://standards.iteh.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013)

<https://standards.iteh.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013>



iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 20032:2013](https://standards.iteh.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013)

<https://standards.iteh.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
Foreword.....	iv
Introduction.....	v
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Symbols, terms and definitions.....</b>	<b>1</b>
<b>4 Principle.....</b>	<b>3</b>
<b>5 Test piece.....</b>	<b>4</b>
<b>6 Apparatus.....</b>	<b>5</b>
6.1 Testing machine.....	5
6.2 Clamping device for test pieces.....	5
6.3 Heating apparatus.....	5
6.4 Atmosphere.....	5
6.5 Thermometric apparatus.....	5
<b>7 Procedure.....</b>	<b>6</b>
7.1 General.....	6
7.2 Method for clamping the test piece.....	6
7.3 Measurement of the test temperature.....	6
7.4 Application of the force.....	6
7.5 Method for dimensional measurement of test pieces.....	6
7.6 Method for determining the superplastic elongation.....	6
7.7 Determination of strain rate sensitivity exponent ( <i>m</i> -value).....	7
7.8 Determination of the <i>m</i> -value with the R-type test piece.....	8
<b>8 Test report.....</b>	<b>10</b>

ISO 20032:2013

<https://standards.iteh.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 2, *Ductility testing*.

This second edition cancels and replaces the first edition (ISO 20032:2007) of which it constitutes a minor revision.

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

[ISO 20032:2013](https://standards.itih.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013)

<https://standards.itih.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013>

## Introduction

Superplastic forming requires the characterization of metallic superplastic materials. The tensile test specified in this International Standard permits the evaluation of superplastic properties, such as superplastic elongation, flow stress, strain rate sensitivity exponent ( $m$ -value), stress-strain relation and flow stress-strain rate relation.

iTeh Standards  
(<https://standards.itih.ai>)  
Document Preview

[ISO 20032:2013](https://standards.itih.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013)

<https://standards.itih.ai/catalog/standards/iso/384c4efd-790a-42c2-91db-3aa060fcf114/iso-20032-2013>

