# *ANNEX II + III:* TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

**Contract Title: Supply of border control and forensic equipment for EUAM Ukraine**

**Lot 3: Forensic equipment**

**Publication reference: EUAM-24-75, Lot 3**

**Column 1-2 should be completed by the Contracting Authority**

**Column 3-4 should be completed by the tenderer**

**Column 5 is reserved for the evaluation committee**

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

* Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
* Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient),
* Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation.

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Technical offers that do not permit to identify precisely the models, their type, brand, article numbers and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.   
Link to the website where the description of the proposed model exists is not acceptable. It is obligatory to add the detailed description of specification offered.

Where the tenderer has offered an “equivalent” item to a brand and model indicated in these technical specifications, it will be the tenderer’s responsibility to prove the claimed equivalence, for example by appending to his offer for the respective item a comparison table with the features and functionalities of the item mentioned by its brand name and model in these specs and the corresponding features and functionalities of the product offered by the tenderer.

| **Item number** | **Specifications Required** | **Specifications Offered**  **(Brand, model, technical characteristics of the offered item)** | **Notes, remarks,**  **ref to documentation** | **Evaluation Committee’s Notes** |
| --- | --- | --- | --- | --- |
| **1** | **Tape Measures and Rulers**  **Description:** High-precision measuring tools for recording distances and dimensions of evidence and crime scenes. Ensure accurate and reliable measurements for forensic investigations.  **Key Features:**   * **Accuracy:** Measurement tolerance of ±1 mm. * **Length Options:**   + Flexible tape measures – up to 50 m (for large scene documentation).   + Rigid rulers – up to 1 m (for small object measurements). * **Material:** Durable stainless steel or fiberglass, resistant to wear and environmental factors. * **Markings:**   + Metric or dual scale.   + High-contrast, scratch-resistant, and easy-to-read in low-light conditions. * **Weather Resistance:** Water, dust, and temperature-resistant (IP54 or higher). * **Ergonomic Design:** Non-slip grip for secure handling in any conditions.   **Specifications:**   * **Length:** Up to 50 m (tape) / 1 m (ruler). * **Material:** Steel or fiberglass. * **Markings:** Metric, imperial, or dual-scale. * **Weight:** Lightweight and portable. * **Temperature Range:** -20°C to +50°C.   **Applications:**   * Crime scene documentation. * Forensic evidence measurement. * Scene mapping and reconstruction.   **Safety & Compliance:**   * Shock-resistant, anti-glare design. * Compliant with forensic measurement standards. |  |  |  |
| **2** | **Forensic Protractor and Angle Finder**  **Description:** Precision tool for measuring angles in forensic investigations. Essential for analyzing bullet trajectories, bloodstain patterns, and evidence positioning.  **Key Features:**   * **High Precision:** Accuracy up to 0.1°. * **Clear Markings:** High-contrast, easy-to-read degree increments. * **Durable Materials:** Transparent plastic or sturdy metal for reliability. * **Ergonomic & Portable:** Lightweight, non-slip grip, easy to carry in forensic kits.   **Specifications:**   * **Material:** High-impact plastic or metal. * **Range:** 0° to 180° or 0° to 360°. * **Markings:** Scratch-resistant, 0.1° increments. * **Weight:** Less than 500g. * **Temperature Resistance:** -20°C to +50°C.   **Applications:**   * Bullet trajectory and bloodstain analysis. * Evidence placement documentation. * Structural analysis in forensic cases.   **Safety & Compliance:**   * Impact-resistant construction. * Secure grip for precise handling. |  |  |  |
