

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

BEARINGS - STEEL - ROLLER AND BALL THROUGH HARDENED OR CASE HARDENED

WSD-M1A307-A

1. SCOPE

The materials defined by this specification are used to manufacture general purpose, anti-friction, ball, tapered roller or cylindrical roller bearings.

2. APPLICATION

This specification was released originally for material used in automotive chassis components, such as rear wheel bearings, differential bearings and pinion bearings; also transmission bearings.

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 MATERIALS

3.2.1 CUPS, CONES, BALLS AND ROLLERS

Bearing quality, plain carbon or alloy steel, having a cleanliness rating to pass ASTM A534 (case hardened steels)-maximum rating as in table 2 or ASTM A295 (through hardened steels)-maximum rating as in table 3.

3.2.2 CAGES

Low carbon steel. Non metallic cages may be supplied in applications as specified on the Engineering Drawing.

3.3 THROUGH HARDENED BEARINGS

3.3.1 MICROSTRUCTURE

The microstructure shall be maintained consistent with the initially approved sample.

Date	Action	Revisions
2002 09 23	Revised	Updated and renumbered
1988 12 21	B/O31519TC	3.2.1 Revised
1987 11 18	SM/ER 1265 TC	Released. J P C Lines, K J Thurgood. EAO

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3.3.1.1 QUENCHED AND TEMPERED

Fine acicular martensite with a uniform distribution of fine globular carbides. Decarburisation or a cementite network is not permitted.

3.3.1.2 ISOTHERMAL TRANSFORMATION (Optional)

Bainite (upper, lower or both) with a uniform distribution of fine globular carbides. Decarburisation or a cementite network is not permitted.

3.3.1.3 GRINDING BURNS

Cups, cones, balls and rollers shall be free of grinding burns.

3.3.2 HARDNESS (CORE AND SURFACE)

Cups and Cones : 59 - 65 HRC

Rollers and Balls : 60 - 66 HRC

3.4 CASE HARDENED BEARINGS (NOTE: Not applicable to Balls)

3.4.1 MICROSTRUCTURE

The microstructure shall be maintained consistent with that of the initially approved sample.

3.4.1.1 The case shall be tempered martensite without detrimental amounts of retained austenite or massive carbides and with no evidence of surface decarburisation. The core shall be free of any detrimental amount of ferrite.

3.4.1.2 GRINDING BURNS

Cups, cones and rollers shall be free of grinding burns.

3.4.2 HARDNESS

Case: (operating surfaces) 58 - 63 HRC

Core: (measured near maximum cross section) 46 HRC max