A.B.C.'S OF BABBITT BEARING METALS

There is much confusion among customers about Babbitt Metals. We know, because of the numerous phone inquiries we receive from people like yourself, who are trying to help the customer get the right material for the job. Please don't misunderstand us, we are ready, willing and able to answer your questions cheerfully, but we thought it might be even more helpful if we wrote out some of the basic information in a format that you could keep for reference in your office. Should you want more copies, please don't hesitate to ask.

The A.B.C.'s of Babbitt Metals are as follows:

A. Babbitt Bearing Metals are basically divided into two families - Tin base and Lead base. Our most popular Tin base Babbitt Metal is Syracuse Government Genuine Babbitt (ASTM B23 Grade 2). Our most popular Lead base Babbitt Metal is Syracuse Stonewall Babbitt (ASTM B23 Grade 7).

B. Tin base Babbitts are best for high speed applications. Also, best for hard to lubricate applications, such as Marine shaft bearings. They are more expensive because of the high cost of Tin. Lead base Babbitt is best for low speed, heavy load or very dusty applications such as Sugar or Cement grinding mills. They are less costly.

C. It is much more important to buy the best available material for the job because on average the material is only 10% of the total job cost. Using cheaper, or more inferior materials, can be false economy, if the bearing fails sooner than necessary. We do not recommend using a Tin base Babbitt Metal made from secondary metals. Only primary metals should be used in alloying a Tin base Babbitt.

D. There are three commonly used standards used to specify the correct Babbitt. They are:

1. ASTM (American Society for Testing and Materials

2. SAE (Society of Automotive Engineers

E. United American Metals over the past 80 years has developed trade names for all of our Babbitt Metals. The following index shows first, United American Metals "Syracuse" brand name, then to the right, the equivalent standards, where applicable, for ASTM, SAE and Federal specifications.

F. TIN BASE ALLOYS:

Syracuse Government Genuine Babbitt  
89% Tin  
7½% Antimony  
3½% Copper  
Equivalent to:  
ASTM B23 Grade 2  
SAE 12  
Federal Spec. QQT390 Grade 2

Specifications Babbitt:  
84% Tin  
8% Antimony  
8% Copper  
Equivalent to:  
ASTM B23 Grade 3  
No SAE equivalent  
Federal Spec. QQT390 Grade 3

G. LEAD BASE ALLOYS:

Syracuse Stonewall Babbitt  
10% Tin  
14 3/4% Antimony  
1/4% Copper  
1/2% Arsenic  
Balance Lead  
Equivalent to:  
ASTM B23 Grade 7  
SAE 14  
Federal Spec. QQT390 Grade 7

Syracuse Manganese Anti-friction Babbitt  
5% Tin  
14 3/4% Antimony  
Balance Lead  
Equivalent to:  
ASTM B23 Grade 8  
Federal Spec. QQT390 Grade 6

H. Your cost for the Tin and Lead base alloys depends on the quantity ordered, and in the case of Tin base Babbitt, the Tin market price for the day of the quote. Quantity price "breaks" are at under 55 lbs., 55 lbs., 110 lbs. 550 lbs. and 1100 lbs. Standard package is 55 lbs. per carton.
BABBITTING ADVICE

by The United American Metals

2246 W. Hubbard Street – Chicago, Illinois 60612
Telephone (AC 312) 733-6700

1. Smoke the mandrel with an acetylene torch or coat it with lamp-black.
2. Burn all oil from the shell.
3. Clean the surface to be tinned, by scratch-brush or grinding.
4. Spread Tintite evenly over the cleaned surface.
5. Heat the shell to approximately 650° F.
6. With a clean rag, wipe the tinned surface to a bright finish.
7. Set up the shell and do not let the heat drop below 450° F.
8. Heat the mandrel to the pouring temperature of the babbitt.
9. Seal all seams with United American Damtite.
10. By this time the babbitt in the pot should have reached pouring temperature as indicated on this chart. (If the pouring of the bearing is not close to the pot, increase the heat of the babbitt by 50° F. to compensate for the drop in temperature between melting-pot and bearing).
11. Stir the metal with a skimmer employing a horizontal figure 8 movement.
12. Reduce the dross with Stanogen Dross Reducer and skim the dross from the surface of the metal.
13. With a heated ladle or dipper, preferably of a capacity to make the complete cast in one pour, pour the molten babbitt in a steady stream against the mandrel so as not to spatter. As the metal approaches the riser, slow down the flow but keep pouring until the metal overflows.
14. Immediately after pouring, cool the bearing by a fine spray of water, starting at the bottom and moving upwards. As a precautionary measure, have on hand wet rags to slap against leaks from unforeseen open seams or where the Damtite had not been firmly packed.

