BEARINGS - LEAD BRONZE STEEL BACKED **WSD-M8A20-A1**

BEARINGS - LEAD BRONZE STEEL BACKED **WSD-M8A20-A2**

BEARINGS - LEAD BRONZE STEEL BACKED **WSD-M8A20-A3**

BEARINGS - LEAD BRONZE STEEL BACKED **WSD-M8A20-A4**

1. SCOPE

The materials defined by these specifications are medium leaded Bronze bearing alloys bonded to a low carbon steel backing.

2. APPLICATION

These specifications were released originally for material used in the manufacture of bearings and bushings for automotive applications. Uses range to include high loaded bushings and medium loaded main bearings.

3. REQUIREMENTS

3.0 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 CONSTRUCTION

The functional layer shall be either cast or an alloyed powder sinter bonded onto the steel backing and processed to final condition. Nickel interlayers between overlay and functional layer, and Copper or Brass interlayers between the functional layer and backing are permitted.

Layer and backing thicknesses as stated on relevant Engineering drawing.

3.3 CHEMICAL COMPOSITION (weight %)

3.3.1 Steel Backing

Cold rolled low carbon steel (0.03 - 0.25% carbon).

Date	Action	Revisions
2003 10 10	Revised	Para 3.0 inserted; para 3.1, 3.8 and 4 deleted
1993 03 04	C10283346	Released R. A.Cooper, EAO; A. N. Novakovic, NAAO

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3.3.2 Functional Layer

	A1	A2	A3	A4
Tin	4.0 - 6.0	1.0 - 4.0	0.15 - 1.5	2.5 - 4.5
Lead	14.0 - 20.0	18.0 - 27.5	20.0 - 27.5	12.0 - 16.0
Iron	0.7 max	0.7 max	0.7 max	0.7 max
Nickel	-	-	-	0.7 max
Total Others	0.75 max	0.75 max	0.75 max	0.75 max
Copper	Balance	Balance	Balance	Balance

Supplied composition shall fall within the above ranges, and limits will be defined as part of the control plan.

3.3.3 Overlay/Surface Coatings (as required by Engineering Drawing.)

Thickness 18 - 30 micrometers (unless specified differently on Engineering Drawing). Lead 80 to 95% with either:

a) Indium 5 – 10%
b) in 7 - 16%
c) Tin + Copper combined 8 - 20%
and/or
A Tin or Indium flash 3 micrometers max thickness.

The steel back may be Copper or Tin flashed (3 micrometers maximum) to aid adhesion and corrosion protection if required.

(Note: Plated Nickel flash allowed as diffusion barrier between overlay and functional layer).

3.4 ADHESION

The bond between the bearing layer and the steel backing must withstand the following test :

A sharp chisel with a cutting width of 10 mm minimum and a cutting angle of 40 - 50° will be forced at an angle of 30 - 60° between the bearing layer and the steel backing. The cutting motion of the chisel is in a direction which tends to pull the bearing layer away from the backing. The bearing layer must not flake or spall.

3.5 HARDNESS

(ISO 6507/ISO 6508/ASTM E 18, the average of 5 determinations minimum on the functional surface)

	A1 Cast	A1 Sintered	A2 & A3 Cast	A2 & A3 Sintered	A4
HV min	50	32	38	38	50
or					
HB min	45	30	35	35	45

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