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BEARING

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The present invention relates to bearing compositions.

It is an object of the invention to provide a bearing material of high corrosion resistance.

Another object of the invention is the provision of a new bearing composition having a high fatigue strength.

It is a further object of the invention to provide a new bearing composition having a very low coefficient of friction.

Other objects of the invention will be apparent from the following description, taken in connection with the appended claims.

The present invention comprises the combination of elements, and the product thereof, brought out and exemplified in the disclosure hereinafter set forth, the scope of the invention being indicated in the appended claims.

While a preferred embodiment of the invention is described herein, it is contemplated that considerable variation may be made in the method of procedure and the combination of elements, without departing from the spirit of the invention.

According to the present invention, an improved bearing composition is contemplated having the following ingredients present in the substantial range of proportions by weight, given below:

	Per cent by weight
Gold	60 to 99
Thallium	1 to 40

The gold-thallium system is a simple eutectic diagram with a eutectic around 73% of thallium the eutectic melting at 131° C.

According to a modification silver may be substituted for part of the gold, as follows:

	Per cent by weight
Gold	25 to 50
Silver	25 to 50
Thallium	1 to 40

A considerable amount of thallium can be taken up in solid solution in the silver, while gold and silver form an unbroken solid solution series. The resulting ternary alloy can be prepared by standard methods, such as casting, centrifugal casting, electroplating, spraying, diffusion or any other means. In the preferred construction the bearing alloy is cast, plated or sprayed as a lining on a steel shell or half shells. Instead of steel it is possible to use nickel or copper alloy backing. It is contemplated for use as an internal combustion engine bearing as well as for other applications. In engines it will generally be operated against ferrous or iron group base alloys.

It is possible to prepare bearings by plating

a layer of gold onto a suitable backing, afterwards plating thallium onto the gold and then diffusing part or all of the thallium into the gold. It is further possible to employ indium in combination with the thallium in order to form thallium indium alloys which have improved corrosion resistant properties. Other metals may be used for this purpose in the place of indium such as tin. The indium or tin may be plated onto the thallium and an alloy may be formed by subjecting the plated layers to a low temperature diffusion treatment.

It is further possible to form a bearing by electroplating silver onto a suitable backing, then plating a thin layer of gold thallium alloy onto the silver. The gold thallium alloy can either be plated in the form of an alloy or the elements may be separately plated and diffused either partly or wholly.

It is also possible to produce grid or mosaic bearings where the bearing base consists of such alloys and metals as silver, copper, aluminum into which grooves have been formed by rolling or similar means these grooves later on being filled with gold thallium alloys.

The fine microscopical distribution of thallium in gold in the form of eutectic particles provides excellent bearing qualities. The gold matrix or silver gold matrix has good thermal conductivity and good corrosion resistance. The extremely soft thallium particles form a film which is unusually seizure resistant even under heavy loads and high speeds.

While specific embodiments of the invention have been described, it is intended to cover the invention broadly within the spirit and scope of the appended claims.

What is claimed is:

1. A bearing material formed of an alloy comprising 1 to 40% thallium by weight, balance gold.

2. A bearing material formed of an alloy comprising thallium, and an element selected from the group consisting of indium and tin, with the balance gold.

3. A bearing material comprising an alloy of 1 to 40% thallium by weight, balance gold, said alloy being characterized by a fine microscopical distribution of thallium in gold in the form of eutectic particles and said particles having a melting point of approximately 131° C.

4. A bearing lining comprising an alloy of gold and thallium containing 60-99% gold, 1-40% thallium by weight, said alloy being characterized by a fine microscopical distribution of thallium in gold in the form of eutectic particles, and said particles having a melting point of approximately 131° C.

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