



Standard Operating Procedure

Struers Tegramin-25 Polisher

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School:	Engineering	Campus:	Waurrn Ponds	Location:	KE2.101
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Category Rating:	Specific Training Required				

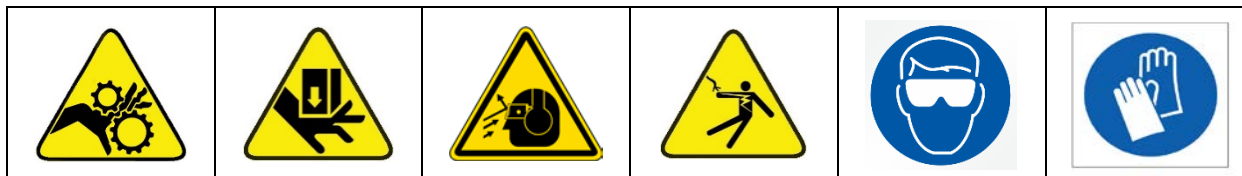
SCOPE & PURPOSE:

The purpose of this SOP is to show students, researchers and staff how to operate the polisher safely.

TRAINING REQUIREMENTS:

User will have completed Level 1 online and Level 2 materials labs inductions, and need to be trained in a level 3 induction by technical staff. Before using this equipment, required safety documentation must be completed and signed off by the technical staff and the user's supervisor.

POTENTIAL HAZARDS/HEALTH EFFECTS:



- Entanglement with moving parts of the plant.
- Crushing due to contact with moving parts of the plant.
- Friction by coming into contact with moving parts of the plant.
- Striking due to workpieces being ejected.
- Electrical due to possible water spillage near powerpoint.
- Slipping due to slippery surfaces if water get onto floor.
- Injury due to chemical and dust hazards.

MANDATORY CONTROLS:

- ✓ Safety Glasses
- ✓ Nitrile Gloves
- ✓ Lab Coat
- ✓ Enclosed Footwear
- ✓ Training provided
- ✓ Project Safety Assessment
- ✓ SDS Available
- ✓ First Aid Available
- ✓ Safety Stop Button

Precaution Requirements:

DO NOT USE AFTERHOURS (OUTSIDE OF MON – FRI 8AM – 6PM) WITHOUT TECHNICIAN AUTHORISATION.

- Do not let the polisher run unattended.
- Under no circumstances is polishing to be performed without lubricant (e.g. water or ethanol).
- Know your metallographic preparation method and required consumables.
- Ensure your samples are clean – ultrasonicated in ethanol or other solvent before each step of polishing.
- Chemical risk assessment for chemicals (e.g. ethanol) and lubricants should be done and approved by the technical staff before any use of equipment.
- Choice and use of specimen mover head must be discussed with the technical staff in advance.
- Do not grind polish nano-materials or their composites unless a safety assessment is completed and approved by technical staff.
- Ensure the specimen edges touching the polishing pad are trimmed.
- Long hair must be tied back and bracelets must be taken off.

INSTRUCTIONS:

Booking Procedure: must have a booking in the outlook calendar *G SEBE ENG Lab Eqpmt KE2.101.02 Polishing machine (even if free and available).

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Before Use:

- Check/Clean and dry with paper towel the bowl, the disc plate, the specimen mover head (by removal) and its prongs (See Appendix). Consult with the technical staff if you are unsure about any cleaning step.
- Install the required polishing pad (via the suggested Struers method) onto the specimen polishing wheel.
- Place and secure the magnetic polishing disc (pad) on the turntable so that the edges are smooth and there is little overhang around the circumference.

