

## A Gorham Granulated Match Safe

By Neil Shapiro



Most match safe essays, when they focus on a single piece, usually examine the history of the piece, or the provenance. Rarely do they examine the technique used to make the match safe. This essay will closely look at an extraordinary safe made in the United States just before the Paris exposition in 1900.

The safe in question is an enamel and vermeil sterling, 2" x 1 1/2" x 3/8" match safe made by the Gorham Manufacturing Co., Providence, RI, in 1897, production #1390.

It is only one of four with this type of granulation ever made by Gorham. The others are production numbers, 1395, 1400 & 1405. (*Gorham Match Safes*, 2009, Shapiro, Neil & Sparacio, George)

These four match safes differ in conformation and slightly in design pattern, but are very similar in presentation, i.e., that all have granulations, vermeil, and wavy raised lines over a sterling case

The Gorham work record for #1390, in the Gorham archives at Brown University, states that it took 3 3/4 of an hour to make the case and another hour to do the enameling and the total wholesale cost was \$6.50. In today's dollars \$6.50 in 1897, would be the equivalent of about \$220.00 (according to the official consumer price index). When

finished the match safe was sent to be sold in Gorham's New York City store. We do not know the retail asking price.

Why was this one of Gorham's more expensive match safes? It has to do with the difficulty of the granulation process.

Granulation is the fusing of tiny metal spheres of silver or gold, in a decorative pattern, to the surface of the same metal. It is an ancient technique that produces delicate, beautiful results but it is difficult to do well and difficult to control the placement of the granules.

Granulation requires the fusing, not soldering of the granules to the body of the object. A simplified description of this process begins by using a flux on the base, placing the granules on the flux, which acts as a glue for the granules, and heating the piece until the granules and the body are joined together. Using alloys of silver makes the fusing process more difficult since it changes the reaction of the flux with the body. The purer the silver the easier it is to produce a granulated piece. Sterling Silver is an alloy.

To be specific; in silver alloys like sterling, the fusing temperature remains unchanged at 779°C, 1434°F. But a higher percentage of pure silver makes the fusing process easier. Other alloys can be used but the most common metal used in granulated jewelry is high karat gold, the purer the gold the easier it is to work with. (For a full technical description see, *The Theory and Practice of Goldsmithing*, Erhard Brepohl, Translated by C.L. Brain, Brynmorgen Press, 2001.)

How the fusing works in general:

Fusing welds two metals of the same alloy together through the use of heat alone. A sheet of metal with approximately the same thickness as the diameter of the granules is necessary to get an even heat distribution. Once the granules are positioned using a diluted flux and a fine paint brush, the whole thing is fired in an oven with a reducing atmosphere. At the point of reaching a melting temperature the granules and sheet metal fuse together. The great advantage of this method is that no flux or solder remains. This is an advanced goldsmithing technique that requires great skill and practice. . (Brepohl, Erhard, <https://www.ganoksin.com/article/ancient-art-fire-gilding/>)

How fusing works with an electric current:

Electric current is applied to each granule, passing through the granule to the base, generating enough heat to fuse the granules to the object. There are both advantages and disadvantages using this technique. It is more difficult to tightly group the granules and may lump the adjoining granules, but it requires much less skill than fusing in a kiln or by hand.

In the 1840s in England, the Elkington's began fusing silver plate through the use of an electric current. That technique is still used today for most commercially made granulated articles.

Decorative granulation:

The decorative techniques of granulation are divided into two categories; silhouette and background. In the first case the profiles of figures, like animals, are created by granulated outlines and in the second case spaces, which were previously created by closed work or blank spaces, are filled in with granulation.

Vermeil:

As mentioned above this match safe has a gilded surface called vermeil. In the vermeil technique, a metallic piece of jewelry is “dipped” in a solution containing pure gold particles. An electrical charge is then applied to the solution, which attracts the gold ions from it and deposits them on to the surface of the object.

By definition, if not law, vermeil must be 14k or higher and contain 2.5 microns (100 micro-inches) of gold over sterling silver.

A close scrutiny at the Gorham safe raises the question how did Gorham make this granulated match safe since it used an electric current to affix the granules and another dose of electric current to overlay the gold vermeil? And then it needed to be put the match safe in a kiln to melt the green enamel. The electric charge to apply the vermeil must not dislodge the affixed granules and then the heat from the kiln to apply the green enamel must not melt or dislodge the granules or disturb the vermeil. The processes seem to be difficult and may account for the limited production of this type of ornamentation on Gorham match safes.

On the Gorham safe the granulation is carefully placed within the raised wavy lines creating a sense of movement on a flat surface. Not only does the surface of this safe look like flowing liquid it offers a tactile surface to hold the safe creating a comfort in the hand. The Gorham artisans then added green enamel flowing within all the raised waves on the body of the safe. The green enamel paired with the gold creates a visual experience that is harmonious and pleasing to the eye. To this writer there is an inner sense of order, a balance in the visual experience.

The Gorham work record does not detail how the work, or in what order the work was done on this match safe. But without knowing the exact production methods we can still visually enjoy the craftsmanship and skill of the artisans.