



SURFACE VEHICLE STANDARD

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Bearing Bushing Alloys Chemical Composition of SAE Bearing and Bushing Alloys

RATIONALE

The technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

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1. **Scope**—Compositions apply to the finished bearing or bearing lining, not necessarily to the alloy at an intermediate processing stage. All values not given as ranges are maxima. (See Tables 1 through 5.)
2. **References**—There are no referenced publications specified herein.

TABLE 1—LEAD AND TIN-BASED ALLOYS

	SAE 12 ISO SnSb8Cu4	SAE 13 ISO PbSb10Sn6	SAE 14 ISO PbSb15Sn10	SAE 15 ISO PbSb1As	SAE 16 ⁽¹⁾ —	SAE 17 —
Pb	0.50 ⁽²⁾	Remainder	Remainder	Remainder	Remainder	0.50
Sn	Remainder	5.0–7.0	9.0–11.0	0.9–1.7	3.5–4.7	Remainder
Sb	7.0–8.0	9.0–11.0	14.0–16.0	13.5–15.5	3.0–4.5	7.5–9.0
Cu	3.0–4.0	0.7	0.7	0.7	0.4	3.0–4.0
Cd	—	0.05	0.05	0.02	0.05	1.0–1.5
As	0.10	0.25	0.6	0.8–1.2	0.6	0.10
Al	0.005	0.005	0.005	0.005	0.005	0.005
Bi	0.08	0.10	0.10	0.10	0.10	0.08
Fe	0.10	0.10	0.10	0.10	0.10	0.10
Zn	0.005	0.005	0.005	0.005	0.005	0.005
Total						
Others	0.20	0.20	0.20	0.20	0.40	0.20 ⁽³⁾⁽⁴⁾

1. SAE 16 is cast into and on a porous sintered matrix, usually copper nickel or lead bronze, bonded to steel. For crankshaft bearings, the surface layer is 0.025 to 0.125 mm (0.001 to 0.005 in) in thickness.
2. ISO SnSb8Cu4 has 0.35 max. Pb.
3. A version of this alloy has 0.2 to 0.5 Ni.
4. A version of this alloy has 0.01 to 0.1 Cr.