

Information for users

The attached standard:

RT/CE/S/052

Issue 3

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/052
Issue	3
Date	October 2002

Rail and Baseplate Pads (formerly RT/CE/S/052)

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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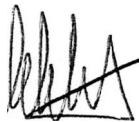
RAILTRACK

COMPANY SPECIFICATION

RAIL AND BASEPLATE PADS

Endorsement and Authorisation

Endorsed by:



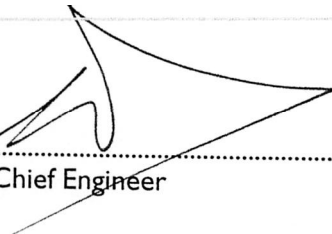
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Summary

This specification gives the requirements for resilient rail pads for use between either flat bottom rails and concrete sleepers or bearers, flat bottom rails and steel sleepers, flat bottom rails and baseplates; and between baseplates and sleepers or bearers.

Issue record

This specification will be updated when necessary by distribution of a complete replacement. Amended or additional parts of revised pages will be marked by a vertical black line in the margin.

Issue	Date	Comments
1	Sep 1996	Supersedes BR1213.
2	Oct 2000	Changes to load-deflection requirements; addition of impact attenuation requirements; provision for baseplate pads; removal of Appendices A to D.
3	Oct 2002	Simplification and clarification of certain test requirements (but no change to required results); electrical test to be on wetted pad; addition of elongation test; addition of pad shape coding system.

Responsibilities

This specification shall be complied with by all manufacturers and purchasers of rail pads and baseplate pads for use in Railtrack's permanent way. Persons using this specification shall ensure that they use the latest version of any document to which reference is made.

Implementation

The provisions of this specification are mandatory and apply immediately in respect of new product acceptance.

Existing Certificates of Acceptance and "Grandfather Rights" ceased to be valid from 1st August 2001. Certificates were re-issued on the basis of, as a minimum, acceptable electrical and impact attenuation performance. Holders of such certificates have until 1st August 2003 to demonstrate full compliance with this specification, except that the marking of pads with the shape code (Appendix B) shall be implemented within two years of the date of this Issue. Suppliers seeking acceptance for the first time, or of new pad types, must demonstrate full compliance with this specification from the outset.

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1 PURPOSE

This specification defines the performance and minimum quality assurance requirements for rail and baseplate pads used in Railtrack's infrastructure.

2 SCOPE

This specification covers the requirements for Railtrack's resilient pads for use between:

- flat bottom rails and concrete sleepers or bearers,
- flat bottom rails and steel sleepers,
- flat bottom rails and baseplates,
- baseplates and sleepers or bearers.

Baseplate pads or baseplates designed to give high levels of vibration attenuation are not included.

3 DEFINITIONS

A typical rail pad deflection characteristic is shown in Fig. 1, along with the definitions used in this specification.

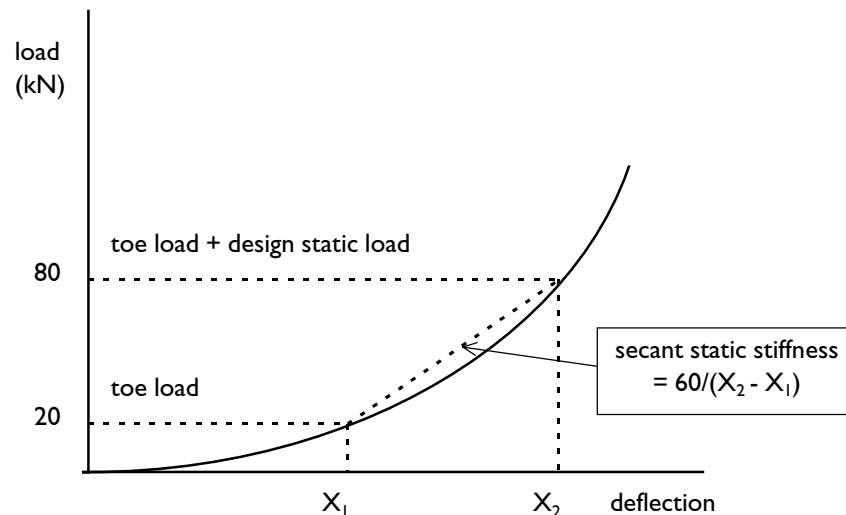


Figure 1 : Rail Pad Load/Deflection Characteristics

Toe Load

The compressive load on the rail pad in the absence of vehicle loading, i.e. that provided by the rail fastening system. This shall be taken as 20kN.

Design Static Load

The incremental compressive load (over and above the toe load) on the rail pad under the maximum static axle load. This shall normally be taken as 60 kN (a maximum wheel load of 125 kN and a sleeper reaction factor of 0.5 nominal). Added to the toe load, this totals 80kN.

