



## Data Sheet

# Mokume-gane

14k Red Gold/Sterling Rod



PO Box 890

Clarkdale, AZ 86324

928/634-3434 • 800/876-3434 • 928/634-6734F  
www.reactivemetals.com • info@reactivemetals.com

## 14K Red Gold/Sterling Rod

### COMPOSITION:

Fifteen(15) layers, alternating sterling silver(8) and 14K Red(7) with sterling on the outside two layers. The sterling layers are approximately twice as thick as the gold layers. 34% 14K Red Gold, 66% Sterling.

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

### MELTING POINT:

Starts to melt at 1434°F/779°C.

### ANNEALING:

1150°-1300°F/620°-700°C. This material should only be torch annealed. This is about a medium red in a dark room, if done by eye. Soaking at the annealing temp is not recommended. Protections from oxygen by coating with flux or annealing in a reducing atmosphere will maintain the brightness of the gold and reduce scale on the sterling. **DO NOT QUENCH AFTER ANNEALING.** Let air cool to about 800°F/426°C before cooling rapidly (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 temp is not recommended as it can cause excessive grain growth and significantly weaken the metal.

### WORKING THE MATERIAL:

This mokume is somewhat hard but forms well by standard methods including forging, bending, rolling and die striking, though more force will be required than working sterling. This mokume files and machines well. Anneal after a 30-50% reduction has been achieved or it becomes too hard to work. Pattern is often developed by twisting. Reverse twist patterns are not recommended as this puts an incredible strain on the material. If you pursue this type of manipulation, the warranty will be void. **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 gold solders, especially if the piece is to be etched.

### 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. This material looks best when etched as this enhances the visibility of the pattern.

### ETCHING:

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

Use a 20-25% solution of Nitric Acid (HNO<sub>3</sub>). Mask any areas not to be etched, such as silver solder seams, or non-gold elements with nail polish or other resist. Carefully watch the object while etching so as not to over-etch. 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 gold accurately.

Ferric Chloride solution may 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: \*

If desired the sterling layers may be patinaed after etching as above. Liver of Sulphur or Antique Patina may be used. For best results clean the surface well with soap to remove all oily contamination. Prepare the surface by rubbing with fine pumice or No Name Patina Prep.

**\* 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.**