| **3** | **Electronic Caliper (Fowler 0-6"/0-150mm or equivalent)**  **Description:**  High-precision digital caliper for forensic investigations. Ensures accurate measurement of bullets, casings, tool marks, and other small evidence.  **Specifications:**   * **Measurement Range:** Not less than 150 mm (6"). * **Accuracy:** Not worse than ±0.02 mm. * **Resolution:** Not less than 0.01 mm. * **Material:** Corrosion-resistant stainless steel or equivalent. * **Functions:** External, internal, depth, and step measurements. * **Display:** Digital LCD with metric and imperial unit conversion. * **Power:** Battery-operated   **Applications:**   * Measuring bullets, casings, and tool marks. * Analyzing imprints and fine details on evidence. * Ensuring accurate forensic documentation.   **Compliance:**   * Must meet or exceed forensic measurement standards (ASTM, ISO, or equivalent). |  |  |  |
| **4** | **Laser Rangefinder (Leica DISTO D810 Touch or equivalent)**  **Description:** Precision laser rangefinder for accurate distance measurement, ideal for forensic investigations and scene documentation.  **Specifications:**   * **Measurement Range:** Not less than 0.05 to 100 meters (or greater, depending on the model). * **Accuracy:** Not worse than ±1 mm at distances up to 10 meters. * **Display:** Bright, backlit, high-contrast LCD touchscreen. * **Storage:** Built-in gallery for photos/screenshots * **Features:**   + Angle measurement (±0.1°)   + Bluetooth for data transfer   + Visual viewfinder (not less than 4x zoom)   + Indirect measurements (Pythagoras, trapezoid) * **Power Supply:** Rechargeable Li-ion battery, auto-off function. * **Durability:** At least IP54 (dust and splash-resistant); impact-resistant housing. * **Units:** Switchable between metric (mm, meters) and imperial (inches, feet).   **Applications:**   * Crime scene measurement, including distances, heights, and dimensions. * 3D crime scene reconstruction for evidence analysis and trajectory mapping. * Large-scale forensic analysis in accident or disaster reconstructions.   **Safety & Compliance:**   * Meets international laser safety standards   **Warranty:** Minimum 2-year warranty |  |  |  |
| **5** | **3D Laser Scanner (Faro Focus S150 or equivalent)**  **Description:** A cutting-edge device designed to scan environments and create highly accurate 3D models, ideal for crime scene documentation, building structures, or accident reconstructions. The scanner captures detailed spatial data, enhancing investigations and legal proceedings.  **Specifications:**   * Battery Life: Minimum 4 hours of continuous operation. * Versatility: Suitable for both indoor and outdoor use, can be used autonomously or mounted on manipulators/drones. * Camera: Built-in HDR camera for high-resolution imaging. * Scanning Range: Minimum 0.5 meters, up to 130 meters or more, depending on the environment. * Remote Control: Scan functions can be controlled remotely via WLAN or mobile device. * Field of View: 360° horizontal / 300° vertical for comprehensive coverage. * Ingress Protection: Solid particle and liquid ingress protection rated at not worse than IP54. * Appropriate computer with software and 3D modeling capability * Possibility to show 3D scan with any other computer (sharing information with other investigative institutes, court etc.)   **Applications:**   * Creating detailed 3D models of crime scenes for investigation and courtroom presentations. * Capturing complex environments and structures in high resolution for forensic analysis.   Enhancing the accuracy of accident reconstructions and crime scene documentation.  **Warranty:** Minimum 2-year warranty with service support  **Training:** Supplier must provide training on the proper use of the equipment. |  |  |  |
| **6** | **Forensic Scales and Reference Markers**  **Description:** Small, portable scales and markers used in forensic photography to provide accurate size references for evidence. These tools ensure that the dimensions of evidence are clearly documented, improving the reliability of photographic evidence.  **Specifications:**   * **Material:** Durable, washable plastic (e.g., ABS or polypropylene) or aluminum, resistant to wear, chemical exposure, and environmental conditions. * **Designs:** Available in L-shaped or linear configurations, featuring high-contrast, scratch-resistant markings for easy visibility in various lighting conditions. * **Size Options:** Multiple sizes available, typically ranging from 1 cm to 30 cm for linear scales and suitable lengths for L-shaped markers. * **Markings:** High-contrast, fade-resistant, and scratch-resistant for clear visibility in forensic images.   **Applications:**   * Ensuring accurate size representation of evidence in photographs. * Providing scale references for small objects, such as blood droplets, tool marks, or other minute evidence details. |  |  |  |