Operation (automated method):

1. Turn the knob to select single specimen methods from the main menu, then push to enter.
2. Select the desired preparation method from the main menu.
3. Moisten the polishing disc with a small amount of the required Diaduo suspension.
4. Disperse ~10 drops of Diaduo suspension onto the polishing disc.
5. Ensure the specimen moving head is to the left, but entirely above the polishing disc.
 - Use the yellow arrows to move the specimen moving head.
6. Evenly distribute your specimens into the sample holder (even number of samples) – specimens must be placed in sample holder positions 1 and 4, 2 and 5, and/or 3 and 6
 - The specimen plate holder can be rotated for ease of adding samples by using the yellow circle button.
7. Press the green 'START' button.
8. During polishing dispense ~4 drops of Diaduo suspension every 10-20 seconds.
9. Once finished, remove samples, rinse with ethanol in a beaker (as a waste container) and ultrasonicate in ethanol.
10. At end of each method step, dispose ethanol into the designated hydrocarbon waste container.
11. Continue with the polishing steps suggested in the Struers method.

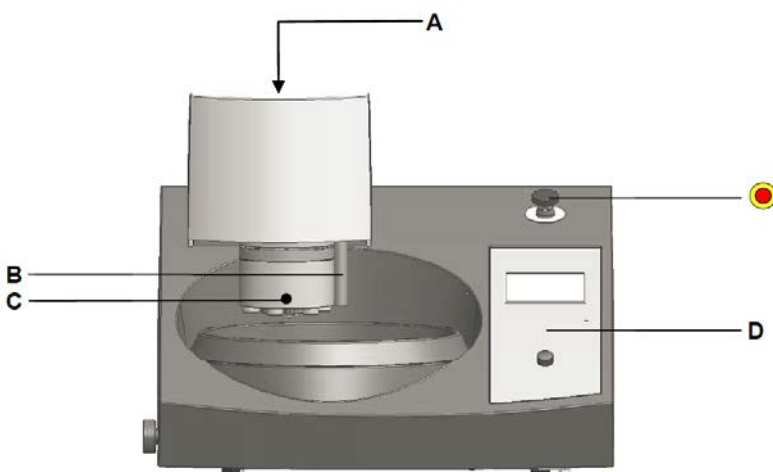
Between Polishing Steps:

- Clean and dry with paper towel the specimen mover head (by removal), prongs and disc plate to ensure they are free of the previous micron suspension polishing residues.
- Install the next polishing pad and repeat operational steps 3 – 10.


After Use:

- Turn the equipment off.
- Check/Clean and then dry with paper towel the bowl, the disc plate (wheel), the plastic guard, the specimen mover head (by removal) and its prongs (See Appendix).
- Return the disc plate, plastic guard, and the specimen mover head, and return the prongs.
- Clean the equipment and its bench top area.

Controls:



- A Adjustment screw for the vertical alignment of the specimen mover plate
- B Dosing block with nozzles
- C Button for release of specimen holder/ mover plate
- D Front panel control(s)

-  Emergency Stop
 - Push the red button to stop
 - Turn the red button clockwise to release



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GENERAL CARE & MAINTENANCE:

- Never use acetone, benzol or similar solvents.
- Grease and oil can be removed with ethanol or isopropanol.
- When cleaning do not use a dry cloth as the surfaces are not scratch resistant.
- Clean exterior surfaces with a damp cloth of water and household detergent.
- Drain the water/oil filter by pressing the release outlet valve.

REPAIRS & CERTIFICATION/VALIDATION SCHEDULE:

Reporting faults/concerns of equipment procedure: Technical Staff.

Supplier service and maintenance is conducted annually.

SPILLS/ ACCIDENT REPORTING PROCEDURE:

Spills procedure (Chemical):

- Wear lab coat, safety glasses and gloves to prevent eye and skin contamination and inhalation of vapours.
- Use absorbent material to contain spill; for major spills use the spill kit, for minor spills use paper towel.
- Prevent run-off into drains.
- Contact Technical staff for assistance.

Report spills/incidents to: Technical Staff.

In case of Emergency:

- Stop process immediately.
- Contact Technical Staff.
- Alert others if nearby.
- If a serious injury has occurred call 000.
- Turn power off at wall.

WASTE PROCEDURE:

- Dispose of contaminated materials into general waste.
- Dispose ethanol waste in the designated hydrocarbon waste container.