Standard Operating Procedure – Standard Polisher/Grinder

About this SOP
This document describes the standard operating procedure for using the polisher/grinders in room 157 Engineering II. It covers hazards, emergency procedures, basic specifications and operating procedures.

Who to Contact
If you have any questions or concerns or would like to report a problem with any of the polishers contact the laboratory’s manager or the laboratory’s safety coordinator. The names, office numbers and phone numbers of these people are located on the “Emergency Contact” sheet post on the inside of the door to the laboratory.

Hazards
The use of these polisher/grinders presents the following types of hazards:

- **Electrical**: these polishers employ 1/4 horsepower electric motors. Avoid overloading the motors, which cause them to overheat, and make sure the electrical cords are in good shape. Also, make sure any spilled water is cleaned up before you start using the polisher/grinder.
- **Mechanical**: the polishing/grinding wheel spin at speeds up to 1200 rpm. This presents two hazards, your hand or fingers may get caught by the wheel, and injury if your specimen is pulled from your hand and flung across the room.

Emergency Procedures
Basic emergency procedures were covered in your general laboratory safety training. If you have not received this training then you cannot work in this laboratory.

Emergencies related to the use of these ovens are most likely related to the hazards described above. If an emergency should occur then deal with it to the best of your ability and according to established emergency procedures such as those summarized in the R.A.C.E. acronym. No matter what the emergency, contact the laboratory’s safety coordinator to report the incident.

Prohibitions
Do not use any of the following in, on or around the polisher grinders:

- **Corrosive chemicals**: the wheels, bowls and table are not resistant to corrosive chemicals and these chemical cannot go into the drains. This prohibition includes metallographic etchants. This means that attack polishing cannot be done using these polisher/grinders.
- **Flammable chemicals**: these present a fire hazard when used near the electric motors.
- **Solvents**: solvents will damage the table.
Operating Procedure

1. Inspection
Before using the polisher/grinder inspect it and its surroundings for the following:
C Make sure the electric power connections are made correctly and that the power cable is not damaged.
C Make sure the polisher/grinder, including the wheel and the bowl, are clean.
C Make sure the table and the floor around the table are clean and dry.

Do not use the polisher/grinder until all necessary corrections have been made.

2. Preparations
C Make sure your polishing cloth or grinding paper are mounted properly. It should not be able to slip and all air bubbles must be removed.
C Make sure your specimen is suitable for polishing/grinding. The polishing surface must be flat and all edges (top and bottom) must be rounded (not sharp). Otherwise, there is a good chance that the cloth or paper will grab the specimen and pull it from your hand, or the edges may cut the cloth and possibly your hand.
C Make sure the rim is in place. Never operate the polisher/grinder without the rim in place.

3. Polishing
C Start the motor and wait for it to come up to speed.
C Gently lower the specimen to the center of the wheel. Once it is down apply pressure and slowly move it to approximately half way to the edge of the wheel.
C Slowly but firmly move the specimen in a clockwise direction.
C Use polishing media sparingly. Excess will just go down the drain or splatter all over the table.

4. Finishing Up
When you are completely finished using the polisher/grinder you must do the following:
C Turn off the polisher/grinder.
C Clean up the wheel, making sure you remove the polishing cloth and all traces of the adhesive and polishing residue.
C Clean the bowl, giving it a final rinse with water.
C Wipe the lid and rim with a moist towel or sponge. Dry them if necessary.
C Wipe up the area around the polisher/grinder. Dry it if necessary.
C Replace the wheel, rim and lid.

Help!
Never leave your polishing cloth or grinding paper on the wheel. If left too on long they can be very difficult to remove. Also, they can be easily contaminated, so by the time you come back to use them again they may be spoiled.

If you ever find a polishing cloth or grinding paper abandoned on a wheel, please remove it.