

ISO/FDIS 9042:2023(E)

ISO/TC 17/SC 7

Secretariat: AFNOR

Date: 2023-01-09

## Steels — Point counting method for statistically estimating the volume fraction of a constituent with a point grid

Aciers — Méthode d'estimation statistique de la fraction volumique d'un constituant à l'aide de grilles de points

**FDIS stage**

ISO/FDIS 9042

<https://standards.iteh.ai/catalog/standards/iso/83122ec6-29d9-480f-acf9-2e15ce930a12/iso-fdis-9042>

© ISO 2023 — All rights reserved.

Edited DIS - MUST BE USED FOR FINAL DRAFT

Style Definition

Formatted: Font: Bold, French (Switzerland)

Formatted: zzCover large

Formatted: Left: 1.9 cm, Right: 1.9 cm, Bottom: 1 cm, Gutter: 0 cm, Section start: New page, Header distance from edge: 1.27 cm, Footer distance from edge: 1.27 cm

Formatted: French (Switzerland)

Formatted

Formatted: Cover Title\_A1

Formatted

Formatted: Footer, Left, Space Before: 0 pt, After: 0 pt, Line spacing: single

Formatted: Font: 11 pt

© ISO 2023, 2024

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

Formatted: Font: 11 pt, Bold

Formatted: HeaderCentered, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt, Bold

Formatted: Default Paragraph Font

Formatted: French (Switzerland)

Formatted: French (Switzerland)

Formatted: French (Switzerland)

Formatted: French (Switzerland)

Formatted: English (United Kingdom)

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

ISO/FDIS 9042

<https://standards.itih.ai/catalog/standards/iso/83122ec6-29d9-480f-acf9-2e15ce930a12/iso-fdis-9042>

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterPageRomanNumber, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt

Contents

Foreword .....v

1 Scope .....1

2 Normative references .....1

3 Terms and definitions .....1

4 Symbols and abbreviated terms .....1

5 Principle .....2

6 Apparatus .....2

6.1 Grid .....2

6.2 Means of observation .....4

7 Sample .....4

7.1 Sampling and number of samples .....4

7.2 Preparation of samples .....4

8 Procedure .....5

8.1 Selection of the grid .....5

8.2 Magnification selection .....5

8.3 Selection of the number of observed fields .....5

8.4 Array of the fields .....6

8.5 Examination and estimation of the fields .....6

8.6 Calculation of the volume fraction  $V_v$  .....7

9 Test report .....8

Bibliography .....9

Foreword .....iv

Introduction .....v

1 Scope .....1

2 Normative references .....1

3 Terms and definitions .....1

4 Symbols and abbreviated terms .....1

5 Principle .....2

6 Apparatus .....2

6.1 Grid .....2

6.2 Means of observation .....3

Formatted: Font: 11 pt, Bold

Formatted: HeaderCentered, Left, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt, Bold

ISO/FDIS 9042

<https://standards.iteh.ai/catalog/standards/iso/83122ec6-29d9-480f-acf9-2e15ce930a12/iso-fdis-9042>

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterPageRomanNumber, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt

7 — Sample — 3  
7.1 — Sampling and number of samples — 3  
7.2 — Preparation of samples — 3  
8 — Procedure — 4  
8.1 — Selection of the grid — 4  
8.2 — Magnification selection — 4  
8.3 — Selection of the number of observed fields — 4  
8.4 — Array of the fields — 4  
8.5 — Examination and estimation of the fields — 5  
8.6 — Calculation of the volume fraction  $V_v$  — 5  
9 — Test report — 7  
Bibliography — 8

Formatted: Font: 11 pt, Bold

Formatted: Font: 11 pt, Bold

Formatted: HeaderCentered, Space After: 0 pt, Line spacing: single

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

ISO/FDIS 9042

<https://standards.itih.ai/catalog/standards/iso/83122ec6-29d9-480f-acf9-2e15ce930a12/iso-fdis-9042>

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterPageRomanNumber, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt

## 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 document 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)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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 17, *Steel*, Subcommittee SC 7, *Methods of testing (other than mechanical tests and chemical analysis)*.

This second edition cancels and replaces the first edition (ISO 9042:1988) which has been technically revised.

The main changes are as follows:

- clearer definition of t multiplier and corrected values in **Table 4** (formerly Table 3);
- additional grid examples;
- application to digital images;
- change of terminology: Error % is now  $E_{rel}$ ;
- editorial changes.

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).

Formatted: Font: 11 pt, Bold

Formatted: Font: 11 pt, Bold

Formatted: HeaderCentered, Left, Space After: 0 pt, Line spacing: single

Field Code Changed

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: FooterPageRomanNumber, Space After: 0 pt, Line spacing: single

Formatted: Font: 11 pt

