
**Corrosion of metals and alloys —
Determination of dezincification
resistance of copper alloys with zinc —
Part 2:
Assessment criteria**

iTeh STANDARD PREVIEW
*Corrosion des métaux et alliages — Détermination de la résistance à
la dézincification des alliages de cuivre avec le zinc —
Partie 2: Critères d'acceptation*
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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 on 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 the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

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

This first edition of ISO 6509-2 cancels and replaces ISO 6509:1981, which has been technically revised.

A list of all parts in the ISO 6509 series can be found on the ISO website.

Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc —

Part 2: Assessment criteria

1 Scope

This document specifies assessment criteria and provides guidance related to the corrosion type dezincification for the selection of copper alloys with a mass fraction of zinc of more than 15 %, exposed to fresh, saline waters or drinking water. The assessment criteria are based on the exposure tests in ISO 6509-1.

The materials can be in the form of a semi-finished product or in the form of a final product (fittings, valves, etc.).

This document is not applicable to complex products like flow-meters or pump-parts. In addition, other properties of the material might need to be taken into account for the intended application. This document is not intended to validate dezincification in case of failure in the application.

2 Normative references (standards.iteh.ai)

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 8044, *Corrosion of metals and alloys — Basic terms and definitions*

ISO 6509-1, *Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc — Part 1: Test method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

dezincification resistant copper alloy

copper alloys with a mass fraction of zinc more than 15 % tested according to ISO 6509-1 and fulfilling the assessment criteria in this document

4 Assessment criteria

The assessment criteria given in [Table 1](#) refer to dezincification depth determination using the method given in ISO 6509-1. The minimum requirement for an alloy to be classified as dezincification resistant is that both the average and the maximum depth of dezincification shall be less than the values in [Table 1](#) or in national standard documents as appropriate.

The assessment criteria in [Table 1](#) are based on a large amount of tests and long experience in practice, mainly on sanitary household installations (see Reference [\[1\]](#), [\[2\]](#) and [\[3\]](#)). Copper alloys with zinc satisfying these assessment criteria have been shown to satisfactorily resist dezincification for similar applications. Nevertheless, the corrosivity of the local water should be assessed when applying these assessment criteria as the likelihood of dezincification will depend on the local source of the water, flow rate and how well the system is managed. In some applications, more restrictive limits than those listed in [Table 1](#) might be required and relevant national standards shall be consulted where applicable (for example, JIS H 3250 for Japan[\[4\]](#), EN 12288 for the UK[\[5\]](#), NSF/ANSI 14 for USA[\[6\]](#) and product standards EN 12163 to EN 12168[\[7-12\]](#), EN 12420[\[13\]](#) and EN 1982[\[14\]](#)). The acceptance criteria for the application shall be agreed between interested parties. The values listed in [Table 1](#) will provide guidance on selecting dezincification resistant alloys but do not necessarily fully qualify a material for service in these environments as there may be other factors that need to be accounted for in assessing suitability of a material for the application.

Table 1 — Assessment criteria

End product type	Average dezincification depth, μm (max.)	Maximum dezincification depth, μm (max.)
(a) Final forgings and castings after machining, including continuously casted bars	100	200
(b) Extruded bars/profiles for machining purposes		
— longitudinal direction	300	400
— transverse direction	100	200

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- [4] JIS H 3250, *Copper and copper alloy rods and bars*
- [5] EN 12288, *Industrial valves. Copper alloy gate valves*
- [6] NSF 14-2015, *Plastic piping system components and related materials*
- [7] EN 12163, *Copper and copper alloys — Rod for general purposes*
- [8] EN 12164, *Copper and copper alloys — Rod for free machining purposes*
- [9] EN 12165, *Copper and copper alloys — Wrought and unwrought forging stock*
- [10] EN 12166, *Copper and copper alloys - Wire for general purposes*
- [11] EN 12167, *Copper and copper alloys — Profiles and bars for general purposes*
- [12] EN 12168, *Copper and copper alloys — Hollow rod for free machining purpose*
- [13] EN 12420, *Copper and copper alloys — Forgings*
- [14] EN 1982, *Copper and copper alloys — ingots and castings*

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