

No.TFC/Spec./374/Safety chain

**SPECIFICATION FOR
SAFETY CHAIN FOR USE ON
INDIAN RAILWAY**

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SPECIFICATION FOR SAFETY CHAIN FOR USE OF INDIAN RAILWAYS BG STOCK

1.0 Foreword

1.1 This document includes technical inputs for safety chain to be used in sick line, yard, loco sheds, workshops, production units and other places or as and when required by railway officials of Indian Railways to protect the BG railway line/wagon temporarily.

2.0 Scope

2.1 This general technical requirement of safety chain for sick Line, yard, loco shed workshops, production units and other places or as and when required by railway officials to IS 3076:1984 Grade T (8).

2.2 These are electrically welded round steel short link chains, fully heat treated and tested and comply with the general conditions of acceptance of ISO 1834 or latest. The sizes range from 5 to 45 mm. (based on user requirement)

3.0 Specifications Referred

3.1 IS 3076:1984 Grade T(8) or latest

3.2 ISO 1834 or latest

3.3 ISO 643 or latest

3.4 ISO 1984 or latest

3.5 IS:5616-1982 or latest

4.0 Scope of supply

4.1 The chain shall comply fully with the requirements of ISO 1834 or latest as well as those of this international standard.

4.2 Safety Chain to IS 3076:1984 Grade T (8) or latest consisting of short link chain having nominal size of 11.2 mm to 14mm (based on user requirement) and long links at ends with hook/suitable locking arrangement for pad locking to the length of 2.5 m to 3 m (based on user requirement).

5.0 Material Requirement

5.1 The material for safety shall be as per IS 3076:1984 Grade T (8) or latest.

5.1.1 The steel used shall be produced by the open hearth or electric process, or by an oxygen blow process.

5.1.2 In its finished state, as supplied to the chain maker, it shall meet the following requirements as determined by check analysis on the rod, wire or finished link.

5.1.3 It shall be an alloy steel of reliable welding quality, capable of being heat treated to produce the mechanical properties required.

5.1.4 It shall be fully killed, and shall contain alloying elements in sufficient quantities to guarantee the mechanical properties of the chain after appropriate heat treatment. The alloy steel used shall contain nickel and at least one of the following alloying elements

Chromium
Molybdenum

Its contents of sulfur and phosphorous shall be restricted as follows:

	Cast analysis	Check analysis
Sulfur max.	0.035%	0.040%
Phosphorous max.	0.035%	0.040%

The steel shall be made in conformity with fine grain practice to give an austenitic grain size of 5 or finer when tested in accordance with ISO 643 or latest.

6.0 Technical/Manufacturing Requirement

- 6.1 All technical and manufacturing requirements shall be to IS 3076:1984 Grade T (8) or latest.
- 6.2 All chains shall be hardened and tempered before being subjected to the manufacturing test force. The tempering temperature shall be not less than 400⁰ C.
- 6.3 During manufacture, the heat treated chain shall be subjected to a force of 60% of the minimum breaking force specified in table 3, column 5 or table 5, column 5.

7.0 Testing

- 7.1 Tests shall be done as per IS 3076:1984 Grade T (8) or latest.
- 7.1.1 The testing of mechanical properties and measurement of tests shall be as specified in table 3 and 5 respectively of IS/ISO 3076:1984 or latest
- 7.1.2 The selection of samples shall be as specified in ISO 1834 or latest.
- 7.1.3 The static tensile test shall be as per Para 7.3 of IS/ISO 3076:1984 or latest.

- 7.2 All chains shall be hardened and tempered before being subjected to the manufacturing test force. The tempering temperature shall not be less than 400⁰ C.
- 7.3 During manufacture, the heat treated chain shall be subjected to a force of 60% of the minimum breaking force specified in table 3, column 5 or table 5, column 5.
- 7.4 The material shall be tested to comply with IS: 3076:1984 or latest.
- 7.5 The manufacturer shall supply the certificate of tests and examination carried out by Govt. owned lab or NABL approved labs.

8.0 Marking

- 8.1 Marking shall be done as per IS 3076:1984 Grade T (8) or latest.
- 8.2 The chain shall be marked with 'T' or 8 in a circle as recommended in IS 5616-1982: or latest.
- 8.3 The identification marking shall comply with the requirement of IS: 5616-1982 or latest.
- 8.4 Inspection marking shall comply with the requirement of IS: 5616-1982 or latest. The quality mark for the chain shall be applied as specified in ISO 1834 or latest.
- 8.5 The identification marking shall be as specified in ISO 1834 or latest.
- 8.6 The inspection marking shall be as specified in ISO 1834 or latest.

9.0 Packing & Other Customer Requirement/Commercial Issues

- 9.1 As specified by Indentor/Purchaser.

10.0 Test Certificate

The manufacturer shall supply a certificate of test and examination carried out by Govt. owned lab or NABL approved labs with every supply of chain. The certificate shall give the following information-

- a) Name of the chain maker,
- b) Grade of material,
- c) Size of chain,
- d) Identification marking,
- e) Proof force applied to the whole chain,
- f) Number of test samples taken,
- g) Breaking force of each sample,
- h) Total ultimate elongation at fracture.