



Rolling Procedure for Sheet and Common Problems

Steps

1. Anneal ingot or sheet, pickle, rinse in water and dry.
2. Apply snug pressure on rollers, commence to roll. After each sweep through the mill rotate the material from end to end before passing through the mill again.

When the metal becomes hard, repeat steps 1 and 2 until the desired thickness is reached.

Common practice for Silver is to roll sheet from 3mm to 1mm before annealing.

Common Rolling Problems and Causes

<i>Buckling</i>	Caused by changing direction during rolling without first annealing. Remove metal, anneal, proceed.
<i>Cracks along edge</i>	The ingot rolled is not of uniform shape, metal rolled too much without annealing. To correct: saw out sections which contain cracks or holes. Anneal, forge out material around the cavities so they align with the edge. Anneal, proceed to roll.
<i>Cracking and flaking surfaces</i>	The metal ingot mold was too cold when metal poured; too much old metal in the pour; metal annealed too often; metal contaminated with foreign matter. To correct; reheat, cast ingot and roll again. If problem persists refine the metal before attempting to proceed.
<i>Sheet pulls to one side</i>	Rollers are not even. Correct by applying equal pressure to both sides of mill.
<i>Wire is wavy when rolled</i>	Not enough tension on the free end of the wire. Correct by placing one end of the wire in the mill and while rolling hold the other end tight with one hand.

Hardening Gold, Silver, and Platinum

Gold	<i>Heat:</i> In general, Yellow Gold can be hardened by heating first and then allowed to cool at room temperature. Green and red alloys cannot be heat hardened with very good success. <i>Work:</i> Karat golds will work-harden when rolled, drawn or forged. The more you reduce the thickness the harder the metal gets.
Silver	<i>Heat:</i> Silver must be in an annealed state. Heat to 1200°F (760°C). Set aside for 15 minutes then quench in cool water. Sterling Silver can be hardened by heating to 600°F (316°C). Hold for 30-50 minutes then let it air cool to room temperature. <i>Work:</i> Fine and Sterling Silver will work-harden when rolled, drawn, or forged.
Platinum	<i>Work:</i> Platinum alloys will work-harden when rolled, drawn, or forged.

Annealing Gold, Silver, and Platinum

Gold:	Karat golds are a little more complicated because compositions vary considerably. But in general, yellow, green and red alloys can be softened by heating to 1200°F (649°C) for 10 minutes. Time will be determined by the alloy and the size and shape of the piece. Then quickly quench in cool water.
Silver:	To soften sterling silver, heat to 1200°F (760°C). Set aside for 15 minutes then quench in cool water.
Platinum: (courtesy of Platinum Guild)	To soften Platinum, heat for 1-minute per millimeter thickness of material to 1292°F/700°C. Let the piece air-cool or quench after dull red-heat is approached. Anneal after about 30% reduction of metal thickness. Annealing for too long can cause grain growth, which may make finishing difficult.