FINAL
DRAFT

INTERNATIONAL STANDARD

ISO/FDIS 21062.2

ISO/TC **156**

Secretariat: SAC

Voting begins on:
2020-02-28

Voting terminates on:
2020-04-24

Corrosion of metals and alloys — Determination of the corrosion rates of embedded steel reinforcement in concrete exposed to simulated marine environments

Corrosion des métaux et alliages — Détermination des vitesses de corrosion de l'acier encastrés simulée de l'armature dans le béton exposé à l'environnement marin

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

Reference number
ISO/FDIS 21062.2:2020(E)

© ISO 2020

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

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
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea614-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

© ISO 2020 – All rights reserved

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).

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).

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea5a4-efe2-4bce-a44f-4883c0d78b4/iso-21062-2020

This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

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.

 © ISO 2020 – All rights reserved

Introduction

Structurally deficient concrete is caused by deterioration due to corrosion, mainly induced by chlorides from de-icing salts and marine exposure. The structural durability of concrete has become an issue of common concern to engineering.

The high humidity and high salt spray characteristics of the marine environment need higher durability structures. More specific requirements for the corrosion-resistant properties of reinforced steel bars, as well as the corresponding testing technology requirements, have been put forward.

In consideration of engineering practices, corrosion properties could be predicted on the basis of testing the corrosion rate via the comparative test of the steel bar specimen and a reference steel bar specimen. This document is consistent with the actual conditions of concrete structure exposure and can provide support for the development and selection of corrosion-resistant steel.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

© ISO 2020 – All rights reserved

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

Corrosion of metals and alloys — Determination of the corrosion rates of embedded steel reinforcement in concrete exposed to simulated marine environments

WARNING — This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices.

1 Scope

This document specifies the apparatus, materials, specimen preparation, procedures, results and reports for comparing the corrosion rates of steel reinforcement bars in concrete in simulated marine and coastal environments.

This document is not applicable to galvanized steel reinforcement. It gives guidelines for material selection in corrosion design.

In order to illustrate the methodology, Annex A provides examples of experimental results.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-
efe24bce-a44f-4888c0b7bb4b/iso-21062-2020

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1920-3, *Testing of concrete — Part 3: Making and curing test specimens*

ISO 1920-4, *Testing of concrete — Part 4: Strength of hardened concrete*

ISO 3673-1, *Plastics — Epoxy resins — Part 1: Designation*

ISO 6935-2, *Steel for the reinforcement of concrete — Part 2: Ribbed bars*

ISO 8407:2009, *Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens*

ISO 22965-1, *Concrete — Part 1: Methods of specifying and guidance for the specifier*

ISO 22965-2, *Concrete — Part 2: Specification of constituent materials, production of concrete and compliance of concrete*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

© ISO 2020 – All rights reserved

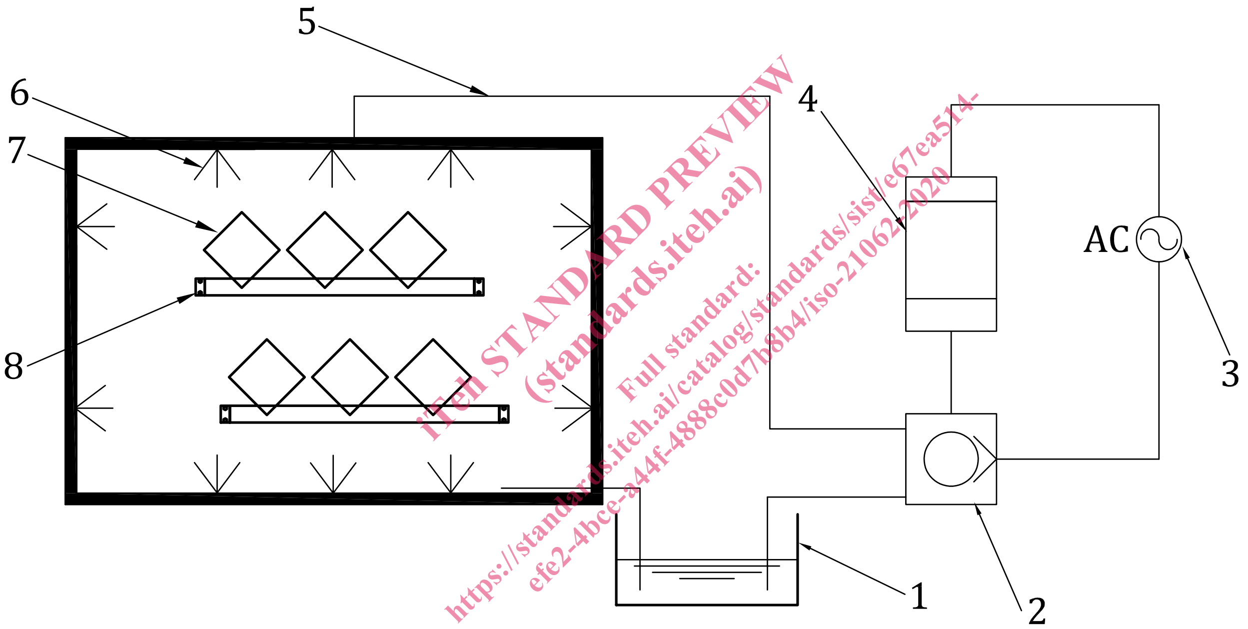
3.1
breaking of specimens
separation of specimens (which are steel reinforcement bars that have been encased in concrete) into fragments using a hammer or similar tools and then taking out the bars

4 Apparatus

4.1 Simulation chamber.

The simulation chamber shall be designed so that the test conditions can be obtained and controlled during the test. The simulation chamber shall be such that the conditions of homogeneity and distribution of the spray are met. A typical design of simulation chamber is shown in Figure 1. The placement of the concrete specimens is shown in Figure 2.