Alloyed by the Stanley Process
Name and design of ingot registered U.S. Patent Office
Heat at which to pour, 700° F - 375° C

Government Genuine is the highest grade of tin-base babbitt. This babbitt will not break under the heaviest shock, it will not creep under the heaviest pressure, it will not fail under the highest speed. No other babbitt has been known to show such a record of bearing performance as Government Genuine.

*It is folly to believe that babbitt which is to line an important bearing can be bought at a price based solely on the cost of the tin, copper and antimony in the metal. Babbitt for such bearings is a specialized product requiring not only the purest grades of tin, antimony and copper, but a thorough knowledge of the metallurgy required for scientifically alloying a babbitt metal.*

In cents per pound, Government Genuine Babbitt is probably the highest priced babbitt metal made. In quality, by which we mean its ability to give long wear under gruelling operating conditions, it is the most economical babbitt made. In its ability to withstand abuse, Government Genuine Babbitt has no equal.

Also available in wire form, 1/8" thick - 25lb. coils.

**STONEWALL**

**THE COPPERED BABBITT**

of the famous family of

**SYRACUSE BABBITS**

**ALLOYED BY THE STANLEY PROCESS**

Stonewall is not a brittle babbitt, yet hard enough to carry a heavy load without squeezing from the box. It does not shrink appreciably and can be used for large or small bearings. Because of its plasticity, it conforms at once to the shaft. For the same reason, where the shaft is scored, Stonewall is especially adaptable.

As indicated by its compressive and tensile strength, Stonewall coppered babbitt affords ample margin of safety for almost every bearing service where a high tin-base babbitt was believed to be essential. When it is considered that upon an applied load of 13,150 lbs., the nominal stress per square inch of Stonewall coppered babbitt is 21,900 lbs., that its maximum actual stress is 16,380 lbs. per square inch and at this stress the babbitt does not fracture, and that its yield point is at 8720 lbs. per square inch, it becomes evident that this is an extraordinary babbitt for bearings which are subjected to heavy load and pressure.

Strength without elasticity is of no avail in a babbitt. As evidence of the elasticity of Stonewall coppered babbitt, its breaking point in tensile stress versus strain is at 10,800 lps. per square inch. It is because of its tensility combined with its compressive strength that this babbitt can stand up so well under shock, load, pound, pressure and vibration.

Stonewall has a low coefficient of friction and, therefore, requires less lubricating attention than any other babbitt of equal strength. This property is of the utmost importance to a bearing operating under heavy duty and high speed.

"Bond it with TINTITE"

To bind a bearing to the back, a tinning operation is essential. Tintite bonds the babbitt firmly to the back, whether the shell is bronze, steel or iron.

The process is simple: Apply a thin coat of Tintite to the cold shell. If the shell is steel or cast iron, clean the surface thoroughly by sand blasting or by filing or with emery paper or grinding wheel. The brighter the surface, the better tinning job. Heat the shell until the Tintite melts, as will be evident when a brown area covers the surface. Wipe off the surface with a rag using a clean section for each pass.

Supplied in 1 lb. and 4 lb. cans.
Stonewall Babbit is recommended for the following machinery bearings and for all other bearings which operate under similar load, shock, speed, etc.