| **7** | **Micrometer**  **Intended Use:** Designed for ballistic investigations in forensic laboratories.  **Description:** A highly accurate measuring tool for precise small-scale measurements, essential for forensic analysis, particularly in firearm and tool mark examinations. It ensures exceptional accuracy for reliable criminal investigations.  **Technical Specifications:**   * **Measurement Range:** Up to 25 mm for detailed forensic analysis. * **Accuracy:** ±0.001 mm, providing superior precision. * **Material:** Durable, wear-resistant construction, suitable for intensive laboratory use.   **Applications:**   * Measuring rifling grooves in bullets for ballistic identification. * Analyzing tool mark impressions to determine weapon or tool usage. |  |  |  |
| **8** | **Metal Detector (Garrett AT Pro International or equivalent)**  **Description:** High-sensitivity metal detector for forensic investigations, designed tolocate metallic evidence (weapons, casings, fragments) on the surface or underground.  **Key Features:**   * Sensitivity: Adjustable for detecting both ferrous and non-ferrous metals. * Durability: Waterproof, rugged, and suitable for various environments. * Detection Modes:   + All-Metal Mode – detects all metal types.   + Discrimination Mode – filters unwanted objects.   + Adjustable Depth – precise detection at varying depths. * Real-Time Feedback: Digital display with depth indication and adjustable audio alerts. * Portability: Collapsible shaft for easy transport and simple controls for all skill levels.   **Technical Specifications:**   * Detection Depth: Up to 30 cm for small objects, deeper for larger items. * Search Coil: Waterproof and interchangeable. * Power Supply: Battery-operated, up to 8 hours of use. * Material Compatibility: Detects iron, steel, aluminum, brass, copper, gold, silver, etc.   **Applications:** Essential for forensic teams, law enforcement, and security professionals for efficient detection of metallic evidence in any investigative environment.  **Warranty:** Minimum 2-year warranty with service support  **Training:** Supplier must provide training on the proper use of the equipment. |  |  |  |
| **9** | **Field Forensic Light Source (Foster+Freeman Crime Lite Auto or equivalent)**  **Description**: A portable forensic light source specifically designed for field investigations, optimized for rapid detection of biological fluids, fingerprints, and other critical evidence in crime scenes. This lightweight and compact tool ensures flexibility and mobility, without compromising forensic integrity.  **Key Features**:   * Multi-Wavelength Illumination:   + UV (365nm): Detects biological fluids such as semen, saliva, and urine.   + Blue (450-470nm): Enhances latent fingerprint visibility.   + Green (525nm): Highlights blood stains with improved clarity.   + IR (800-900nm): Reveals alterations in ink and hidden markings. * Camera to show results directly from screen. Solution for the capture of evidence.   + Not less than 20MP camera   + Touchscreen display   + Intelligent software * Portable & Compact: Easy to transport, ensuring immediate availability for crime scene investigations. * Adjustable Light Intensity: Quick adjustments for various environmental conditions. * Ergonomic Design & Hands-Free Operation: Lightweight, with tripod mount for precise use. * Power Supply: Rechargeable battery, with optional AC connection for extended investigations.   **Applications**:   * On-site detection of biological fluids and blood stains. * Enhancement of latent fingerprints for further investigation. * Collection of trace evidence (fibers, hair, particles). * Identification of hidden markings and document alterations.   **Compliance**: Meets ASTM E3085 forensic standards.  **Warranty:** Minimum 2-year warranty with service support  **Training:** Supplier must provide training on the proper use of the equipment. |  |  |  |
