

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

STEEL BOLTS - LOW CARBON

ESW-M1A150-AA

1. SCOPE

The materials defined by this specification are low carbon steels.

2. APPLICATION

This specification was released to cover the chemical and mechanical requirements for low carbon steel fasteners.

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

The fasteners must be made of steel conforming in chemical composition to one of the following SAE grades:

SAE 1013	SAE 1017	SAE 1021
SAE 1015	SAE 1018	SAE 1022
SAE 1016	SAE 1019	

3.3 MECHANICAL PROPERTIES (SAE J429)

3.3.1 Bolt Diameter 0.5 in (12.7 mm) and Less

Tensile Strength, min	69 000 psi (475 MPa)
Proof Load	55 000 psi (380 MPa)
Hardness, Rockwell "B", max	100
Hardness, Brinell, max	241

Date	Action	Revisions
2002 09 24	Revised	Updated and renumbered
1982 11 29		Metricated & Retyped CF4M-RD887294-21
1964 03 10		Released CP5-438028

Printed copies are uncontrolled

3.3.2 Bolt Diameter over 0.5 in (12.7 mm) to 0.75 in (19 mm) Inclusive

Tensile Strength, min	64 000 psi (440 MPa)
Proof Load	52 000 psi (360 MPa)
Hardness, Rockwell "B", max	100
Hardness, Brinell, max	241

3.4 MANUFACTURING METHOD

Cold headed

3.5 STRESS RELIEVING

Other than thin head bolts, stress relieving will not be performed unless specifically required by the engineering drawing.

Carriage head and other bolts with similar thin heads must be stress relieved at 595 - 650 °C for one hour minimum at heat. When this is done mechanical property requirements are waived.

3.6 BOLT IDENTIFICATION

Bolt heads shall be marked to identify the manufacturer.

3.7 QUALITY

Fasteners manufactured under this specification must be free of cracks, seams, banding and decarburization or other metallurgical defects which could cause premature failure of the part in service.