

International Standard



1005/4

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Railway rolling stock material — Part 4 : Rolled or forged wheel centres for tyred wheels for tractive and trailing stock — Quality requirements

Matériel roulant de chemin de fer — Partie 4 : Corps de roues laminés ou forgés pour roues bandagées pour matériel moteur et matériel remorqué — Prescriptions de qualité

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Documents

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 1005/4 was prepared by Technical Committee ISO/TC 17, *Steel*.

It cancels and replaces ISO Recommendation R 1005/4-1969, of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Railway rolling stock material —

Part 4 : Rolled or forged wheel centres for tyred wheels for tractive and trailing stock — Quality requirements

1 Scope and field of application

1.1 This part of ISO 1005 specifies requirements for the manufacture and supply of rolled or forged wheel centres for tractive and trailing stock, which are suitable for tyreing and are made of unalloyed steels in accordance with table 1 and clause 4. Spoked wheel centres are not covered by this part of ISO 1005.

1.2 The quality requirements for tyres are given in ISO 1005/1 and the quality requirements for forged and rolled wheel centres are given in this part of ISO 1005. Quality requirements for cast wheel centres, if required, shall be subject to agreement between purchaser and manufacturer.

1.3 In addition to this part of ISO 1005, the requirements of ISO 404 are applicable.

2 References

ISO 83, *Steel — Charpy impact test (U-notch)*.

ISO 377, *Selection and preparation of samples and test pieces for wrought steel*.

ISO 404, *Steel and steel products — General technical delivery requirements*.

ISO 1005, *Railway rolling stock material*

— *Part 1 : Rough-rolled tyres for tractive and trailing stock — Quality requirements*.

— *Part 2 : Tyres, wheel centres and tyred wheels for tractive and trailing stock — Dimensional, balancing and assembly requirements*.

ISO 6892, *Metallic materials — Tensile testing*.

3 Information to be supplied by the purchaser

The purchaser shall supply the following information in his enquiry and order:

- a) the number of this part of ISO 1005;
- b) the grade of steel (see 4.1 and table 1);
- c) the type of heat treatment (see 4.2 and 6.5);
- d) the degree of finish (see 4.3);
- e) if a check analysis is required (see 5.1.2);
- f) the dimensions of the wheel centre (see 5.4);
- g) whether, in the case of finished wheel centres, the position and amount of residual static unbalance shall be marked (see 5.2.3);
- h) if any special marking is required (see 5.5);
- j) the conditions for machining and the elimination of unbalance (see 6.6);
- k) the type of inspection required (see clause 7);
- m) if special preparation and sampling of test pieces is required (see 7.7.2 and 7.7.3);
- n) the methods of protection against corrosion and mechanical damage (see 8.1 and 8.2);
- p) if the conditions of guarantee are to be agreed (see clause 9).

4 Classification

The wheel centres shall be specified in the order or its appended documents according to the grade of steel, the heat-treatment condition of delivery, the degree of finish and the type of inspection required.

4.1 Steel grades

This part of ISO 1005 covers steel grades C1, C2 and C3 having the characteristics given in table 1.



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4.2 Types of heat-treatment condition of delivery

The wheel centres shall be supplied:

- a) untreated (no symbol); or
- b) normalized or normalized and tempered (symbol N).

Irrespective of the heat-treatment condition specified, where no effective degassing has been carried out, suitable precautions, which may include for example slow cooling, shall be taken to avoid the formation of flakes (hydrogen cracking). If so requested, the representative of the railway authority shall be informed of the precautions taken.

4.3 Degree of finish

This part of ISO 1005 differentiates in accordance with ISO 1005/2 between the degrees of finish specified in 4.3.1 to 4.3.6.

4.3.1 Unmachined

This indicates the "black" as-forged or as-rolled condition without any subsequent machining other than that which may have been carried out by the manufacturer to enable the wheel centre to conform to the required standard.

4.3.2 Rough machined

This indicates the condition in which the wheel centre has received no final machining, but has been rough machined on all or only certain portions which have to be machined.

4.3.3 Half finished

This indicates a condition in which the wheel centre has received final machining on certain portions which have to be machined and are considered as finished, whereas other portions are unmachined or rough machined.

4.3.4 Finished

This indicates the condition in which all portions of the wheel centre which are required, by the order or the drawing, to be machined have undergone all machining operations other than those normally carried out by the manufacturer immediately before mounting the wheel centre on the axle, i.e. final finishing operation of the bore and, in the case of wheel centres which are to be tyred subsequent to mounting on the axle (see ISO 1005/2), perhaps the rim.

4.3.5 Ready for assembly

This indicates the wheel centre condition in which all necessary machining operations have been carried out.

For clarity this part of ISO 1005 differentiates between

- a) wheel centres ready for assembly of the tyre;
- b) wheel centres ready for assembly to the axle.

4.3.6 Unless otherwise agreed at the time of enquiry and order, the following degree of finish shall apply:

- hub and web: unmachined
- rim and bore: rough machined

5 Requirements

5.1 Chemical composition

5.1.1 The maximum contents of the various elements are given in table 1. These values apply to the cast analysis.

5.1.2 If a product analysis is required, this shall be stated on the enquiry and order. In this case, the results of product analysis may deviate from the requirements in table 1 by the values given in table 2.

5.2 Physical properties

5.2.1 Appearance

Those parts remaining black shall blend smoothly into the machined portions.

The finish of the machined surfaces, if any, shall be in accordance with ISO 1005/2 or the order or its appended documents.

The surfaces of the wheel centres shall not show any marks other than in the positions specified in the order or its appended documents.

5.2.2 Soundness

The wheel centres shall be sound throughout and without any defects detrimental to their use.

5.2.3 Weight distribution — Balancing

If specified in the order or its appended documents, the position and amount of the residual static unbalance of finished wheel centres shall be suitably marked (see 5.5.2).

5.3 Mechanical properties

The mechanical properties of the wheel centres shall be those shown in table 1.

5.4 Dimensional characteristics

5.4.1 The dimensions of the wheel centres shall be given in the order or its appended documents.

5.4.2 The tolerances on dimensional requirements and the permitted machining allowances shall be as specified in ISO 1005/2.