| **10** | **Laboratory Forensic Light Source (Foster+Freeman Crime Lite ML Pro 2 or equivalent)**  **Description**: Designed for high-precision forensic analysis in laboratory settings, providing controlled illumination for detailed and consistent analysis of forensic evidence.  **Key Features**:   * Multi-Wavelength Illumination:   + UV (365nm): Detects biological fluids with high sensitivity.   + Blue (450-470nm): Enhances fingerprint visibility with superior clarity.   + Green (525nm): Optimized for blood stain detection.   + IR (800-900nm): Accurate identification of ink and document alterations. * Camera to show results directly from screen. Solution for the capture of evidence.   + Not less than 20MP camera   + Touchscreen display   + Intelligent software * High Intensity & Brightness: Ensures consistent, high-quality analysis in the laboratory. * Adjustable Light Intensity: Fine-tune light output for precise forensic analysis. * AC-Powered Operation: Continuous power supply for extended laboratory investigations. * Precision Tripod Mount: Provides stable positioning during extended use.   **Applications**:   * Detailed detection and analysis of biological fluids and blood stains. * Latent fingerprint enhancement in controlled laboratory conditions. * Collection and examination of trace evidence (fibers, hair, particles). * Thorough document examination for hidden or altered markings.   **Warranty:** Minimum 2-year warranty with service support  **Training:** Supplier must provide training on the proper use of the equipment. |  |  |  |
| **11** | **Remote Area Lighting System (Peli™ RALS 9460 or equivalent)**  **Description:**  A portable, high-intensity lighting system designed for forensic investigations, search and rescue, and emergency response. Provides reliable illumination in low-visibility conditions, ensuring operational efficiency in remote or off-grid locations. Durable, weather-resistant, and easy to transport.  **Key Features:**   * High-Intensity LED Light – output of at least 2,000 lumens, depending on the model. * Multiple Light Heads – system may include one or more adjustable light heads for increased coverage. * Adjustable Brightness – multiple power levels for optimized energy consumption and extended battery life. * Rechargeable Battery – lithium-ion, providing extended operation time. * Weather-Resistant Housing – impact-resistant with a protection rating of at least IP54. * Adjustable Mast – telescopic support with a minimum height of 1.8 meters, stable on uneven surfaces. * Portable Design – integrated wheels and handles for easy transport and deployment.   **Specifications:**   * Light Output: at least 2,000 lumens, depending on the model * Battery Life: at least 7 hours at maximum brightness * Mast Height: at least 1.8 meters * Operating Temperature: -20°C to +50°C * Protection Rating: at least IP54   **Applications:**   * Crime scene illumination * Search and rescue operations * Emergency and disaster response * Forensic field investigations   **Safety Features:**   * Overcharge and overheating protection * Non-slip feet for stability * Automatic shutoff during inactivity   **Compliance:**  Meets IEC safety standards for field operations.  **Warranty:** Minimum 2-year warranty with service support  **Training:** Supplier must provide training on the proper use of the equipment. |  |  |  |
| **12** | **Gunshot Residue (GSR) Collection Kit (Tri-Tech Forensics GSR-2SEM or equivalent)**  **Description:** A portable kit designed for the collection of GSR particles from hands, clothing, or surrounding surfaces at a crime scene.  **Technical Specifications:**   * Collection methods: adhesive devices, swabs, or specialized tapes. * Packaging: pre-sterilized and designed to prevent cross-contamination. * Storage containers: sealed and secure to maintain sample integrity.   **Applications:**   * Rapid collection of gunshot residue at crime scenes.   Immediate sampling from suspects or firearms for forensic analysis. |  |  |  |