The test is conducted in a temperature range (approximately 5 °C to 30 °C). In special cases, other test temperature ranges may be adopted by agreement between the parties.



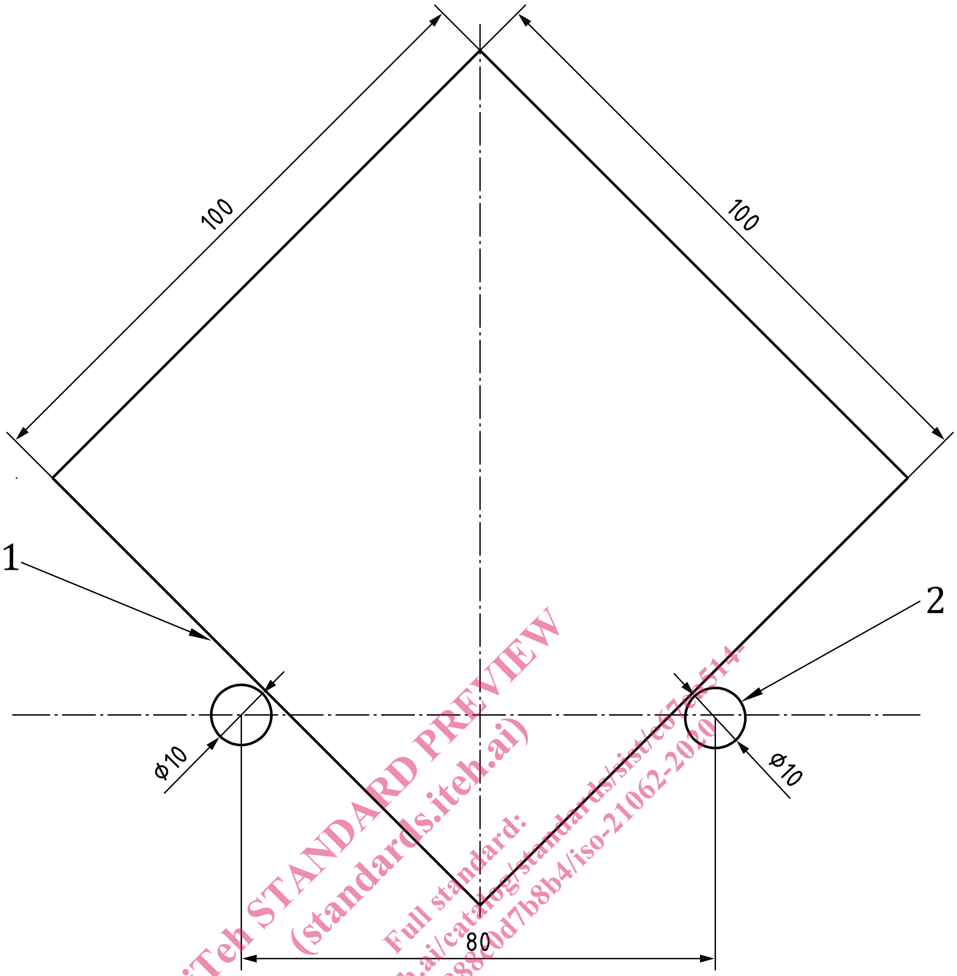
iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/e67ea514-efe2-4bce-a44f-4888c0d7b8b4/iso-21062-2020

Key

1 vessel with spray solution
2 pressurizing pump
3 power
4 control unit
5 tube
6 nozzles
7 specimens
8 specimen holder

Figure 1 — Typical design of simulation chamber

© ISO 2020 – All rights reserved



iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/c67c514-efe2-4bce-a44f-488800d7b8b4/iso-21062-2020

Key

1 specimen

2 specimen holder

NOTE All materials, such as plastic or stainless steel, that can support the mass of the specimens and have certain corrosion resistance can be used as specimen holders.

Figure 2 — Placement of concrete specimens

4.2 Spraying device.

The spraying device for the salt solution installed in the simulation chamber shall be capable of producing a fine mist or small droplets falling on the test objects.

Salt (5.5) solution concentration: 3 % ± 0,2 %, initial pH 7 ± 0,5.

4.3 System for forced drying.

The simulation chamber shall be equipped with a system for forced air flow drying, as after spraying/wet stand-by all test objects should be dried and it shall be possible to regain environmental control within a reasonable time.

The specimens are sprinkled every 12 h for 60 min ± 5 min. Then the ventilation system is turned on for 2 h to dry the specimens.

© ISO 2020 – All rights reserved