

Fourth edition  
2022-05

---

---

## **Iron ores for blast furnace feedstocks — Determination of reduction under load**

*Minerais de fer pour charges de hauts fourneaux — Détermination de  
la réduction sous charge*



Reference number  
ISO 7992:2022(E)

© ISO 2022



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of ISO 7992:2022. Click [here](#) to purchase the full version from the ANSI store.

## Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>1</b>
<b>5 Sampling, sample preparation and preparation of test portions</b> .....	<b>2</b>
5.1 Sampling and sample preparation.....	2
5.2 Preparation of test portions.....	2
<b>6 Apparatus</b> .....	<b>2</b>
<b>7 Test conditions</b> .....	<b>6</b>
7.1 General.....	6
7.2 Reducing gas.....	6
7.2.1 Composition.....	6
7.2.2 Purity.....	6
7.2.3 Flow rate.....	6
7.3 Heating and cooling gas.....	7
7.4 Temperature of the test portion.....	7
7.5 Loading of the test portion.....	7
<b>8 Procedure</b> .....	<b>7</b>
8.1 Number of determinations for the test.....	7
8.2 Chemical analysis.....	7
8.3 Reduction.....	7
<b>9 Expression of results</b> .....	<b>8</b>
9.1 Preparation of the reduction curve.....	8
9.2 Calculation of the differential pressure at 80 % reduction ( $\Delta p_{80}$ ).....	8
9.3 Calculation of the change in the height of the test bed at 80 % reduction ( $\Delta h_{80}$ ).....	8
9.4 Repeatability and acceptance of test results.....	9
<b>10 Test report</b> .....	<b>9</b>
<b>11 Verification</b> .....	<b>9</b>
<b>Annex A (normative) Flowsheet of the procedure for the acceptance of test results</b> .....	<b>11</b>
<b>Annex B (informative) Derivation of equation for reducibility</b> .....	<b>12</b>

## 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 (see [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 (see [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.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 102, *Iron ore and direct reduced iron*, Subcommittee SC 3, *Physical testing*.

This fourth edition cancels and replaces the third edition (ISO 7992:2015), which has been technically revised to adjust the apparatus described in the previous edition according to the original text.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

This is a preview of ISO 7992:2022. [Click here to purchase the full version from the ANSI store.](#)

## Introduction

This document concerns one of a number of physical test methods that have been developed to measure various physical parameters and to evaluate the behaviour of iron ores, including reducibility, disintegration, crushing strength, apparent density, etc. This method was developed to provide a uniform procedure, validated by collaborative testing, to facilitate comparisons of tests made in different laboratories.

The results of this test have to be considered in conjunction with other tests used to evaluate the quality of iron ores as feedstocks for blast furnace processes.

This document can be used to provide test results as part of a production quality control system, as a basis of a contract, or as part of a research project.