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COPPER BASE ALLOY

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This invention relates to alloys and more particularly to copper base alloys.

Copper base alloys commercially used today in contact with molten glass frequently possess properties which are not entirely satisfactory or adequate for such purpose so as to result in partial or complete failure. Accordingly the objects of the present invention are to provide an alloy which is characterized by having good thermal conductivity, increased resistance to oxidation by the molten glass, high wear resistance, good machinability, and resistance to attack by sulfur and its compounds which are present in the molten glass.

These and other objects and advantages are attained in accordance with the present invention with a copper base alloy containing selected specified amounts of aluminum and magnesium.

In particular it has been discovered that an alloy having the aforementioned desirable properties can be obtained by an alloy comprising the following metals:

Metal:	Percent by weight
Aluminum.....	6-10.
Magnesium.....	3-7.
Copper.....	Balance (83-91).

In the above alloy the copper apparently provides the resulting alloy with the desired good thermal conductivity while the aluminum and magnesium provide increased resistance to oxidation by the hot molten glass. The last two mentioned metals also impart increased resistance to attack by sulfur and its compounds which are present in the fused glass. In addition the magnesium and aluminum serve as hardening agents thereby increasing the wear resistance and machinability of the resulting alloy.

It has also been observed that certain modifications can be made in the composition of the alloy without adversely affecting the above desired properties. For example, lead up to .25 percent by weight and iron up to 2 percent by weight can be added to the alloy to improve the machinability of the alloy further without detracting from the other properties of thermal conductivity and resistance to chemical attack by the molten glass in contact with the alloy. It is to be understood that both the iron and lead can be present at the same time.

Patentability of a copper-magnesium aluminum alloy in general is not alleged by the present invention but rather of such an alloy having the specific range of metals as disclosed above. Although the alloys of this invention have been described as particularly suitable for use in contact with a corrosive fluid such as molten glass, it will be apparent to those skilled in the art that the alloys of

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this invention can be employed with considerable advantage in other applications in which good thermal conductivity, high wear resistance, good machinability, and overall resistance to chemical attack are desired.

While the illustrative embodiments of the invention have been described hereinbefore with particularity, it will be understood that various other modifications will be apparent to and can readily be made by those skilled in the art without departing from the scope and spirit of the invention. Accordingly, it is not intended that the scope of the claims appended hereto be limited to the example and description set forth herein but rather that the claims be construed as encompassing all the features of patentable novelty which reside in the present invention including all features which would be treated as equivalents thereof by those skilled in the art to which the invention pertains.

What is claimed is:

1. An alloy containing about 3-7 percent by weight of magnesium, 6-10 percent by weight aluminum, and the balance copper.

2. An alloy corresponding to the following composition by weight:

Metal:	Percent
Aluminum.....	6-10.
Magnesium.....	3-7.
Lead.....	Up to .25.
Copper.....	Balance

3. An alloy corresponding to the following composition by weight:

Metal:	Percent
Aluminum.....	6-10.
Magnesium.....	3-7.
Iron.....	Up to 2.
Copper.....	Balance

4. An alloy corresponding to the following composition by weight:

Metal:	Percent
Aluminum.....	6-10.
Magnesium.....	3-7.
Lead.....	Up to .25.
Iron.....	Up to 2.
Copper.....	Balance

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