Static Stiffness

The secant stiffness measured when the rail pad load is increased from the toe load by an amount equal to the design static load, at a loading rate of 500 kN/minute.

Low Attenuation Pad

A pad giving low attenuation of dynamic impact forces.

Medium Attenuation Pad

A pad giving a medium degree of attenuation of dynamic impact forces.

High Attenuation Pad

A pad giving a high degree of attenuation of dynamic impact forces.

4 PAD PROPERTIES

4.1 General requirements

Pads are required to

- provide a conformable interface between rails and sleepers/baseplates or baseplates and sleepers in order to prevent wear of the components;
- provide impact protection of components, particularly sleepers and ballast, under impact load conditions: generally, impact attenuation must be maximised within the limitations on pad thickness imposed by the rail fastening system;
- limit rail rollover and excessive fastening deflection on curves;
- provide satisfactory electrical insulation for signalling and traction return currents in the rail;
- form part of a rail fastening system that is resistant to rail creep;
- assist in keeping the sleepers square to the rail and preventing them from rotating;
- remain durable under railway service loading and environmental conditions;
- contribute to minimisation of noise and vibration emission.

It is acknowledged that some of these requirements are conflicting and that a universal pad is not available. Railtrack will therefore normally specify rail pads in three types:

- Type A: A pad giving high impact attenuation properties, suitable for most applications, and required for use on concrete sleepers in high speed lines
- Type B: A pad giving medium impact attenuation properties, acceptable for use on older (pre-F40) concrete sleepers which cannot accommodate the thicker Type A pads
- Type C: A pad for use in specific circumstances where softer pads may give unacceptable dynamic gauge widening or acoustic performance. Also for general use on steel sleepers.

4.2 Dimensions

4.2.1 In plan

The plan dimensions of the common forms of rail pad are shown in the following Railtrack Permanent Way Standard Drawings:

Drawing no.	Pad type	Application
RE/PW/187	'H'-shaped rail pads	Concrete or steel sleepers with Pandrol "e" or "PR" fastenings
RE/PW/188	'+' shaped rail pads	F19 (SHC) concrete sleepers.
RE/PW/195	Lipped rail pads	Concrete sleepers; cast iron baseplates
RE/PW/196	Lipped rail pads	Concrete bearers
Notes: This list is not comprehensive; other pads are listed in RT/CE/C/004 <i>Catalogue of Approved Permanent Way Drawings</i> . For dimensional details of all types of 'H'-shaped rail pads see Appendix B		

4.2.2 Thickness

The thickness requirements are to be met when the rail pad is installed under the normal clamping force (toe load) of the rail fastening system, i.e. 20 kN.

Pads are required in the following thicknesses and will be specified by the purchaser according to the application (see also Appendix B):

Pad thickness under 20kN	Application
5.0 ± 0.5 mm	(a) With sleepers with direct fastenings designed for 5mm pads, in new condition or with insignificant abrasion of the rail seat; (b) With metal baseplates designed for 5mm pads, for both new installation and maintenance installation.
7.5 ± 0.5 mm	(a) With sleepers with direct fastenings designed for 5mm pads, but with abrasion of the rail seat; (b) With sleepers with direct fastenings, originally designed for 5mm pads, in new condition or with insignificant abrasion of the rail seat, retrofitted with Pandrol e-plus clips.
10.0 ± 0.5 mm	(a) With sleepers with direct fastenings designed for 10mm pads, in new condition or with insignificant abrasion of the rail seat; (b) With metal baseplates designed for 10mm pads, for both new installation and maintenance installation.

4.3 Impact attenuation and stiffness requirements

4.3.1 Test methods - impact attenuation

No test results are required for

- pads for which low attenuation (Type C) is claimed
- pads formed of EVA (**Note:** with suitable surface configuration, EVA pads may exhibit high (Type A) or medium (Type B) attenuation results on test, but such results are not believed to be sustained in service).

Pads of similar thickness, surface configuration (if any) and material may be grouped together for test purposes, and the results reported for a “representative” pad with a surface area near the middle of the range.

The test method shall be as defined in prEN-13146-3 for an assembled fastening system. The track components used in the test shall be compatible with the rail pad to be tested. For the purposes of this specification, the maximum measured strain for the reference pad must be between 60% and 80% of the calculated cracking strain of a concrete sleeper. For Railtrack concrete sleepers this cracking strain will be typically in the region 300 – 350 microstrain. The calculated strain value and the measured reference value shall be quoted in the test report.

Impact attenuation shall be measured under a pre-load of 20kN, representing fastening toe load only.