

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

**STEEL, 110,000 PSI (758 MPa) YIELD
STRENGTH - HEAT TREATABLE**

EST-M1A154-A

1. SCOPE

The material defined by this specification is a hot-rolled, scale-free steel made by either open hearth, electric furnace, or basic oxygen process.

2. APPLICATION

This specification was released originally for materials used for truck frame side rails, reinforcements and other applications where additional physical properties are obtained by heat treatment.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 CHEMICAL COMPOSITION

Carbon	0.22 - 0.27
Manganese	0.85 - 1.20
Phosphorus	0.04 max
Sulphur	0.05 max
Silicon	0.30 max

3.3 MECHANICAL PROPERTIES AFTER HEAT TREATMENT

(Water Quench and Temper at 538 °C Minimum)
(ASTM E 8 and ASTM E 10)

3.3.1	Tensile Strength, min	125,000 psi (862 MPa)
3.3.2	Yield Point, min	110,000 psi (758 MPa)
3.3.3	Elongation, min	12.0 %
3.3.4	Hardness, Brinell	269 - 331

Date	Action	Revisions
2002 07 31	Revised	Updated and renumbered
1978 11 10		Metricated and Retyped
1969 03 06		Released CHY2-DR-913899 Original /s/ J. Raus

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3.4 BEND TEST

The test specimen shall bend, at room temperature, 180° around a mandrel having a diameter twice the thickness of the specimen without rupture.

3.5 MATERIAL ENDURANCE LIMIT AFTER HEAT TREATMENT (As Processed)

The B-10 endurance limit shall not be less than 37,500 psi (258 MPa) for test specimens selected at random.

A constant moment bending specimen is to be used for fatigue evaluation, the configuration of which is shown below. The top and bottom surfaces are to be as processed in the production state. The staircase technique is to be used for determining the endurance limit.

Ref: ASTM Special Tech. Pub. No. 91A, "A Guide for Fatigue Testing & Statistical Analysis of Fatigue Data," (Philadelphia, 1963) pp 48, 49.

Conversion Chart

in	mm
0.50	12.7
1.00	25.4
1.25	31.8
3.62	91.9
5.75	146.1

