

Railway rolling stock materials —

Part 2: Specification for forged and rolled wheel centres

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Iron and Steel Standards Policy Committee (ISM/-) to Technical Committee ISM/69, upon which the following bodies were represented:

- British Railways Board
- British Steel Industry
- London Underground Ltd.
- Ministry of Defence
- Railway Industry Association of Great Britain

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Foreword

This Part of BS 5892 was prepared under the direction of the Iron and Steel Standards Policy Committee and supersedes BS 5892-2:1987, which is withdrawn. BS 5892, which covers railway rolling stock material, is published in the following six Parts.

- *Part 1: Specification for axles for traction and trailing stock;*
- *Part 2: Specification for forged and rolled wheel centres;*
- *Part 3: Specification for monobloc wheels for traction and trailing stock;*
- *Part 4: Specification for forged and rolled tyres;*
- *Part 5: Specification for steel bars for retaining rings for tyred wheels;*
- *Part 6: Specification for wheelsets for traction and trailing stock.*

The format of this Part of BS 5892 has been revised to incorporate the requirements for dimensional tolerancing for wheel centres which were previously included in BS 5892-6. This Part of BS 5892 is related to ISO 1005-4; however, it has not been possible to obtain equivalence. It is also related to UIC 812-1.

BS 5892-1, BS 5892-3, BS 5892-4 and BS 5892-6 have also been revised to ensure consistency with the requirements of this Part.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded to BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 5892 specifies requirements for the manufacture, inspection and testing of forged and/or rolled wheel centres in the unmachined, part machined or ready for assembly condition for traction and trailing stock. This Part of BS 5892 includes requirements for the dimensions, tolerances, and surface finish that are to be adopted unless otherwise specified in the design drawing.

NOTE The titles of the publications referred to in this Part of BS 5892 are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 5892 the following definitions apply.

2.1

unmachined

condition of a wheel centre that is forged and/or rolled having undergone no machining operation but is in the heat treatment condition specified (see 4.2)

2.2

part machined

condition of a wheel centre that is finish machined with the exception of the bore and the rim section

2.3

ready for assembly

condition of a wheel centre that has received all machining operations required for assembly

2.4

normal speed

operational speed up to and including 200 km/h

2.5

high speed

operational speed greater than 200 km/h

3 Information to be supplied by the purchaser

The following information to be supplied by the purchaser in the enquiry and order shall be fully documented:

- a) the number of this British Standard, i.e. BS 5892-2;
- b) a fully dimensioned drawing of the wheel centre;
- c) the type of heat treatment required (see 4.2);
- d) the degree of finish (see 4.3);
- e) the type of inspection quality assurance system required (see clause 7);

f) whether a statement giving the cast analysis and/or results of mechanical or other tests is required (see clause 12);

g) whether any special marking is required (see clause 6);

h) the method of protection against corrosion and mechanical damage (see clause 13).

4 Classification and heat treatment

4.1 Grade of steel

The steel used in the manufacture of wheel centres shall have the composition given in Table 1.

4.2 Heat treatment condition

The wheel centres shall be supplied in one of the following conditions [see item c) of clause 3]:

- a) untreated, which shall be designated by the letter U;
- b) normalized or normalized and tempered, which shall be designated by the letter N.

4.3 Degree of finish

Wheel centres shall be supplied in one of the following degrees of finish [see clause 2 and item d) of clause 3]:

- a) unmachined;
- b) part machined;
- c) ready for assembly.

5 Manufacture

5.1 Steelmaking

The wheel centres shall be made from steel produced by the electric process or the basic oxygen process.

The steel shall be killed in the furnace or in the ladle and treated to ensure that the finished wheel centres have a grain size of 5 to 8 as determined by the method in Appendix F of BS 4490:1989. Ingots shall be bottom poured.

5.2 Manufacture of wheel centres

The wheel centres shall be hot forged and/or rolled from one of the following:

- a) ingots; or
- b) rolled or forged bars; or
- c) continuously cast bars.

All feedstock materials shall be inspected to ensure that visible defects are removed prior to the manufacture of wheel centres. The ingot or bar sections shall be rough shaped and punched using a forging hammer or press and finally shaped by forging or rolling.