



Materials Science and Engineering

Laboratory Session III: Cold Work of Metals.

AIM

To study the effect of cold working and re-crystallization process in the mechanical and electrical properties of a brass.

MATERIALS

- Brass samples
- Metal rolling machine
- Oven
- Hardness tester
- Optical microscope
- Conductivity meter

EXPERIMENTAL method

- Measure the hardness and conductivity of the brass probed in the initial annealed state (sample 1).
- Afterwards, reduced the section of three of the probes (samples 2,3 and 4) by 10, 30 and 50% respectively and measuring in each case hardness and conductivity .
- The last samples (sample 5) has been rolled to 50%, annealed in the oven at 650 °C for 10 minutes and cooled down slowly in the oven. Measure its hardness and conductivity.

Probe	1	2	3	4	5
Reduction %	0	10	30	50	50 +annealing
(HRB)Hardness					
Electrical conductivity (MS/m)					

- Metallographic inspection. Observe under the optical microscope the prepared brass spacimens with different rolling amount.

