



Standard Operating Procedure

Struers DuraScan Hardness Tester

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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 hardness tester safely.

TRAINING REQUIREMENTS:

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

POTENTIAL HAZARDS/HEALTH EFFECTS:



Crushing, stabbing, and puncturing by coming into contact with moving parts.

MANDATORY CONTROLS:

- ✓ Safety Glasses
- ✓ Enclosed Footwear
- ✓ Training
- ✓ Safety stop button
- ✓ Project Safety Assessment

Precaution Requirements:

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

DO NOT change samples without the indenter in the working (6 o'clock) position.

- Refrain from testing unknown materials. Refer to available standards and datasheets for choosing the correct hardness method and testing parameters.
- Sample preparation and surface condition should meet the ASTM E384 standard.

INSTRUCTIONS:

Booking Procedure: must have a booking in the Outlook Calendar *G SEBE ENG Lab Eqpmt KE2.101 Vickers Hardness Tester (even if free and available).

Pre-Start check:

- Decide which indenter (Vickers or Knoop) to use based on available standards and technical notes.
- Familiarise yourself with the control unit (figure 1).

Operation: For additional information on how to perform these tasks consult the manual.

- Turn power on at the wall and turn instrument power on using the button at the left rear of the instrument.
- Check that/move the indenter into the working (6 o'clock) position.
- Raise the indenter arm a safe distance to allow mounting of the sample by moving the scroll bar upward.
- Place sample on the stage underneath the indenter.
- Clear the result history.
- Setup electronic saving of data if required. ALTERNATIVELY at the completion of testing an excel file can be saved from the history page. Plug in your USB drive to the control unit if preferred.
- Input the method.
- Lower the indenter to ~2mm above the sample by moving the scroll bar downward.

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- Press AF touch
- Position the sample in the analysis location using the imagefield and x, y stage movement.
- Change the turret from the lens to the required indenter.
- Make the indentation by selecting measure.
- Check the indentation meets measurement criteria – adjust using post processing functions if required.
- Record the measured hardness value if you are not saving the data electronically via your USB drive.

After Use:

- Return the indenter to the working position.
- Raise the indenter arm up to the indicator.
- Return the stage to neutral (middle x & y = 12.5) position.
- Turn the instrument off.



- 1 Machine stand
- 2 Test unit
- 3 Turret with indenter and lenses
- 4 Test anvil (here: DuraScan 10 with XY table)
- 5 Control unit
- 6 EMERGENCY-OFF button



- 1 Touch screen
- 2 Touch pen
- 3 Standby button with green pilot light

Figure 1: Controls of the Vickers/Knoop Hardness Tester.

GENERAL CARE & MAINTENANCE:

- Protect from dust and dirt.
- Ensure anvil is lubricated with oil.
- Use only special cleaning products to clean LCD screen.

REPAIRS & CERTIFICATION/VALIDATION SCHEDULE:

Reporting faults/concerns of equipment procedure: Technical Staff.
Supplier service and calibration is conducted annually.

SPILLS/ ACCIDENT REPORTING PROCEDURE:

Report spills/incidents to: Technical Staff.

In case of Emergency:

- Use safety stop button.
- Contact Technical Staff.
- If a serious injury has occurred call 000.
- Alert others if nearby.
- Evacuate to closest assembly area.



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