DIN EN 16431:2014-10 (E)

Railway applications - Track - Hollow sleepers and bearers

Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms, definitions and abbreviations 5
3.1 Terms and definitions 5
3.2 Abbreviations 6

4 Requirements 6
4.1 General 6
4.2 General requirements 7
4.3 Functional requirements 7
4.4 Design requirements 8
4.5 Materials 8
4.6 Environmental requirements 9
4.6.1 Environmental test standards 9
4.6.2 Hot and cold temperature 9
4.6.3 Flammability 9
4.6.4 Effect of exposure to severe environmental conditions (optional) 9
4.7 Requirements for interfaces with mechanical equipments in case of integrated system (optional) 9

5 Test methods 9
5.1 General 9
5.2 Tests for fastening system and interface 9
5.2.1 Effect of repeated loading 9
5.2.2 Fixation of the fastening system on body 10
5.2.3 Attenuation of impact loads (Optional test) 10
5.2.4 Pad and assembly stiffness (Optional test) 10
5.3 Bending test for the body 10
5.4 Electrical resistance 11
5.5 Field test 11

6 Acceptance criteria for homologation 11
6.1 Fastening system and interface acceptance criteria 11
6.1.1 Effect of repeated loading 11
6.1.2 Fixation of the fastening system on body (optional test) 11
6.1.3 Attenuation of impact loads (optional test) 12
6.1.4 Pad and assembly stiffness (optional test) 12
6.2 Body acceptance criteria 12
6.2.1 Bending test acceptance criteria 12
6.2.2 Other acceptance criteria checked by FEM calculation 12
6.3 Electrical acceptance criteria 12
6.4 Field test acceptance criteria 13

7 Tests and tolerance for quality control 13
7.1 Dimension tolerances 13
7.2 Electrical resistance 13

8 Quality 14

8.1 General ... 14
8.2 Quality control during homologation tests ... 14
8.3 Quality control during manufacturing (Routine tests) ... 14

9 Traceability ... 15

Annex A (normative) Effect on repeated loading on fastening system and interface ... 16

A.1 General ... 16
A.2 Symbols ... 16
A.3 Principle ... 17
A.4 Apparatus ... 17
A.4.1 Rail ... 17
A.4.2 Load application head ... 18
A.4.3 Verification of calibration ... 18
A.5 Test specimens ... 18
A.5.1 Sleeper or other rail support ... 18
A.5.2 Fastening ... 19
A.6 Test procedure ... 19
A.6.1 General ... 19
A.6.2 Preparation for test ... 19
A.6.3 Cyclic loading ... 19
A.6.4 Visual inspection ... 20
A.6.5 Rail foot lateral displacement ... 20
A.7 Test report ... 21

Annex B (normative) Bending test for body only ... 22

B.1 Scope ... 22
B.2 Apparatus ... 22
B.2.1 Load application devices ... 22
B.3 Test specimens ... 24
B.3.1 Hollow sleeper or bearer body ... 24
B.4 Procedure ... 24
B.4.1 General ... 24
B.4.2 Test arrangement ... 24
B.4.3 Resilient pad ... 25
B.4.4 Procedure ... 26
B.5 Test report ... 27

Bibliography ... 28