

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

STEEL - BOLT, SELF LOCKING

WSD-M1A292-B

1. SCOPE

The material defined by this specification is a heat treated steel with controlled surface hardness.

2. APPLICATION

This specification was released to define the requirements of bolts with underhead self locking features.

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 MATERIAL

The choice of steel composition is at the manufacturer's discretion and shall be suitable to meet the specified hardenability and other properties.

The general quality of manufacture of the steel and wire product for bolt making shall conform to the relevant national standard for the country of sourcing. In the absence of a national standard or for referee purposes, the steel shall conform to ISO 4954, section 1. Specific requirements for composition, mechanical properties and treatment condition of the wire shall conform to ISO 4954 or to the relevant national or industry standard.

3.3 HEAT TREATMENT

All bolts shall be case hardened and tempered to the required level as indicated.

3.3.1 CORE HARDNESS, HV30 265 - 325

The core hardness shall be determined at the mid-radial position on a cross section taken 1d from the threaded end.

Date	Action	Revisions
2002 09 30	Revised	Updated and renumbered
1989 02 28	B/031521TC	3.3.4 renumbered to 3.4, STEEL added to title
1989 01 09	SM/ER1996TC	Released, B.Edwards, EAO C.A.McKenney E.Staff

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3.3.2 SURFACE HARDNESS, HV5 380 - 500

The surface hardness shall be determined at any suitable position on the bolt, but no more than 0.02 mm of surface shall be removed during preparation of a suitable surface for the hardness test.

3.3.3 CASE DEPTH, mm 0.1 - 0.25

Case depth shall be determined for referee purposes by the microhardness traverse by the HV 0.3 method. The case depth is that depth with a hardness of 30 Vickers points above the actual core hardness. The surface hardness for this test shall be determined at 2.5 - 3 impression diagonals from the surface.

3.4 BREAKING FORCE, kN, min

(ISO 898/1 Clause 8.5 except 4 degree wedge angle)

Size	BREAKING FORCE
M6 x 1	15.5
M8 x 1.25	28.0
M10 x 1.5	45.0
M12 x 1.75	65.0

Fracture shall occur in the threaded area except for bolts and screws with special heads which are weaker than the threaded section.

The above requirements apply to head diameters up to 1.7d. For products with head diameters above 1.7d the head may be machined to 1.7d prior to test.

For products too short for tensile testing a 4 degree head soundness test will apply in accordance with ISO 898/1 section 8.7

3.5 PROTECTIVE FINISH

The protective finish shall be of a non embrittling type and shall be as released or as specified on the Engineering drawing for the part.

3.6 DEFECTS

The general quality of thread, occurrence and severity of thread defects shall conform to the requirements of the Worldwide Standard Parts Manual, WA990.

4. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification.

This material has a core hardness inline with ISO 898/1 property class 8.8.

Products manufactured to this specification will give mechanical properties similar to grade 8.8. However, the high surface hardness will lead to a reduction in product ductility.