Abrasive machinery
Agitators
Allis Chalmers crushers
Aluminum Rolling mills
Ammonia compressors
Arbors (in saw mills)
Autocar trucks
Automotive trucks
Axles
Bacon slicers (large)
Bag pilers
Baggage carriers
Ball mills
Band saws
Barrel washing machines
Bearers
Beef Chippers (large)
Bending machinery
Blast furnace (blowing engines)
Blooming mill engines (cross head shoes)
Blooming mill engines (main crank pins)
Blowers
Bleaching machines (textile)
Booms
Box car loaders
Braiding machines (textile)
Brick machinery
Briquetting presses
Broaching machines
Brookway auto trucks
Buffing machines
Calendars (paper mills)
Card machinery
Carpel looms (textile)
Caterpillar tractors
Cement mills
Cenitilugals
Ceramic machinery
Champion crusher
Chippers
Chip wringers
(screwing cutting oils)
Chvy machinery
Cleaning equipment
Cold roll strip mills
Coining presses
Colloid mills
Compressors
Concentrators
Concrete machinery
Concrete mixers
Connecting rods
Conveyors
Cookers (rotary)
Cooper Bessemer engines
Corliss engines
Cotton gins
Cranes
Crank pins
Croahheads
 Crushers
Cryostizer drives
Cutters
Cutting machines
Cut-off machines
Diamond T auto trucks
Degreasing machinery
Diesel engines (main bearings)
Dipper dredges
Drawing presses
Dredging pumps
Drop hammers
Dryers
Dyeing machinery (textile)
Dynamics
Eccentrics
Eizers
Electric motors
Elevators
Embossing machines (general)
Excelsior machines
Extruding machines
Farrell jaw crushers
Federal motor trucks
Filing machines
Folding rolls
Flax mills (beaters)
Fleshing machines (tanning)
Flour mills
Fog mills
Ford motor trucks
Forging machines
Fourdriners
Gas engines (main bearings)
General Motor trucks
Generators
Gravel crushers
Great Lake boats
Grinders
Gruenfelder crushers
Gyrolary crushers
Hack saws (power)
Hamilton Corliss engines
Hammerrmill crushers
Hemp mills (beaters)
Hog bearings
Hoisting engines
Hot stahl mill
Hudson auto trucks
Ice crushers
International trucks
Jaw crushers
Jeffercy crushers
Jordania (shredders)
Kennedy Van Snau crushers
Knitting machines (textile)
Kominiter (cement mills)
Laboratory presses
Le France auto trucks
Loather
Leather presses (tanning)
Line shafts (main bearings)
Logging engines
Locoms (textile)
Loriemr Diesel engines
Lumber gangs
Machine tools (general)
Mack trucks
Marine engines (main bearings)
Meat slicers (large)
Mechanical press
Metal spinning machines
Mill gears
Mixing (crushers)
Mixing mills
Molding machines
Moore turbines
Ocean liners (line shafts)
Oil engines (main bearings)
Oil wells
Oro feeders
Osbrokko auto trucks
Pennsylvania crushers
Piercing presses
Pillow blocks
Platers
Polishers
Powder presses
Power presses
Power shovels
Pressure blowers
Press rolls (paper mills)
Printing presses
Propeller shafts
Pulp grinders
Pulverizing mills
Pumps (centrifugal)
Punching machines
Punch presses
Quarries (crushers)

Rag Rotaries
Railroad cars
Reduction gear drives
Reo motor trucks
Resaws
River boats
Rock crushers
Rolling Mills
Roll necks
Roll neck bearings (in steel mills)
Rotary cookers
Rotary saws (grain)
Sand dryers (rotary type)
Sanding machines
Sand pumps
Saws (band saws)
Saws (circular)
Saws (hot and cold in steel mills)
Saws (gang)
Screw lifts (grain)
Separators (tanneries)
Shaker screens
Shavers (tanneries)
Shearing machines
Sifters (flour mills)
Slabs
Slice valves
Speed reducers
Spline bearings (in steel mills)
Spinning machines (textile)
Scooping machines (wire)
Stacking machines (tanneries)
Steam engines (main bearings)
Steam pumps
Steam shovels
Sterling auto trucks
Stokers
Stretching presses
Stubchaker auto trucks
Sturtevant crushers
Swing jaw crushers
Swing saws
Symons Cone crushers
Tannery machinery
Telsmith crushers
Throw eccentrics
Tractors
Traylor crushers
Trimmers
Trimming presses
Trolley cars
Trunions
Tub mill
Tumbler mills (tanneries)
Turbinos
Turbo compressors
Unhauling machines (tanneries)
Universal crushers
Vacuum pumps
Valve guides
Veneer mills (lathes)
Warming mills
Waukesha motors
Water pumps
Water turbines
Water wheels
Wheel grinders
White auto trucks
Williams crushers
Wire cutting machines
Wire drawing machines
Wire forming machines
Wire straightening machines
Worthandton pumps
Yachts

