

SMC Powder Metallurgy, Inc.

P/M Material Specifications for Self-Lubricating Bearings

Grade	Material	Composition %	Typical Values						Recommendations	Equivalent Specifications
			Density g/cc	Porosity Volume % (min)	Strength Constant "K" PSI	Tensile Strength PSI	Elongation %, in 1"	Compressive Yield Strength (0.1%) PSI		
G-72	Diluted Bronze	Fe: 55 - 62 Cu: 34 - 38 Sn: 3 - 4 Other: 2.0 max	6.0 - 6.4	17	30,000				Low cost bearing material used at light to medium loads and medium to high speed.	MPIF: FCTG - 3604 - K22
G-117 LD	Bronze	Cu: 87.2 - 90.5 Sn: 9.5 - 10.5 Graphite: 0 - 0.3 Other: 2.0 max	6.0 - 6.4	24	19,000	10,000		7,500	General purpose bearing material	MPIF: CT-1000 - K19 ASTM: B 438 - 83a Class A, Type 1
G-220-1	Bronze (Medium Graphite)	Cu: 85.7 - 90.0 Sn: 9.5 - 10.5 Graph.: 0.5 - 1.8 Other: 2.0 max	6.4 - 6.8	17	23,000	12,000	2	10,000	These bearings will operate under heavy loads and high speeds and under moderately abrasive conditions.	MPIF: CT - 1001 - K23 ASTM: B 438 - 83a Class B, Type II DIN: SINT - B51
G-220-2	Bronze (Medium Graphite)	Cu: 85.7 - 90.0 Sn: 9.5 - 10.5 Graph.: 0.5 - 1.8 Other: 2.0 max	6.8 - 7.2	9	33,000	15,000	2	12,000	These bearings will operate under heavy loads and high speeds and under moderately abrasive conditions.	MPIF: CT - 1001 - K33 ASTM: B 438 - 83a Class B, Type III DIN: SINT - C51
G-243	High Strength Bronze	Cu: 87 - 89 Phos-Cu: 3 Sn: 8 Other: 1.0 max	6.8 - 7.2	12	40,000	24,000	3	21,000	Used for lower speed applications but has excellent strength for combination of structural parts and bearings.	MPIF: CT - 1000 - K37 ASTM: B 438 - 83a Class A, Type III DIN: SINT - B50

G-240	Bronze (High Graphite)	Cu: 82.5 - 87.5 Sn: 9.5 - 10.5 Graph.: 3.0 - 5.0 Other: 2.0 max	5.8 - 6.2	11	10,000				These bearings run very quietly. They tend to require less field lubrication and operate at somewhat higher temperatures.	MPIF: CTG - 1004 - K10
G-242	Bronze (High Graphite)	Cu: 82.5 - 87.5 Sn: 9.5 - 10.5 Graph.: 3.0 - 5.0 Other: 2.0 max	6.2 - 6.6	4	15,000				These bearings run very quietly. They tend to require less field lubrication and operate at somewhat higher temperatures.	MPIF: CTG - 1004 - K15
I-12	Iron	Fe: 97.7 - 100.0 Carbon: 0-0.3 Other: 2.0 max	6.0 - 6.4	17	23,000	18,000	1.5	16,000	Used as a bearing material for medium loads. Typically harder and stronger than 90-10 bronze at same density.	MPIF: F - 0000 - K23 ASTM: B 439 - 83 Grade 1 DIN: SINT - B00
I-14	Iron, Carbon	Fe: 97.1 - 99.4 Carbon: 0.6-0.9 Other: 2.0 max	6.0 - 6.4	17	32,000	35,000	0.5	41,000	These bearings result in a stronger than pure iron with higher crushing strength, greater wear resistance and higher compressive strength.	MPIF: F - 0008 - K32 ASTM: B 439 - 83 Grade 2 DIN: SINT - B11
I-43	Iron-Graphite	Fe: 93.9 - 97.2 Graph.: 2.5-3.5 Other: 2.0 max	6.0 - 6.4	12	16,000	15,000	1		This material has excellent damping characteristics and results in quiet running. May be impregnated with oil.	MPIF: FG - 0303 - K16