

The samples were annealed in General Electric Viscasil 100,000 cs silicone fluid contained inside a specially designed tetrahedral high-pressure sample holder as shown in Figure 3. It is to be noticed that this design puts the thermocouple (30 gauge chromel-alumel) in intimate contact with the lead. This was necessary because of the large temperature gradient associated with such a short furnace. Experiments using multiple thermocouples have shown that there was probably not more than a 5 C° temperature differential in the lead itself, and probably much less.

In order to insure that the system remained hydrostatic (i. e., the Viscasil did not solidify), the system was raised to 150°C at 6 kilobars and maintained there until the pressure was reached at which the sample was to be annealed.

High current, low voltage power was supplied by a combined inducteral and step-down transformer. The power was controlled by a solid state dimmer device manufactured by Hunt Electronics (Dallas, Texas), which was driven from a Leeds and Northrup, type R 820, amplifier. The power was advanced manually and equilibrium obtained before switching to automatic control. The regulating system compared the thermocouple with a reference voltage developed by a Honeywell, type 2745, portable potentiometer and controlled to within .05 mv. Using this procedure, equilibrium could usually be obtained in less than ten seconds.