

Corrigendum No. 2 of Feb' 2023

Indian Railways Standards Specification
For
Elastic Rail Clips
Serial No. T-31-2021

The existing clause 3 has been reworded as under and two new clauses 4.11A and 15 have been added respectively.

3.0 RAW MATERIAL PROCUREMENT:

~~Quality Assurance / Mechanical Directorate of RDSO approves vendors for Spring Steel Round to grade 55 Si7 to IS: 3195. Spring Steel Round shall be procured from these vendors only. Vendors list are regularly updated by QA / Mechanical Dte. of RDSO. It can be accessed through RDSO website www.rds.indianrailways.gov.in~~

Spring Steel Rounds of grade 55 Si7 conforming to IS: 3195, for manufacture of Elastic Rail Clips (ERCs), shall be procured from RDSO approved / developmental vendors only. Vendors list can be accessed through website www.rds.indianrailways.gov.in or www.ireps.gov.in

4.11A INSPECTION OF RAW MATERIAL (i.e. SPRING STEEL ROUNDS) AT THE PREMISES OF PRODUCER OF SPRING STEEL ROUNDS :

The producer/manufacturer of spring steel rounds shall carry out the following tests and submit the necessary test certificates/reports. Further, documents pertaining to the steel manufacture, refining details, ingot shape and size of the rolled product, cropping yield etc. shall also be submitted.

- i) Heat number & Grade
- ii) Colour code
- iii) Chemical analysis
- iv) Inclusion rating
- v) Grain size
- vi) Depth of decarburization (C, P&T)
- vii) Freedom from harmful defects
- viii) Section/Dimension
- ix) Hardness
- x) Weight of consignment.
- xi) Reduction ratio

~~The ERC manufacturer, after getting the Purchase Order (PO) for supply of ERCs from Zonal Railway/ Tendering authority, shall subsequently place the PO for spring steel rounds to the spring steel manufacturer. Thereafter, the spring steel manufacturer shall approach the inspecting authority nominated by Zonal Railway/Tendering authority for inspection of requisite quantity of raw material i.e. spring steel rounds.~~

4.11A.1 While carrying out inspection of rolled bars the inspecting official would pay special attention to following:

- a) Size of ingots/billets used as verified from the records of the steel manufacturer.
- b) Dressing of complete billet by general surface grinding and freedom from surface defects.
- c) Discarding of end portions at both ends of each billet and freedom from piping.
- d) The size of ingot used shall be checked, recorded and verified that minimum reduction ratio 16:1 is ensured for the rolled bars offered for inspection.

4.11A.2 The inspecting official shall carry out the tests of properties mentioned in Para 4.11A (iii) to (ix), as per sampling plan given in Para 4.11A.5 of this document and maintain records. He may draw any additional number of samples and carry- out tests at his discretion. He shall also have the right to cross check any of the above parameters by actual tests at his discretion and at the cost of the spring steel manufacturer.

4.11A.3 The inspecting official shall examine various registers and records maintained by the spring steel manufacturer to verify heat wise checks carried out on various parameters and manufacturing practices like production of ingots with wide end up and hot top cropping of each ingot/primary rolled billet etc.

4.11A.4 Records for all the above tests shall be made available for scrutiny of inspecting official. Samples of the above test shall be preserved for atleast 3 months for counter check by inspecting official.

4.11A.5 Sampling (Random) of Spring Steel Rounds shall be as follows:

SN	Items	Relevant Specification	Sampling
1.	Chemical Analysis	IS:228	2 bars per heat
2.	Hardness	IS:1500	10 bars per heat.
3.	Macro Examination	IS:7739	0.5% subject to minimum of 5 bars per heat.
4.	Depth of Decarburisation	IS:6396	3 bars per heat
5.	Inclusion Content.	IS:4163	3 bars per heat
6.	Grain size.	ASTM-E112	3 bars per heat
7.	Visual checks for defects.	IS:3195	2% of black bars per heat.
8.	Verification of dimensional tolerance	IS:3195	5 bars per heat

4.11A.6 Inspecting official may pick up two samples per ~~500~~ 250 tonnes of material offered or part thereof and send the same to NABL accredited labs for confirmatory test for chemical and metallurgical properties at Spring Steel Manufacturer's expense. This test should not form part of purchase acceptance test but will only serve as a counter check on Spring Steel Manufacturer's quality control practice.

4.11A.7 Rejection: In case the material offered for inspection fails to meet any of the requirements laid down in specification, twice the size of the original sample shall be drawn and tested for the parameters in which the original sample had failed. If one or both the retest samples fail, the

complete heat shall be treated as failed. The manufacturer shall then undertake to render the heat unserviceable for Railways' use.

4.11A.8 Procedure of Inspection of Raw material i.e. spring steel rounds of dia 20.64mm/23mm of grade 55Si7 conforming to IS: 3195

- a) The inspection shall be carried out by the RDSO.
- b) Raw material manufacturer has to submit an advance intimation in writing, at least 15 days prior to their rolling schedule to RDSO, so that the inspecting officials can be nominated by RDSO accordingly.
- c) The Raw material manufacturer can offer the entire/partial quantity rolled or planned to roll for inspection.
- d) The raw material manufacturer shall offer the spring steel round bars, size wise and heat wise for inspection.
- e) The inspecting official will check all the parameters as per Para 4.11A.5 above and certify the manufacturer's test certificates (MTC) heatwise.
- f) Inspecting official shall issue Inspection Certificates (ICs) for the offered round bars, heatwise and shall paste a hologram on each bar.
- g) The raw material manufacturer will then supply the certified material to ERC manufacturers against their PO along with the certified true copy of manufacturer's test certificates (MTC) and certified true copy of IC.

