

Technical Specification

T0441 Track: Under-sleeper pads

Issue: A1

MAYOR OF LONDON

Issue date: May 2015

Review date: May 2018

 **Documents**
Document Sharing Hub



Contents

1	Purpose	3
2	Scope	3
3	Requirements	3
3.1	General requirements	3
3.2	Durability	3
3.3	Bedding modulus values	4
3.4	Assessment of ballast protection capability	4
3.5	Resistance to pull-out from sleeper	5
3.6	Resistance to water and chemical agents	5
3.7	Resistance to freeze-thaw effects	5
3.8	Resistance to fire	5
3.9	Stacking of sleepers	5
3.10	Dimensions and masses	5
3.11	Effect on lateral stability of the track	5
3.12	Effect on track renewal and maintenance procedures	5
3.13	Track deflection and stiffness transitions	6
3.14	Quality control	6
4	Responsibilities	6
5	Supporting information	6
6	References	6
6.1	References	6
6.2	Abbreviations	6
6.3	Person accountable for the document	7
6.4	Document history	7
7	Attachments	7
7.1	Train loading and environmental performance criteria	7
7.2	Measurement of ballast contact area	7

1 Purpose

This technical specification gives performance requirements for under-sleeper pads (USPs) fitted to concrete sleepers or bearers.

2 Scope

This technical specification relates to USPs to be attached to concrete sleepers and bearers and intended for

- a) noise and vibration mitigation;
- b) protection of ballast (i.e. extension of ballast life).

3 Requirements

3.1 General requirements

- 3.1.1 USPs shall sustain the traffic loadings and environmental effects typical of the LU network. These are summarised in Attachment 1.
- 3.1.2 LU will select USPs on the basis of their primary intended purpose, i.e.
 - a) noise and vibration mitigation, or
 - b) protection of ballast (i.e. extension of ballast life).
- 3.1.3 USPs shall generally comply with EN 16730, subject to amendments or clarifications set out in this specification. Suppliers may be asked to submit evidence of satisfactory use in other railways in support of arguments for benefits achieved by the use of USPs, especially in respect of aspects not amenable to direct laboratory testing.
- 3.1.4 In the absence of test procedures and acceptance criteria in EN 16730 or this specification, suppliers may propose alternatives for consideration by LU.

Note: At the time of this technical specification EN 16730 is still in draft. The draft describes test methods but gives few acceptance criteria. The criteria given in this technical specification are based on information received from manufacturers regarding what their products typically achieve and what they would recommend for acceptance. This technical specification may be subject to revision when the EN is published.

3.2 Durability

3.2.1 Tensile strength

- 3.2.1.1 The tensile strength shall be measured using the method in EN 16730 (which refers to EN ISO 527-3).
- 3.2.1.2 Acceptance criteria:
 - a) >1 MPa for USPs intended for noise and vibration mitigation;
 - b) >2.7 MPa for USPs intended for ballast protection.

3.2.2 Fatigue testing – all USP types

- 3.2.2.1 The fatigue performance of all USP types shall be assessed in accordance with EN 16730, as follows:
 - a) Fix a sample of the USP to a concrete block. Place the block, with the USP on the underside, in a trough of ballast;
 - b) Measure the static and low-frequency (at the frequencies specified in EN 16730) dynamic bedding modulus values;
 - c) According to the measured static bedding modulus select and apply the appropriate loads for the cyclic test, using load category “TC1”;