

 Ranipet	Technical Delivery Conditions (TDC) For BLADE SHAFT BUSH COPPER BASE (SINTERED BRONZE)	Doc.Ref.	TDC:RTF:321
		Rev.No.	01
		Date:	25 10 2017
		Page No.	01 OF 02

1.0 SCOPE

- 1.1 This TDC specifies the requirements for supply of Blade Shaft Bush Manufactured by Powder Metallurgy Processes.
- 1.2 BHEL Drawing.

Base: Copper –Tin

The self-lubricating properties of this alloy are obtained by the addition of solid lubricant. The solid lubricant is homogeneously and finely distributed throughout the structure. The material has low ductility. The material is suitable for use with conventional lubricants.

2.0 Chemical properties

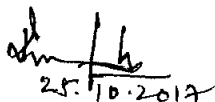
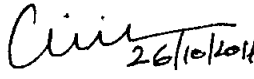
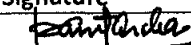
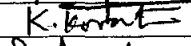
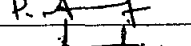
Element	C	Sn	Traces (P, Pb, Zn, Ni, Fe etc)	CU
Required Value (%)	5.70 - 6.20	12-13	Max 0.60	Remaining

3.0 Mechanical properties

Tensile strength (N/mm ²)	80 (Min)
Compressive strength (N/mm ²)	360 (Min)
Young's Modulus (N/mm ²)	49000 (Min)
Hardness	60 HB (Min)

4.0 Physical properties

Coefficient of linear thermal expansion (1/K)	18X10 ⁻⁶
Density (g/cm ³)	Approx. 6.8
Temperature range (°C)	-100 to 350

Prepared by  25.10.2017	Reviewed by	Signature	Approved by  26/10/2017 (Head / QA)
	ENGG(Fans)		
	QC (Proc)		
	MPL		
	Purchase		
	QA		

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5.0 Tribological Properties

Solid lubricant, graphite	% By weight	6
	% By volume	18 to 19
Limit value pU (dry running)		1.5 W/mm ²
Coefficient of friction	Dry	0.15 to 0.22
	Water	0.13 to 0.18

5.1 Chemical Resistance

The Chemical resistance is determined by the metallic matrix which is comparable to that of the cast material 2.01052(DIN 17050).

6.0 Inspection

- 6.1 Dimension and surface finish should be as per BHEL Drawing.
- 6.2 Weight of the individual Bush shall be submitted by the vendor, to be checked for drawing requirement.
- 6.3 Visual inspection: No linear crack is permitted.

7.0 Surface protection, marking and packing.

- 7.1 Surface to be protected.
- 7.2 Melt No./Heat No./Batch, specification and maker's emblem shall be stamped or Stenciled on each component.

8.0 Test Certificate

- 8.1 Guarantee and Test Certificate are to be submitted by the vendor.
- 8.2 Test certificate in English shall be submitted for following properties as per 3.1 of EN 10204 (PI see Cl.2.0 above) Melt No. / Heat No./Batch No. wise.

Record of revisions

Rev No.	Clause revised	Revision made	Date
00	--	Original Issue	19 08 15
01	2.0	Based on Sample test result	25 10 17