| **13** | **DNA Sampling Kit (Sirchie DNA200 or equivalent)**  The DNA Sampling Kit is designed for the secure collection, preservation, and transport of DNA evidence from crime scenes. This kit ensures the integrity of the sample, prevents contamination, and complies with forensic standards, making it suitable for legal and investigative purposes.  **Kit Components:**   * Sterile Single-Use Swabs (foam or flocked): Optimized for high DNA yield and contamination-free collection. * Sample Transport Tubes: Leak-proof, labeled, and designed for long-term DNA stabilization. * Tamper-Proof Evidence Bags: Pre-labeled with case information fields and barcodes for secure tracking. * Disposable Nitrile Gloves: To prevent cross-contamination during collection. * Chain-of-Custody Forms: For proper documentation and legal integrity of evidence.   **Key Features:**   1. Forensic-Grade Sterility: All components are pre-sterilized and individually sealed to ensure high-quality sampling. 2. Secure Chain of Custody: Unique identifiers and tamper-proof packaging guarantee traceability and integrity of the evidence. 3. Optimized DNA Preservation: Transport tubes with stabilization media protect samples from degradation and maintain their integrity for analysis. 4. Versatile Collection: Suitable for buccal swabs, blood, saliva, touch DNA, and tissue samples, ensuring comprehensive evidence collection. 5. Field-Ready Design: Easy-to-use components ensure reliable DNA collection in challenging crime scene environments.   **Specifications:**   * Sample Types: Buccal cells, blood, saliva, touch DNA, and tissue. * Swab Material: Sterile foam or flocked swabs optimized for DNA capture and yield. * Tube Capacity: 1–2 mL, ideal for DNA stabilization solutions. * Storage Conditions: Stable at ambient temperatures; compatible with freezing for long-term preservation.   **Applications:**   * Forensic Investigations: DNA collection from crime scenes, victims, and suspects. * Criminal Identification: Vital for linking suspects to evidence or clearing individuals. * Legal and Law Enforcement Use: Supports casework, paternity testing, and victim identification.   **Compliance & Safety:**   * All components meet forensic and laboratory-grade quality standards. * Designed for single use to prevent cross-contamination, ensuring integrity in every sample collection. |  |  |  |
| **14** | **Blood Identification Kit (BLUESTAR Forensic MAGNUM or equivalent)**  **Description:** The Blood Identification Kit is designed for detecting and confirming blood traces at crime scenes and forensic laboratories. It utilizes chemical, optical, immunological, and spectroscopic methods to identify human or animal blood on various surfaces and samples. This kit is essential for evidence collection, crime scene reconstruction, and forensic analysis, providing reliable results for investigations.  **Key Features:**   * High-Sensitivity Detection: Capable of detecting minute traces of blood, including dried and diluted samples. * Portable and User-Friendly: Compact, lightweight, and easy to operate with minimal training required. * Non-Destructive Testing: Ensures that the sample remains intact for further analysis without altering its integrity. * Versatile Performance: Effective on a variety of surfaces and in different crime scene conditions. * Forensic Standards Compliance: Meets forensic requirements, compatible with DNA analysis and serology tests.   **Detection Technologies:**   * Chemical Testing Kits: Utilizes reagents like luminol for chemiluminescence to reveal blood traces. * Optical Detection Devices: Employs UV or infrared light to enhance blood visibility for easier identification. * Immunological Assays: Differentiates human blood from animal blood for accurate classification. * **Spectroscopic Analyzers**: Provides real-time analysis to distinguish blood from other substances.   **Applications:**   * Crime Scene Investigation: Identifies bloodstains for crime scene reconstruction and evidence collection. * Laboratory Analysis: Confirms the presence of blood for DNA extraction and subsequent analysis. * Disaster Victim Identification (DVI): Detects blood traces in mass casualty scenarios, aiding in victim identification.   **Advantages:**   * Rapid and Reliable Detection: Provides fast results with high sensitivity for thorough forensic analysis. * Enhances Investigation Efficiency: Helps investigators quickly locate and identify blood samples, streamlining the investigative process. * Supports Legal Validation: Results are court-admissible, making this kit essential for legal investigations and proceedings.   **Safety and Maintenance:**   * Non-toxic Reagents: Safe for use, with clear disposal and handling guidelines. * Regular Calibration: Ensures accurate results, requiring routine calibration for optimal performance.   This Blood Identification Kit is an indispensable tool for forensic professionals, providing fast, accurate blood detection to support investigations and legal processes effectively. |  |  |  |