~~After inspection of spring steel rounds, the inspecting official shall endorse the spring steel round's I/C(s) details on the front side of original invoice(s) & original test certificate(s) and forward the original test certificate and one of the original invoice (out of two) along with I/C(s) to PO issuing authority.~~

~~Spring Steel manufacturers shall maintain the detailed records of production, supply and stock of spring steel for all POs of spring steel rounds placed on it by ERC manufacturers, in a single machine numbered register.~~

~~Similarly, ERC manufacturer shall maintain detailed records of receipt, consumption & stock of spring steel rounds for all POs of ERCs placed on it by Zonal Railways/ PSUs/ private suppliers etc. in a single machine numbered register.~~

15 Consignee End Inspection of ERCs

15.1 The Purchaser/Consignee or its nominated representative shall pick up and seal 03 02 sample sets @ 20 30 nos. ERCs per lot in the presence of firm's representative within 01 month after receipt the material (ERC) at the consignee depot and shall be preserved in the consignee depot or nominated location for a period of one year from the date of receipt of material.

15.2 If the firm's representative does not turn up within one month after receipt of material (ERC) at the consignee end for joint sampling by Purchaser/Consignee, the sampling shall be done by Purchaser/Consignee solely.

15.3 The sealed sample set can be got tested by the Purchaser/Consignee, from RDSO or NABL accredited labs within 06 12 months from the date of receipt of material with the approval of an

officer not below the level of JAG of the concerned Zonal Railway or equivalent as per the discretion of Purchaser/Consignee—observation during field inspections/ specific nature of complaint from the field regarding performance of ERC . A total number of 14 nos samples (ERCs) shall be tested for conformity as per following scheme:

No. of Samples	Test to be conducted for conformity
14	Dimension
06	Hardness, depth of decarburization, freedom from surface defects and Micro structure and inclusion rating and chemical analysis on 02 samples
08	Toe-load, flat bearing area, application & deflection test

Second sample shall be kept as standby as per the provisions of ISO Apex documents. ~~Third sample shall be kept as an additional sample for reference/confirmation if required.~~

- 15.4 After decision for testing of samples, the supplier shall be informed to witness the test of first sample set. Second sample shall be kept as standby as per the provisions of ISO Apex documents.
- 15.5 If test on first sample set passes, no further action will be needed. In case the first sample fails as per acceptance / rejection criteria, ~~and~~ the corresponding lot is rejected, then the supplier/firm has to remove the rejected lot from the consignee depot at their own cost, but only after the supplier/firm has reimbursed payments already made by Purchaser/Consignee (if any) or an equivalent amount has been recovered for this purpose. However, the Purchaser/Consignee shall not be liable to return the material that is already put into track and the supplier/firm shall have no claim for compensation.
- 15.6 The rejected lot shall be removed by the supplier/firm within 03 months of date of rejection advice, failing which the Purchaser/Consignee shall not be liable to return the rejected lot and the supplier/firm shall have no claim for compensation for such material. The rejected clips shall be cut into two pieces by the supplier/firm at using oxy-acetylene flame at their own cost before removing the rejected clips from purchaser/consignee depot.
- 15.7 Financial recovery and Penal action shall be taken as per the provisions of ISO Apex documents and Railway Board's extant policy.
- 15.8 Acceptance / Rejection of the sample: The sample set will be subjected to the tests as as per Acceptance / Rejection criteria.

15.8.1 Dimension checking of ERC: (Defect and Non-conformity criteria)

Parameters	Main gauge	Dia .	Major axis	Minor Axis	Slip gauge 'L'	Slip gauge 'M'	Slip gauge 'N'	Slip gauge 'R'	Details at F	Application Block
Defect/Non conformity	D	D	NC	NC	NC	NC	NC	NC	NC	NC
Sample no. 1										
upto Sample no. 14										

- All the 14 clips shall be checked for dimension.
- More than three NC in a piece will constitute a defect.
- More than 16 NC in the set will render the whole set defective

15.8.2 Toe load, Application & Deflection and Flat bearing area checking of ERC: 08 nos. clips shall be checked for Toe load, Application & Flat bearing area

Parameters	Toe load	Application test	Flat bearing area
Whether Defect or NC	Defect, if the value is beyond the specified limit as per Annexure-V of IRS/T-31 in more than one clip	Application test shall be done on each piece as per Para 7.7 of IRS/ T-31. Non-conformity during application test shall be considered as a defect in any of the following conditions: - a) When any piece breaks during insertion or extraction in application block. b) When any piece cannot be driven into the application block. c) When any piece bounces back while driving into application block.	Defect, if value beyond as specified in Annexure-V of IRS/T-31 in more than three clips
Sample no. 1			
upto Sample no. 08			

15.8.3 M&C checking of ERC: 6 nos. clips shall be checked for Hardness (HRC), depth of decarburization & Surface condition

Parameters	Hardness (HRC)	Depth of decarburization	Surface condition
Whether Defect or NC	Defect, if deviation are beyond 2 on either side in more than one clip	Defect, if any piece having value beyond d/100 or 0.25mm.	Defect, if non conformity with the para 7.4 of IRS T-31 in more than one clip
Sample no. 1			
upto Sample no. 06			