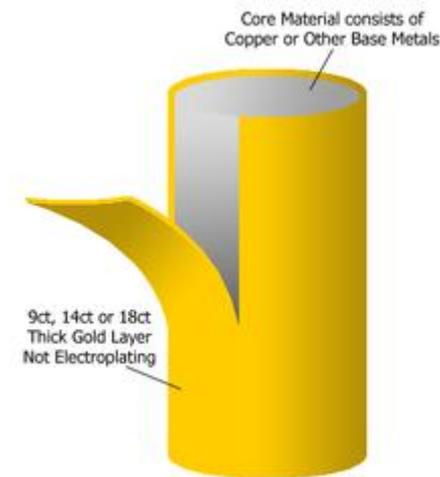


## Gold filled jewelry



**Gold-filled** jewelry, also known as "rolled gold" or "rolled gold plate" is composed of a solid layer of gold bonded with heat and pressure to a base metal such as brass. Some high quality gold-filled pieces have the same appearance as 14 karat (58%) gold. In the USA the quality of gold filled is defined by the Federal Trade Commission. If the gold layer is 10 kt fineness the minimum layer of karat gold in an item stamped GF must equal at least 1/10 the weight of the total item. If the gold layer is 12 kt or higher the minimum layer of karat gold in an item stamped GF must equal at least 1/20 the weight of the total item. The most common stamps found on gold-filled jewelry are 1/20 12kt GF and 1/20 14kt GF. Also common is 1/10 10kt. Some products are made using sterling silver as the base, although this more expensive version is not common today.

"Double clad" gold-filled sheet is produced with 1/2 the thickness of gold on each side. 1/20 14Kt double clad gold-filled has a layer on each side of 1/40th 14Kt making the total content of gold 1/20. The thinner layer on each side does not wear as well as single clad gold-filled.

The Federal Trade Commission allows the use of "Rolled Gold Plate" or "R.G.P". on items with lower thicknesses of gold than are required for "gold-filled." A 12 kt gold layer that is 1/60 the weight of the total item is designated as 1/60 12kt RGP. This lower quality does not wear as well as gold-filled items.

Gold-filled items, even with daily wear, can last five to 30 years but will eventually wear through. The gold layer on gold-plated jewelry varies greatly depending on manufacturer, so there is no single, simple comparison. Gold-filled items are 50 to 100,000 times thicker than regular gold plating, and 17 to 25,000 times thicker than heavy gold electroplate (sometimes stamped HGE or HGP—usually found on flashy cubic zirconia "cocktail rings").



## *Something about metals*

### **Sterling silver**

***Sterling silver** is an alloy of silver containing 92.5% by mass of silver and 7.5% by mass of other metals, usually copper. The sterling silver standard has a minimum millesimal fineness of 925.*

*Fine silver (99.9% pure) is generally too soft for producing functional objects; therefore, the silver is usually alloyed with copper to give it strength while preserving the ductility and beauty of the precious metal. Other metals can replace the copper, usually with the intent to improve various properties of the basic sterling alloy such as reducing casting porosity, eliminating firescale, and increasing resistance to tarnish. These replacement metals include germanium, zinc and platinum, as well as a variety of other additives, including silicon and boron. A number of alloys, such as Argentium sterling silver, have appeared in recent years, formulated to lessen firescale or to inhibit tarnish, and this has sparked heavy competition among the various manufacturers, who are rushing to make claims of having the best formulation. However, no one alloy has emerged to replace copper as the industry standard, and alloy development is a very active area.*

### **Tarnish and corrosion**

*As the purity of the silver decreases, the problem of corrosion or tarnishing increases.*

*Chemically, silver is not very reactive—it does not react with oxygen or water at ordinary temperatures, so does not easily form a silver oxide. However, other metals in the alloy, usually copper, may react with oxygen in the air.*

*The black silver sulfide ( $\text{Ag}_2\text{S}$ ) is among the most insoluble salts in aqueous solution, a property that is exploited for separating silver ions from other positive ions.*

*Sodium chloride ( $\text{NaCl}$ ) or common table salt is known to corrode silver-copper alloy, typically seen in silver salt shakers where corrosion appears around the holes in the top.*

*Several products have been developed for the purpose of polishing silver that serve to remove sulfur from the metal without damaging or warping it. Because harsh polishing and buffing can permanently damage and devalue a piece of antique silver, valuable items are typically hand-polished to preserve the unique patinas of older pieces. Techniques such as wheel polishing, which are typically performed by professional jewelers or silver repair companies, are reserved for extreme tarnish or corrosion.*



## Something about metals

### Vermeil

A **vermeil** wine cooler manufactured in 1810 by Paul Storr is located in the Vermeil Room of the White House.

