

German Jordanian University

School of Applied Technical Sciences

Department of Industrial Engineering

Materials and Mechanics Lab IE224

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Section:2

Experiment 1: Microscopic Examination

Objectives

* Getting familiar with the specimen preparation for micro examination.
* Using the metallurgical microscope.
* Examining the micro- structure of the specimen under the microscope.
* Introducing grain size calculations.

Materials and apparatus

* mounting press machine
* mounted specimen
* grinding papers with different grit sizes P12, P16, P24, P120, P180, P220, P360, P400, and P600, till P2500
* twin rotating disc grinding and polishing machine
* polishing powders )Aluminum Oxide or diamond(
* Lubricant (water)

1. Discuss the purpose of (refer to manual for help,,,instead of the “Procedure” for this week):

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| Point to consider | Purpose |
| * 1. Cutting the specimen | indicating the structure of the whole material |
| * 1. Mounting the specimen | holding small specimens in an easier way |
| * 1. Grinding the specimen | obtaining a flat surface. |
| * 1. Polishing the specimen | removing the scratches |
| * 1. Viewing the specimen under the microscope after grinding | Ensuring that the piece is perfectly grinded and has no scratches |
| * 1. Viewing the specimen after polishing | Ensuring that the piece is perfectly polished and having a mirror surface |
| * 1. Etching the specimen (not done during lab) | To get ready for examination under the metallurgical microscope |