



## Data Sheet

Mokume-gane

22k Gold/Sterling Silver Rod

**RMS**  
Reactive Metals Studio Inc  
**RMS**

PO Box 890

Clarkdale, AZ 86324

928/634-3434 • 800/876-3434 • 928/634-6734F

[www.reactivemetals.com](http://www.reactivemetals.com) • [info@reactivemetals.com](mailto:info@reactivemetals.com)

## 22K Gold/Sterling Silver Rod

### COMPOSITION:

42% 22K rose gold, 58% sterling silver.

19 layers total. Nine (9) 22K gold layers. Ten (10) sterling silver layers. The sterling layers are twice as thick as the gold.

**QUALITY MARK:** No legal quality mark in the USA

### APPROX MELTING POINT:

Starts to melt at 1490°F/810°C.

### ANNEALING:

Recommended annealing temperature is 1150-1300°F/620-704°C. This material should only be torch annealed. This temperature is about a medium red in a dark room. Soaking at the annealing temperature is not recommended. Protection from oxygen by coating with flux or annealing in a reducing atmosphere will maintain the brightness of the gold.

**Do NOT quench from the annealing temperature.** Let air cool to about 800°F/426°C before quenching, after all visible color has left the metal when viewed in a dark room. A note to the impatient: speed cooling can be done by resting the hot metal on a heavy steel plate. Pickle as needed. Over-annealing in frequency, time and temperature is not recommended as it can cause excessive grain growth and significantly weaken the metal.

### WORKING THE MATERIAL:

This mokume is fairly soft and easily formed by standard methods including forging, bending, rolling, die striking and stock removal. Anneal after a 30-50% reduction has been achieved. Pattern is often developed by twisting. **DO NOT HOT WORK THIS MATERIAL, DOING SO WILL VOID THE WARRANTY.**

Use a solder that flows at a temperature lower than the melting point of the sterling. We suggest using easy or medium solders.

This mokume can be enameled on with enamels that will work on gold and sterling.

Please see the following guide on twist patterning: <https://www.reactivemetals.com/downloads>

### FINISHING:

This mokume may be finished using the standard jewelry finishing techniques. Heavy buffing is not recommended as this may smear the surface of the metal and muddy the pattern. Use abrasives and tools that cut rather than grind. If a rotary file tool is used, it is often best to remove the tool marks with abrasive paper or water stones before buffing.

A matte surface will show off the colors of the metals much better than a high polish. Sandblasting or glass beading can produce interesting results; experimentation with surface finish is recommended before determining a final form.

### ETCHING:

**Use all chemical solutions with proper ventilation, safety equipment and supervision.**

Use a 20-25% solution of Nitric Acid (HNO<sub>3</sub>) or Multi Etch. Mask any areas not to be etched, such as silver solder seams or non-gold elements, with nail polish or some other resist. Carefully watch the object while etching so as not to over etch as etching can occur quite quickly. Etching often leaves a thin film of silver deposited on the gold layers and this must be removed by the use of a light abrasive and a bristle brush in order to display the colors of the gold accurately.

Ferric Chloride solution may also be used to etch the sterling but it turns the sterling a very ugly grey that is difficult to remove. We do not recommend using this etchant. \*

### PATINA:

For best results clean the surface well with soap to remove all oily contamination. Prepare the surface by rubbing with fine pumice. Traditional liver of sulphur can be used effectively. Dissolve a small amount in warm water forming a light brown solution. Warm the metal under running water. Then gently rub a small amount of the solution on the whole surface and rinse. Continue alternating application with rinsing until the color is achieved. The sterling should take on a black/brown color.

Antique Patina should be diluted and applied as suggested above. At full strength a variety of colors can be achieved even on the gold.

All patinas are temporary. The environment they live in will affect them in many ways. They will often respond to the chemistry of the wearer. Waxes and lacquers can be applied to help stabilize the colors but in themselves should be considered temporary fixes.

### \*NOTE:

**Take proper safety precautions when using any chemicals or tools. This information represents the best knowledge and experience regarding the use of Shining Wave Metals products by their manufacturer, however it is not guaranteed to produce an expected result and is no substitute for experimentation by the user.**