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SIMULATED GOLD ALLOY

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This invention relates to the making of simulated gold articles for jewelry purposes and the like.

There are compositions of the prior art which attempt to simulate gold, especially in terms of color. Such compositions are usually based on copper or an alloy of copper. However, all of this type of simulated gold, with which we are familiar, is too reddish in hue compared to actual gold, and therefore has not found too favorable an acceptance in commercial channels.

It is a common practice, in the jewelry art, to plate these copper-base simulated gold articles with a thin layer of real gold e.g. of 14 or 18 kt. purity. When this plating wears off in one or more areas, the underlayer, which is the copper base, or copper base alloy material, is seen, and because its color is appreciably different than the actual gold, it is quite noticeable and detracts considerably from the value of the gold simulated article.

Bearing in mind the foregoing facts, it is a major object of the present invention to produce a composition of matter simulating gold in color as closely as possible, and to a greater extent than has hitherto been found possible in the art.

Another object of the present invention is to provide a gold simulating composition of matter which comprises an improved copper alloy.

A further object of the present invention is to provide a gold simulated composition of matter of improved workability and color.

These and other objects of the invention will become readily understood by referring to the following detailed description.

Our composition of matter employs a copper base (a substantial majority of copper) because it is a common metal which most closely approaches gold in weight and in color and also has good all-around workability. Specified small amounts of zinc are preferably but not necessarily added to copper. The zinc is added to lighten the reddish color of the copper and impart a better hue thereto. The zinc also improves the workability of the copper. Tin is also sometimes added for the purpose of improving workability.

Regardless of these additions to copper, the color of the simulated metal does not have the desired yellow hue but is slightly on the reddish side. Consequently when the usual thin gold plate deposited on the metal for jewelry purposes is worn off, the undermetal clearly shows through and it is quite apparent that a copper base has indeed been used.

We have found that by adding a small amount of aluminum to the copper-zinc-tin alloy or copper-zinc alloy, preferably from 1 to 4%, an exceedingly good color match with real gold is obtained.

This color match is further enhanced by the addition of 0.25% to 2% of real gold to the copper-zinc-tin-aluminum alloy.

The addition of aluminum serves to lighten the copper-zinc-tin or copper-zinc alloy so that the color of real

gold is realized. Further, the aluminum improves the general workability and castability of the alloy. In this connection, approximately 4% aluminum in the alloy is a maximum amount because, if more than this amount is used, the alloy becomes too brittle to work with. A typical and preferred composition which closely simulates gold in color, is listed below:

	Percent
Copper (Cu)	88.86
Tin (Sn)	0.47
Zinc (Zn)	7.55
Aluminum (Al)	1.95
Gold (Au)	1.13
Traces of other elements	0.04
	100.00

The preferred range of the various elements in our composition are listed below:

	Percent
Copper	75–95
Tin	0.00–10
Zinc	1–22
Aluminum	1–4

It will be noted that, in some compositions, the tin need not be used.

In making our improved alloy the copper, zinc, and tin, if any, are melted at a temperature in the neighborhood of 1950° F. The aluminum, which melts at approximately 1220° F. is placed in the 1950° F. melt and melted thereby. The gold, if any is desired, is then added, and is liquefied by the melt.

The whole melt is then agitated with a carbon rod and is then quenched by water, oil or some other quenching medium—in the form of nuggets, bars, etc.

The alloy thus made is next recast into the desired shape, ground, polished and gold plated, if desired, from an acid gold solution.

While aluminum is preferably added to the copper-zinc or copper-zinc-tin alloy, antimony (Sb), bismuth (Bi), and magnesium (Mg) can be alloyed with the copper-zinc-tin alloy or the copper-zinc alloy with similar results. Proportions of these metals used are similar to those employed for aluminum.

While a preferred embodiment of our invention has been described, workers skilled in the art may make changes and modifications that come within the scope and spirit of our invention. Hence, we intend to be limited only by the appended claims.

We claim:

1. An alloy composition of matter for simulating gold, which consists of: 75–95% copper; 1–22% zinc; 1–4% of a metal selected from the group consisting of aluminum, bismuth, antimony and magnesium; and the balance, not exceeding 10%, of tin.

2. An alloy composition of matter for simulating gold which consists of: 75–95% copper; 1–22% zinc; 0.25%–2% gold; 1–4% of a metal selected from the group consisting of aluminum, bismuth, antimony and magnesium; and the balance, not exceeding 10%, of tin.

3. An alloy composition of matter for simulating gold, which comprises: approximately 88.86% copper; approximately 0.47% tin; approximately 7.55% zinc; approximately 1.95% magnesium; and approximately 1.13% gold.

4. An alloy composition of matter for simulating gold, which comprises: approximately 88.86% copper; approximately 0.47% tin; approximately 7.55% zinc; approximately 1.95% bismuth; and approximately 1.13% gold.

5. An alloy composition of matter for simulating gold, which comprises: approximately 88.86% copper; approximately 0.47% tin; approximately 7.55% zinc; approxi-

mately 1.95% antimony; and approximately 1.13% gold.

6. An alloy composition of matter for simulating gold which comprises: approximately 88.86% copper; approximately 0.47% tin; approximately 7.55% zinc; approximately 1.95% aluminum; and approximately 1.13% gold.

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