| **15** | **Blood Identification Reagent Test Strips (Hemastix or equivalent)**  **Description**: A rapid and reliable blood identification reagent test strip designed for the detection of human blood at crime scenes and in forensic investigations. This non-invasive tool offers an easy-to-use, cost-effective solution for initial blood detection, assisting law enforcement and forensic experts in the identification of blood stains or traces with high accuracy.  **Key Features:**   * Fast and Simple Operation: The test strips are easy to use and provide quick results for the identification of human blood. * Color Change Indicator: When the reagent reacts with human hemoglobin, the strip changes color, providing a clear and visible result. * Non-Invasive: Ideal for field use, these strips are simple to apply without requiring extensive sample preparation. * No Need for Specialized Equipment: The strips can be used without the need for complex laboratory equipment, making them suitable for field investigations. * Compact and Portable: Lightweight and compact packaging, ideal for carrying on-site to crime scenes. * Reliable Results: High sensitivity to human blood, even in trace amounts, ensuring reliable identification of blood at crime scenes. * Durable and Long Shelf Life: Stable and effective under a wide range of environmental conditions, ensuring consistent performance over time.   **Applications:**   * Field Forensics: Detection of blood at crime scenes for preliminary investigation before confirmatory tests. * Crime Scene Investigation: Identification of bloodstains on clothing, surfaces, or other materials. * Corroborating Evidence: Assisting investigators in confirming the presence of blood as part of a broader forensic investigation.   **Compliance**: Meets forensic standards for blood identification in crime scene investigations.  **Packaging Options**: Available in convenient packaging formats with multiple strips for extended use in the field. |  |  |  |
| **16** | **Immunological Blood Identification Test (Hexagon OBTI or equivalent)**  **Description**: Rapid test designed to confirm human blood presence in forensic investigations. Utilizes monoclonal antibodies to detect human hemoglobin, ensuring precise identification of human blood at crime scenes or in the lab.  **Key Features:**   * Human Blood Specificity: Detects human blood by identifying human hemoglobin antigens, distinguishing from animal blood. * Quick Results: Provides results in minutes, with easy-to-read colorimetric changes for clear interpretation. * Portable and Simple: No specialized equipment required, ideal for field or lab use. * Compact and Lightweight: Convenient for on-site investigations and field analysis. * Reliable: High sensitivity for small or degraded blood samples.   **Applications:**   * Field Forensics: Identifies human blood at crime scenes. * Forensic Laboratories: Initial screening before further DNA analysis. * Crime Scene Investigation: Differentiates human from animal blood for evidence collection.   **Compliance:** Meets forensic standards for blood identification. |  |  |  |
