**VICKERS HARDNESS TESTER-DIGITAL TYPE**

|  |  |
| --- | --- |
|  | **Name of the equipment:**  Vickers Hardness Tester-Digital type  **Make & Model:**  Matsuzawa Co. Ltd, Japan VMT X7S  **I-Stem Registration ID-**  **3224876**  **Category of Instrument**  Hardness Tester  **Types of Analysis / Testing**  Vickers Hardness Testing  **Application:**  Measure the Hardness of various Materials Research and development in material science  **Description of Instrument**  An instrument used to measure the hardness of materials by creating a small, diamond-shaped indentation on the material's surface and then measuring the diagonals of the indentation. The device applies a known force, typically between  1 kg and 50 kg, using a diamond indenter in the shape of a square-based pyramid. The hardness value, expressed as Vickers Hardness Number (HV), is then calculated based on the indentation's dimensions and the applied force. |

**Booking Details**

|  |  |
| --- | --- |
| **Book through I-STEM:**  <https://www.istem.gov.in/>  **Slot Booking Link**  [I-STEM Slot Booking link for External User](https://www.istem.gov.in/equipment-info/24876/Vickers-Hardness-Tester) | **Booking available for**  Internal and External Both  **Requisition form for**  Internal  External |

**Contact Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Faculty In-charge:**  Dr. Murali KP  **Email ID:**  [kpmurali@nitc.ac.in](mailto:kpmurali@nitc.ac.in)  **Phone number:**  0495-2286414 | **Technical Staff:**  Sanal PR (TA SG I)  [sanal@nitc.ac.in](mailto:sanal@nitc.ac.in)  Jithin Krishna M (TA)  [jithinkrishnam@nitc.ac.in](mailto:jithinkrishnam@nitc.ac.in)  Jijeesh k (ST)  [jijeeshk@nitc.ac.in](mailto:jijeeshk@nitc.ac.in) | | **Department**  MED  **Office Email ID**  [medoffice@nitc.ac.in](mailto:medoffice@nitc.ac.in)  **Location**  Material Science Lab  Production Block  **Lab Phone No**  0495-2286450 |
| **Load** | |

* 1kgf to 50kgf

**Features, Working Principle and Specifications**

**Specifications**

* Visibility and operativity improve by color LCD touch panel.
* Realize 0.01 μm measurement at general magnification 200X - 1,000X
* Four kinds of new measuring mode deploy.
* (fracture toughness(KC) measuring mode, Light-load Brinell mode, Xbar mode, Cylindrical correction mode)

**Type of Sample Required for Analysis / Testing (Quantity, Pre-Preparation, State etc.) Guidelines for Sample Submission – User Instructions**

|  |
| --- |
| **1. Type of Sample Required**   * **Material State:** Solid, homogeneous material * **Shape:** Preferably **flat**, **polished**, and **stable** under load * **Minimum Surface Area:** Must fully accommodate the indentation and microscope viewing — typically ≥10 mm × 10 mm * **Thickness:**   + **Minimum:** 1 mm (to prevent distortion or substrate influence)   + **Recommended:** ≥3 mm for higher loads (>5 kgf)   + **Maximum:** As per test setup, generally ≤10 mm for small lab-scale machines * **Quantity:**   + **Single sample** per test condition   + More if multiple tests or repeatability is required   **2. Pre-Preparation of Sample (by User)**  To ensure accurate and consistent results:   * **Flat Surface:** The test surface **must be flat and perpendicular** to the indenter axis. * **Polishing:**   + Polish to a **mirror-like finish** (up to 1 µm diamond paste or finer)   + No surface scratches, pits, or oxidation * **Cleanliness:**   + Free from oil, dirt, or oxidation   + Clean with ethanol or acetone before submission   **3. Guidelines for Sample Submission**   * **Labeling:** Clearly label each sample with an ID or code using permanent marker or an attached label (not on the test surface). * **Packaging:**   + Use non-abrasive packing material (e.g., foam or soft cloth)   + Avoid stacking bare samples together * **Test Requirements to Provide:**   + Load required (e.g., 1 kgf, 5 kgf, etc.)   + Number of indentations per sample   + Specific location(s) if applicable   + Material information (alloy, treatment history, etc.) * **Delivery Note:** Include a document with:   + Contact details   + Test details   + Sample IDs and quantity |

**User Charges Rs. (GST Extra)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Internal** | **External Academic Institutes** | **National R&D Lab** | **Industry** |
| 100/- per sample | 300/- per sample + GST | 300/- per sample + GST | 300/- per sample + GST |