**VICKERS HARDNESS TESTER-DIGITAL TYPE**

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|  | **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**

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| **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** InternalExternal |

**Contact Details**

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| **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**

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

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