

**Government of India
Ministry of Railways**



**INDIAN RAILWAY STANDARD SPECIFICATION
FOR SPECIAL CAST LINER
Provisional –2019 (First Revision-2020)**

**Track Design Directorate
Research Designs and Standards
Organisation Manak Nagar, Lucknow-226011**

0. Foreword

- 0.1 This specification is being issued for the first time as Indian Railway Standards Specification, Provisional -2019, in compliance to Railway Board's letter no. 2004/Track-II/22/22/1 Pt. (RDSO) dated 02.04.2019.
- 0.2 This standard specification is intended to cover the technical provisions relating to material, manufacturing and tests of Special liners for Zero Toe Load Fastening System on H – Beam Sleepers.
- 0.3 This specification has now been revised in 2020 to include an additional para for protection of the product.

1. Scope

- 1.1 This standard covers the requirement of special liner in Railway Track fastening application on H-beam sleeper over girder bridges. The special liners enable the rail to move freely (expansion/contraction) due to temperature variation without restraint at rail of the rail seat.
- 1.2 The special liners for this standard may be referred to as Castings.
- 1.3 This standard draws reference from Indian Standard specification IS: 1865 – 1991 “Iron castings with spheroidal or nodular graphite-specification”. The IS standard specification shall be used as reference document where so ever relevant for this Specification.

2. Manufacture

- 2.1 The Castings (special liners) shall conform to grade SG 500/7 of IS: 1865 – 1991.
- 2.2 The method of manufacture, including chemical composition and the heat-treatment, is left to the discretion of the manufacturer so long as the property requirements in this standard are complied with.

3. Dimensions

- 3.1 The castings (special liners) shall be accurately moulded (and cored) in accordance with the relevant RDSO's drawings of the special liners.

4. Heat treatment

- 4.1 The castings (special liners) may be supplied without heat-treatment if the mechanical properties pertaining to Grade G500/7 given in Table 1 of IS:1865 – 1991 are attained without heat-treatment.
- 4.2 When heat-treated, the heat-treatment cycle shall be decided by the manufacturer provided the specified mechanical properties are met with after the heat-treatment.

5. Freedom from defects

5.1 For this purpose the provision of Clause 8.1 and 8.2 of IS: 1865 – 1991 shall be applicable.

6. Microstructure

6.1 For this purpose, provision of Clause 9.1 of IS: 1865 – 1991 shall be applicable.

7. Hardness

7.1 When tested in accordance with IS: 1500 – 1983, hardness of casting shall be between 170 - 241 BHN.

8. Structural strength

8.1 The Casting shall be tested for structural strength relevant for the freely supported portion of the liner in assembly condition with Elastic Rail Clip MK-III as per test arrangement given in (Fig.1).

8.2 The castings shall withstand vertical downward load ‘P’ of 3000 kgf without any bending, crack or breakage (Fig.1).

9. Pre Acceptance Test

9.1 For pre acceptance test, 12 nos. samples of special liners shall be drawn as per following by the inspecting agency for testing in Special Cast Liners/Steel Base Plate manufacturer’s premises:

Nature of Test	No. of Samples	Acceptance level	Remarks
Hardness	4	Clause 7	Tests shall be conducted on Common samples
Microstructure	1	Clause 6	
Freedom from defects	4	Clause 5	
Structural Strength	1	Clause 8	

9.2 Out of 12 nos. samples of special liners drawn, dimensions of 8 nos special liners shall be checked with Go-No Go Gauges approved by RDSO to comply with Provision 3.1 of this standard.

9.3 All the samples mentioned above should pass the all tests indicated in Clause 9.1 & 9.2 above.

10. Acceptance quality tests for inspection (To be conducted in Special Cast Liners/Steel Base Plate manufacturer's premises)

10.1 Batch: 10,000 casting (Special liners) or part thereof of the same drawing shall constitute a batch for inspection.

10.2 Tests

Nature of Test	No. of Samples Per batch	Acceptance level
(i)Hardness	10	Clause 7
(ii)Microstructure	1	Clause6
(iii) Freedom from defects	10	Clause5
(iv) Structural Strength	1	Clause8

10.3 Dimensions of special liners shall be checked with Go-No Go Gauges approved by RDSO as per relevant gauge drawing to comply with Provision 3.1 of this standard. For sample size and acceptance double sampling plan as detailed in Tables 1 & 3 A (General Inspection Level- I) with AQL 2.5% of IS 2500 (Part 1) shall be applicable.

11. Retest

11.1 In case of failure to comply with any of the tests under Clause 10.2, twice the no. of samples shall be drawn and tested for that particular test. The results of testing of all samples should meet the acceptance standard for acceptance of the batch.

12. Protection

12.1 After satisfactory inspection, the Special Cast Liner shall be thoroughly cleaned and shall be given a protective coating with anti corrosive bituminous black paint conforming to IS:9862 before packing. Two coats of coating of thickness of 100 microns each shall be done after an interval of 8 hours between two coats.

13. Packing

13.1 The special liners shall be packed in double gunny/polythene bags, so as to avoid any loss or damage during transit. No bag shall contain special liners more than 50Kg.

14. Guarantee

14.1 The materials shall be guaranteed for one and half year from the date of supply or one year from the date these are put in track whichever is earlier.

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TEST ARRANGEMENT
FOR STRENGTH OF THE SPECIAL LINER

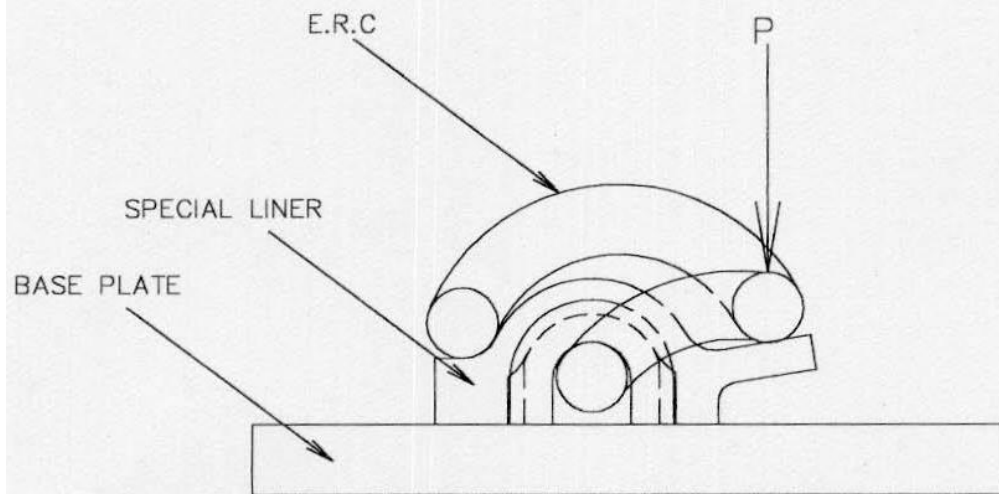


FIG.1