
Railway rolling stock material — Ultrasonic acceptance testing

Matériel roulant de chemin de fer — Essai de réception aux ultrasons





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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 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.

This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 15, *Railway rails, rails fasteners, wheels and wheelsets*.

This third edition cancels and replaces the second edition (ISO 5948:1994), which has been technically revised. The main changes compared with the previous edition are as follows:

- a test of hollow axles has been included;
- a testing technique to determine the ultrasonic permeability of axles with a reference block for choice has been added;
- more stringent acceptance levels applicable to wheels and axles used under the service condition of high train speed or high axle load have been added;
- the normative references have been updated.

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.

Railway rolling stock material — Ultrasonic acceptance testing

1 Scope

This document specifies the test conditions and the acceptance levels for ultrasonic acceptance tests for the railway rolling stock material, such as tyres, axles and wheels.

Unless otherwise agreed, this document is applied when the product standards require mandatory ultrasonic tests or when the ordered optional tests are made mandatory (see ISO 1005-1, ISO 1005-3 and ISO 1005-6).

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 5577, *Non-destructive testing — Ultrasonic testing — Vocabulary*

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO/TS 18173, *Non-destructive testing — General terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5577 and ISO/TS 18173 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/>

4 Ordering

4.1 If ultrasonic acceptance tests are optional according to this document but the purchaser requires that such tests shall be carried out this shall be specified in the order.

4.2 The types of tests, main characteristics and conditions for all kinds of products covered by this document (see [Clause 1](#)) are summarily provided in [Table 1](#).

4.3 Where appropriate, the following details may be agreed upon at the time of enquiry and order:

- a) the type(s) of ultrasonic acceptance test(s) to be carried out (see [Table 1](#), columns 1 to 6);
- b) the manufacturing stage(s) at which ultrasonic testing shall be performed (see [Clause 6](#));
- c) details of the surface condition (see [7.1](#));
- d) the requirements for the ultrasonic instrument (see [8.1](#)), probes (see [8.2](#)) and other devices (see [8.3](#));
- e) details of the reference blocks (see [Clause 10](#) and [Annexes A](#) and [B](#));

- f) the areas to be scanned, and the volume(s) to be tested (see column 11 and [Clause 11](#));
- g) the acceptance levels (see [Clause 13](#));
- h) details of the ultrasonic permeability testing of axles (see [Table 1](#), last row, and [8.2](#), [10.4](#), [11.4](#), [12.3](#) and [13.3](#)), if this test is required.

When these possibilities are used for agreements, care shall be taken that the test conditions and the acceptance levels remain compatible.

4.4 If the order and its technical specification does not specify the details given in [4.3](#), the manufacturer may assume that the type of test indicated with an “m” in [Table 1](#), column 2, shall be carried out, and that the normal test conditions and acceptance levels specified in this document shall apply.