

LabNotebook

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1 Introduction

This day our group measured the Vickers hardnesses of our previously mounted samples.

1.1 Goals

The goal was to learn how to use the Vickers hardness tester as well as to learn more about different hardness scales and develop a better intuition about materials science in general.

2 Purpose

Vickers hardness, opposed to Rockwell hardness, has a different scale and method of measurement. It utilizes microscopy and a constant distance between the indenter and stage at certain magnifications to normalize values. Experience with this process will help students learn more about materials science.

3 Setup

The sample pucks were recovered from storage the previous week.

3.1 Materials

1018 Steel annealed, 6061 Al annealed.

3.2 Tools

An microscope with a stage to hold samples, with an indenter also mounted.

4 Procedure

The puck was placed into the hardness tester. After appropriate software had been launched, we focused on a specific portion of the sample, then set the force of the impact. After indentation, height and width data of the indent was taken down along with hardness data. We ran the hardness tester at 500gf for Steel using only 50gf for the thinnest sample.

We did not have enough time to measure all of our data - only Steel is recorded below.

5 Results

Material	D1	D2	HV	HRB	15T
Steel round 1	97.65	96.97	192	92.6	90.8
Steel round 2	86.06	83.53	128	71.8	84.3
Steel round 3	62.01	59.36	247	21.8	N/A
Steel round 4	61.53	56.78	265	24.7	N/A

6 Observations

We can see how hardness values change as the sample is rolled. This can be seen by the decrease in indent left - as both dimensions decrease as number of rolls increases. Some hardness values were out of range of specific scales and were thus listed as N/A on those scales.