**Stonewall Jackson**

**UNITED AMERICAN METALS CORPN**

AND AFFILIATED CORPORATIONS

BABBITT AND BEARING SPECIALISTS
HOW TO GET A PERFECT BOND

1. Burn out all oil from the shell.
2. Clean the surface of the shell by filing or with emery cloth, sand-blasting or by grinding wheel or scratch brush. The cleaner the surface the better the job.
3. Apply a thin coat of Tintite uniformly with a brush while the shell is at room temperature.
4. Heat the shell to approximately 650°F.
5. Wipe the tinned surface to a bright finish with a clean rag until the entire surface shows complete coverage.
6. Pour the babbitt immediately after wiping. The shell should not be below 450°F.

STIR WELL BEFORE APPLYING IMPORTANT: TO PREVENT HARDENING KEEP THE JAR OF TINTITE COVERED WHEN NOT IN USE AND STORE IN A COOL PLACE.

When babbitting steel or iron shells, the pouring temperature of the babbitt should be increased by about 200°F.

DANGER! Avoid contact with skin and eyes. In case of contact with skin or eyes, flush with water for at least 15 minutes. For eyes, get medical attention immediately. If swallowed, give plenty of water or milk or take person to hospital immediately. Avoid breathing fumes produced by soldering. Use adequate ventilation. See Z49.1, "Safety in Welding and Cutting" published by the American Welding Society. KEEP AWAY FROM CHILDREN.

UNITED AMERICAN METALS CORPORATION
2246 W. Hubbard Street, Chicago, Ill. 60612
DANGER
Contains Zinc Chloride
CAUSES SEVERE BURNS
MAY BE FATAL IF SWALLOWED
Read caution on side panel carefully

Net Weight, 1 lb.
"BABBITRITE"

A DAMMING, MOLDING, POSITIONING COMPOUND

- Resistant to Heat, Cold, Weather - Free from Moisture
- Holds tight, remains plastic and retains molten babbitt and low melting point materials
- Is easily packed in place and is reusable

SOME OTHER USES

1. CASTING LOW MELTING POINT ALLOYS and LEAD: BABBITRITE® receives the impression from a casting and is used in positioning delicate parts. It is also used as a dam when pouring gates and vents to hold the molten alloy in position until it hardens. BABBITRITE® helps produce chuck jaws and dimensional samples.

2. STOP-OFF COMPOUND: For containing lead alloy in the fabrication of lead punches and dies; and to prevent low melting point alloys from contacting locating surfaces on shuttle bases.

3. AIR CONDITIONING and REFRIGERATION: For sealing openings, joints and electrical leads around coolers and air conditioning units. BABBITRITE® remains flexible and in place when firmly applied.

4. ZINC CRUSHERS: In replacing mantles and bowl liners, BABBITRITE® is used to dam all openings while molten zinc is poured for backing up the mantles and bowl liners.

5. BUILDING INSTALLATIONS: For sealing ventilating fan frames, air ducts, and openings through walls.

6. MACHINERY INSTALLATIONS: Used as a retainer when pouring 190°F asphaltum in machine settings.

7. SOLDERING: Holds solder while soldering wires on generators.

8. SPLASH SHIELDING: Used as a shielding dam to protect operator and material from cutting compounds.

9. WELDING and BRAZING: Protects motors and machine parts and aids in positioning.

10. LEADED PIPE JOINTS: Retainer and funnel material for molten lead for ball and spigot pipes.

11. CHOCKER SOCKETS: Used as a mold material in fastening wire ropes.

12. HEAT TREATING: For coating machined surfaces to prevent scaling while in furnace. It is easily and quickly removed with minimal labor costs.