**Vermeil** (pronounced /'vɜrmi:l/ or /vər'meɪ/; French: [vɛʁ'mɛj]), a French word which came into use in the English language, mostly in America, in the 19th century as an alternative for the usual term silver-gilt,[1] is a combination of sterling silver, gold, and other precious metals. It is commonly used as a component in jewelry. A typical example is sterling silver coated with 14 carat (58%) gold. To be considered vermeil, the gold must be at least 10 carat (42%) and be at least 2.5 micrometres thick. In the US, sterling silver covered with a base metal (such as nickel) and plated with gold cannot be sold as vermeil without disclosing that it contains base metal.

**Vermeil** can be produced by either fire-gilding or electrolysis. The original fire-gilding process was developed in France in the mid-18th century; however, France later banned the production of vermeil because over time artisans developed blindness due to mercury involved in the process. Today, vermeil is safely produced by electrolysis.

The White House has a collection of vermeil tableware kept on display (when not in use) in the Vermeil Room.

The Code of Federal Regulations 16, Part 23.5 defines Vermeil: "An industry product may be described or marked as 'vermeil' if it consists of a base of sterling silver coated or plated on all significant surfaces with gold or gold alloy of not less than 10 karat fineness, that is of substantial thickness and a minimum thickness throughout equivalent to two and one half (2½) microns (or approximately 1/10000ths of an inch) of fine gold."

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### Brass

**Brass** is an alloy of copper and zinc; the proportions of zinc and copper can be varied to create a range of brasses with varying properties.

In comparison, bronze is principally an alloy of copper and tin. Bronze does not necessarily contain tin, and a variety of alloys of copper, including alloys with arsenic, phosphorus, aluminum, manganese, and silicon, are commonly termed "bronze". The term is applied to a variety of brasses and the distinction is largely historical.



## *Something about metals*

**Brass** is a substitutional alloy. It is used for decoration for its bright gold-like appearance; for applications where low friction is required such as locks, gears, bearings, doorknobs, ammunition, and valves; for plumbing and electrical applications; and extensively in musical instruments such as horns and bells for its acoustic properties. It is also used in zippers. Because it is softer than most other metals in general use, brass is often used in situations where it is important that sparks not be struck, as in fittings and tools around explosive gases.

**Brass** has a muted yellow color which is somewhat similar to gold. It is relatively resistant to tarnishing, and is often used as decoration and for coins. In antiquity, polished brass was often used as a mirror.

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## **Copper**

**Copper** is a chemical element with the symbol Cu (from Latin: cuprum) and atomic number 29. It is a ductile metal with very high thermal and electrical conductivity. Pure copper is soft and malleable; an exposed surface has a reddish-orange tarnish. It is used as a conductor of heat and electricity, a building material, and a constituent of various metal alloys.

The metal and its alloys have been used for thousands of years. In the Roman era, copper was principally mined on Cyprus, hence the origin of the name of the metal as cyprium (metal of Cyprus), later shortened to cuprum. Its compounds are commonly encountered as copper salts, which often impart blue or green colors to minerals such as turquoise and have been widely used historically as pigments. Architectural structures built with copper corrode to give green verdigris (or patina). Decorative art prominently features copper, both by itself and as part of pigments.

**Copper** ions are water-soluble, where they function at low concentration as bacteriostatic substances, fungicides, and wood preservatives. In sufficient amounts, they are poisonous to higher organisms; at lower concentrations it is an essential trace nutrient to all higher plant and animal life. The main areas where copper is found in animals are tissues, liver, muscle and bone.