

Supplement Notice

Information for users

The attached standard:

RT/CE/S/021

Issue 2

has essential supplementary information

Instructions for use

It is essential that you first read and understand the supplement pertaining to the standard before proceeding to the standard. You must then apply the requirements of the supplement to the standard.

Proceed to supplement ►**I have read & understand the supplement.
Proceed to standard ►**

Ref	NR/SP/TRK/021
Issue	2
Date	February 2003

Steel Sleepers (formerly RT/CE/S/021)

This temporary front sheet facilitates change to the new Network Rail Standards referencing nomenclature.

The Ref above will be formally allocated to this standard when it is next changed in the meantime the contents, date and issue number of this Network Rail Standard are **UNCHANGED and with immediate effect it should be referred to as “(new ref) formerly (old ref)”.**

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Published & Issued by: Network Rail; 40 Melton Street, London NW1 2EE



Railtrack Company Product Specification

Steel sleepers

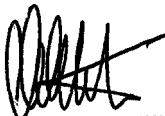
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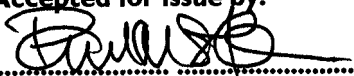
ENDORSEMENT & AUTHORISATION

Endorsed by:



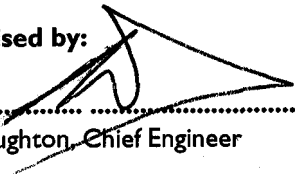
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Accepted for issue by:



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ISSUE RECORD

Issue	Date	Comments
1	Aug 1997	New specification
2	Feb 2003	Includes requirements for 30 tonne axle loads, 60EI rails and usage on curves of radius 250 - 400m

IMPLEMENTATION

The provisions of this specification are mandatory and apply from the date of issue.

COMPLIANCE

This specification shall be complied with by all manufacturers and purchasers of steel sleepers for use in Railtrack's permanent way.

Persons using this specification shall ensure that where a specific edition of any document is referenced, it is used. For other documents the edition current at the time of tender shall be used.

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Published & Issued by
Railtrack plc
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1 PURPOSE

To ensure the serviceability of steel sleepers installed in Railtrack's permanent way.

2 SCOPE

This specification details the information Railtrack requires in order to consider the type approval of steel sleepers proposed for installation in its infrastructure, and the criteria that will be applied.

Requirements are defined for geometry, durability, lateral resistance, rail fastening performance, electrical resistance and branding. Requirements are also set out for the control of the production process so that the consistency of the sleeper's performance is assured.

Sleepers for use with both 56EI and 60EI rails are covered but this specification does not cover sleepers for use in track with fishplated joints, other than insulated rail joints, nor for use where the cant deficiency exceeds 150mm.

Two categories of sleeper are included, distinguished by their cyclic loading resistance. The first is suitable for axle loads up to 25.5 tonnes and curve radii down to 400m; the second is suitable for 30 tonne axle loads and should also be used where the track radius is less than 400m but not less than 250m.

3 INFORMATION TO BE SUPPLIED BY THE MANUFACTURER WHEN SEEKING APPROVAL

- (a) Dimensioned and toleranced drawings of the sleeper that it is proposed to supply, including details of the pad and fastening system to be used.

- (b) A statement of how the manufacturer will ensure that all sleepers supplied meet the requirements of this specification. Sufficient detail shall be provided to enable the Purchaser or Railtrack to verify that the manufacturer is adhering to the stated method.
- (Note: Advice on achieving a consistent and verifiable performance is given in Appendix A).
- (c) The results of the tests required to demonstrate compliance with clauses **5**, **6**, **7** and **8**.
- (d) The method of packaging which will be used, including stack size.
- (e) Where extra holes may be drilled subsequently (including on site) to accommodate AWS equipment, cables etc., and what restrictions are to apply in respect of diameter and surface finish.

Changes to the design, materials or the production process from that used to produce the sleepers tested to provide the data reported here shall not be introduced without Railtrack's approval (this includes changes to the fastening assembly i.e. the clips, pads and insulators). Railtrack may require the repetition of the type approval tests described in this standard before approving changes.

4 GEOMETRY

The rail seat inclination shall be 2.9° (1 in 20) $\pm 0.2^{\circ}$.

The depth of the spade-end or of other features incorporated to enhance lateral resistance shall not exceed 100mm measured relative to the bottom edge of the rolled section at its centre.

Spade end depths shall not differ by more than 10mm.

Overall length shall not exceed 2580mm.

The sleeper soffit shall be continuous except that small apertures shall be included near the rail seat for the inspection of ballast condition. Small apertures necessary for fastening attachments and the attachment of cables may also be provided.

The internal width of the sleeper trough at the point where the sidewall angle exceeds 55° to the sleeper top-plate shall not be less than 200 mm. This may be reduced to 168 mm where the maximum axle load is not greater than 25.5 tonnes.

Where a sleeper intended for use with hook-in fastenings is proposed, the top plate thickness shall be either 10mm or 12mm, unless specifically agreed otherwise by Railtrack, in order to ensure compatibility with existing sleepers.

When used in conjunction with new rails of 56EI nominal profile which comply with RT/CE/S/061, the nominal track gauge shall be 1435 +3/-0 mm. When used in conjunction with rails of the 60EI nominal profile, the nominal track gauge shall be 1437+3/-0mm

5 FASTENING SYSTEMS

Fastening systems shall comply with the requirements of EN 13481-4 with the exception of those relating to electrical resistance which are replaced by clause **7** below. Tests shall be undertaken on at least five sleepers.

Fastening systems for use with 60EI rails shall be such that the sleepers may also be used with 56EI rails.

6 CYCLIC LOADING RESISTANCE

Tests shall be undertaken as described in Appendix B. If all the tests result in failures, the cyclic loading resistance of the sleeper system is unacceptable. If all the tests result in run-outs, the cyclic loading resistance of the sleeper system shall be deemed acceptable for usage under 30 tonne axle loads and on all curves of radius 250m or greater. Otherwise, depending on the anticipated usage, the mean minus two standard deviations value of the maximum force applied at the fatigue limit shall not be less than the value given below.

Max. Axle load	Min radius of Curvature (m)	Mean - 2 s.d. fatigue strength (kN)
25.5 tonnes	400	220
30 tonnes	250	260

Note. The requirements of this clause are intended to ensure that sleepers do not suffer from fatigue cracking in service. As with other types of sleeper, special precautions are still required to ensure track stability if the curve radius is less than 400m.

7 CONDUCTION OF ELECTRICITY

Sleepers shall be tested as described in Appendix D. Tests shall be undertaken on at least 5 sleepers both before and after the cyclic loading tests required by clause 5. Whether the sleepers are tested before or after cyclic loading, the tests shall be undertaken after the subsidiary mechanical tests (the measurement of longitudinal rail restraint, vertical stiffness and clamping force) required.

When tested in accordance with Appendix D, the value of rail-to-rail impedance of each sleeper after cyclic loading shall not be less than 10 k-ohm.

8 SLEEPER LATERAL RESISTANCE

The lateral resistance of the sleeper shall be not less than 4.5kN when tested as described in Appendix C.

9 BRANDING

The sleepers shall be branded on a part of the surface which will be visible after installation with

- (a) the designation mark of the manufacturer
- (b) the last two figures of the year of manufacture
- (c) the sleeper designation.

The branding shall be hot-rolled. The characters shall be at least 20mm high and 15mm wide and 0.8mm in relief. Each element of the marking shall be separated by a hyphen of minimum length 0.7 times the character height.