LI015B

data sheet

Belmont

Babbitt Metals

Featuring:

High-Tin Babbitts • Lead-Base Babbitts

The use of bearing materials to reduce bearing friction can be traced at least back to the Roman chariot days. Soft metals such as Tin and Lead were unsuccessfully tried in the 1700's; but, it was not until 1839 that Isaac Babbitt patented a bearing with a Steel or Bronze shell lined with a Tin-base alloy. The alloy mentioned in the patent was 89% Tin, 9% Antimony and 2% Copper, which is amazingly close to today's very popular ASTM B-23 Grade 2 Babbitt containing 89% Tin, 7.5% Antimony and 3.5% Copper. Although the term "Babbitt" was originally applied to Tin-base alloys, it is now used to describe bearing metals with Lead or other metals as the major element.

Belmont Babbitt metals are manufactured under strict metallurgical control to provide sufficient softness for excellent conformability and embeddability, thereby offering good fluid-film forming properties. They are easily cast, can be rigidly bonded to Cast Iron, Steel or Bronze, will run satisfactorily against a Steel shaft, and show excellent corrosion resistance. Given suitable design of a bearing assembly, a properly selected Belmont Babbitt alloy will give effective service under a wide variety of conditions.

In addition to the traditional method of pouring molten Babbitt to form the bearing surface, Babbitt is often sprayed onto the bearing surface using Babbitt wire in metallizing equipment. The spray method is also used to seal the ends of rolled or stacked electronic condensers.

Belmont offers a broad range of both Tin and Lead-base Babbitt alloys to meet requirements for the most common applications. We also invite inquiries on Cadmium-base, Copper-base, Aluminum-base, and Zinc-base bearing alloys.

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Data Table

Belmont Alloy	Specific Gravity	Compressive Yield KSI 68°F	Compressive Yield KSI 212°F	Compressive Ultimate KSI 68°F	Compressive Ultimate KSI 212°F	Brinell Hardness 68°F	Brinell Hardness 212°F	Solidus °C	Solidus °F	Liquidus °C	Liquidus °F	Pouring Temp. °C	Pouring Temp. °F
7915 (Grade 1 Babbitt)	7.34	4.40	2.65	12.85	6.95	17.0	8.0	223	433	371	700	441	825
7881 (Genuine Babbitt)	7.39	6.10	3.00	14.90	8.70	24.5	12.0	241	466	354	669	425	795
7852 (Heavy Duty Babbitt)	7.46	6.60	3.15	17.60	9.90	27.0	14.5	240	464	422	792	490	915
78821 (No. 11 Babbitt)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5752 (1015 Babbitt)	9.73	3.55	1.60	15.65	6.15	22.5	10.5	240	464	268	514	338	640
5807 (Anti-Friction Babbitt)	10.04	340	1.75	15.60	6.15	20.0	9.5	237	459	272	522	340	645
58412 (No. 13 Babbitt)	10.97	3.40	NA	15.50	NA	17.7	8.0	243	460	254	490	327	620
5808 (Micrograin Babbitt)	10.05	NA	NA	14.20	NA	21.0	13.0	248	479	281	538	350	662

As=Arsenic • Cu=Copper • Pb=Lead • Sb=Antimony • Sn=Tin

Nominal Composition					Similar		Similar		
% Sn	% Sb	% Cu	% Pb	% As	ASTM B-23#	Similar QQ-T-390A#	SAE J460e#	Similar UNS	Belmont Alloy
91	4.5	4.5	— max	— max	1	1	—	L13910	**7915**
89	7.5	3.5	—	—	2	2	12	L13890	**7881**
84	8.0	8.0	—	—	3	3		L13840	**7852**
87.5	6.75	5.75	—	—	11		11	L13870	**78821**
10.0	15.0	—	bal	0.45	7	7	14	L53565	**5752**
5.0	15.0	—	bal	0.45	8	6	—	L53565	**5807**
6.0	10.0	—	bal	—	13	13	13	L53346 & others	**58412**
1.0	16.0	—	bal	1.0	15	10	15	L53620	**5808**

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Belmont High-Tin Babbitts

The most common alloys in this group contain 83-91% Tin, and are virtually Lead-free. All are based on the Tin-Antimony-Copper metallurgical system. As Copper or Antimony content is increased, hardness and tensile strength also increase, while ductility decreases. Their Brinell Hardness number provides a fairly reliable indication of their other physical properties, and therefore indicates their relative resistance to flow under load.

Belmont Lead-Base Babbitts

This group derives its desirable properties for bearing metal applications from its Lead-Antimony-Tin metallurgical system. This system, similar to the Tin-base type, features hard crystals within a relatively soft matrix.

Forms Available

Belmont Babbitt metals are provided as 40-lb. ingots, or as smaller ingots, six to eight lbs., with five sections, and wire for *flame spraying/metallizing* applications.

Data Tables

Belmont Babbitt metals are produced under strict metallurgical controls to assure consistent performance. While the data in the tables are based on the best available information, actual results with finished products may vary due to design and casting conditions.

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