| **17** | **Microtube Thermoshaker (Biosan TS-100 or equivalent)**  A laboratory device designed for precise temperature control and intensive mixing of samples in microtest tubes or PCR plates. Combining the functionalities of a shaker, dry-block thermostat, and thermoshaker in one compact unit, it is ideal for applications like DNA analysis, protein extraction, and molecular biology procedures.  **Key Features:**   * Simultaneous Heating and Mixing: Allows for concurrent or independent heating (up to +100°C) and mixing, offering flexibility for various experimental protocols. * Rapid Mixing Speed: Quickly achieves set mixing speeds, maintaining a consistent rotation amplitude for uniform sample processing. * Temperature Stability: Maintains a stable temperature across a wide range, with uniformity at ±0.1°C at 37°C and ±0.2°C at 100°C. * User-Friendly Interface: Features an LCD display showing preset and actual values for temperature, speed, and time, enabling easy monitoring and adjustments. * Quiet Operation: Designed for low-noise operation, ensuring a comfortable laboratory environment. * Compact and Durable: Its small size and robust construction ensure long service life and efficient use of lab space.   **Specifications:**   * Temperature Control Range: Ambient +5°C to +100°C * Temperature Setting Resolution: 0.1°C * Temperature Stability: ±0.1°C * Speed Control Range: 250 to 1,400 rpm * Orbit Diameter: 2 mm   **Applications:**   * Sample Preparation for DNA Analysis: Facilitates DNA and RNA extraction for genetic analysis. * Protein, Polysaccharide, and Lipid Extraction: Efficiently extracts cellular components for biochemical studies. * Enzymatic Reactions: Provides controlled conditions for conducting enzymatic assays and other biochemical reactions.   **Interchangeable Blocks:** The thermoshaker supports a range of interchangeable blocks for different tube sizes and plate formats, enhancing its versatility for various lab applications.  In summary, the Thermoshaker is a reliable and efficient tool for labs requiring precise temperature control and mixing of microtubes and PCR plates, streamlining workflows in molecular biology and biochemistry. |  |  |  |
| **18** | **Block for Thermoshaker for 24 Microtubes 2 mL (Biosan SC-24 or Equivalent)**  **Description:** This block is designed for use with thermoshakers and dry-block thermostats to provide uniform temperature control and efficient mixing for 24 microtubes of 2 mL each. Ideal for molecular biology, forensic science, and clinical laboratories, this device enables precise incubation, sample preparation, and reaction processes, ensuring high-quality results and maintaining sample integrity.  **Key Features:**   * Temperature Control: Uniform heat distribution for consistent incubation conditions. * Efficient Mixing: Secure wells minimize sample movement during shaking, compatible with orbital or reciprocal thermoshakers. * Robust Construction: High-quality, thermally conductive and chemically resistant material. * Sample Compatibility: Fits 24 x 2 mL microtubes for simultaneous processing. * User-Friendly: Easy installation, quick handling, and heat-resistant grips.   **Specifications:**   * Capacity: 24 microtubes of 2 mL * Material: Thermally conductive alloy or equivalent * Temperature Uniformity: ±0.1°C across wells * Compatibility: Fits compatible thermoshakers   **Applications:**   * Molecular Biology: DNA/RNA extraction, enzymatic reactions, protein analysis. * Forensic Science: PCR and qPCR workflows, crime scene sample processing. * Clinical Laboratories: Diagnostic protocols and sample preparation.   **Safety and Maintenance:**  Easy to clean, long-lasting performance, compatible with standard laboratory cleaning agents. |  |  |  |
| **19** | **Personal Vortex Mixer (Biosan Vortex V-1 Plus or Equivalent)**  **Description:**  The Personal Vortex Mixer is a compact and efficient laboratory instrument designed for rapid mixing of small liquid volumes in test tubes, microtubes, and similar containers. It is essential for forensic sample preparation, reagent mixing, and resuspension of biological and chemical materials. With its intuitive design and reliable performance, this vortex mixer enhances forensic workflows, providing consistent and thorough mixing for DNA, RNA, and protein analysis.  **Key Features:**   * Compact and Ergonomic Design: Space-saving, lightweight, and portable for easy placement in any laboratory setting. * Efficient and Consistent Mixing: Adjustable speed range (500–3000 rpm) for optimal mixing of different sample viscosities. Oscillating movement ensures uniform sample distribution and prevents sedimentation. * Dual Operating Modes:   + Continuous Mode: For uninterrupted mixing during prolonged applications.   + Touch Mode: Activates mixing only when pressure is applied, reducing energy consumption. * Adjustable Speed Control: Smoothly adjustable speed for gentle agitation (low speeds) or rapid homogenization (high speeds). * Stable and Quiet Operation: Rubber feet or suction cups prevent movement, and the device operates quietly, even at maximum speed. * Durable and Chemical-Resistant: Built to withstand daily use and resistant to most laboratory chemicals.   **Specifications:**   * Speed Range: 500–3000 rpm * Mixing Orbit Diameter: 4 mm * Operating Modes: Continuous or touch-activated * Sample Compatibility: Tubes from 0.5 mL to 50 mL and other small containers * Power Supply: 220V   **Applications:**   * Forensic Science: Efficient mixing of forensic samples, reagents, and solutions for DNA, RNA, and protein analysis, aiding in the preparation of samples for downstream applications. * Molecular Biology: Ideal for mixing nucleic acid extraction reagents, PCR/qPCR reagents, and other molecular protocols. * Chemical Analysis: Useful for blending solvents, reagents, and chemical mixtures in small volumes. * Clinical Laboratories: Mixing blood samples, reagents, and assay components with minimal sample loss.   **Safety and Performance:**   * Integrated overheating protection ensures long-term reliability. * Non-slip base for stability and enhanced operator safety.   This Personal Vortex Mixer is a versatile, high-performance tool, designed to provide reliable, consistent mixing for forensic laboratories and other applications requiring precise, high-speed agitation. |  |  |  |
| **20** | **Filter Tips for Precision Pipetting (20 μL, 200 μL, and 1000 μL) – Expell Filter Tips or Equivalent**  **Description:**  High-quality sterile filter tips designed to ensure precision and accuracy in laboratory liquid handling. Equipped with aerosol-resistant hydrophobic filters, these tips prevent contamination, ensuring reliable and reproducible results. Suitable for applications in molecular biology, forensic science, clinical diagnostics, and chemical research.  **Key Features:**   1. **Universal Compatibility:**    * Designed for use with most standard single-channel and multi-channel pipettes. 2. **High-Quality Material:**    * Manufactured from medical-grade polypropylene for durability and chemical resistance.    * Certified DNase, RNase, and endotoxin-free to ensure contamination-free sample handling. 3. **Aerosol-Resistant Filtration:**    * Integrated hydrophobic filters effectively prevent cross-contamination.    * Ideal for sensitive applications, including PCR, qPCR, and forensic analysis. 4. **Sterile and Ready to Use:**    * Pre-sterilized by gamma irradiation, eliminating the need for autoclaving.    * Certified for laboratory-grade sterility and quality compliance. 5. **Optimized Design for Precision Pipetting:**    * Fine, beveled tip design ensures accurate droplet formation and precise sample dispensing.    * Smooth surface and precise dimensions allow for secure sealing and minimal pipetting force. 6. **Convenient Packaging:**    * Supplied in sturdy racks for easy handling and organized storage.    * Each rack contains 96 tips, with 8–10 racks per pack for efficient laboratory use.   **Specifications:**   * Volume Ranges: 20 μL, 200 μL, 1000 μL * Material: Medical-grade polypropylene * Filter Type: Hydrophobic aerosol-resistant filters * Packaging: 96 tips per rack; 8–10 racks per pack * Sterility: Pre-sterilized by gamma irradiation * Contamination-Free Certification: DNase, RNase, and pyrogen-free   **Applications:**   1. **Molecular Biology:**    * Accurate pipetting for PCR, qPCR, enzymatic reactions, and nucleic acid handling. 2. **Forensic Science:**    * Prevents contamination in forensic DNA and toxicology tests. 3. **Clinical Diagnostics:**    * Suitable for ELISA, immunoassays, and other diagnostic liquid handling. 4. **Chemical and Biochemical Research:**    * Ensures precision in reagent handling and sample preparation.   **Benefits:**   * Ensures high accuracy and repeatability in pipetting workflows. * Minimizes risk of contamination for reliable experimental outcomes. * Pre-sterilized and ready to use, reducing preparation time. * Robust construction ensures compatibility with laboratory conditions and reagents.   **Safety and Compliance:**   * Designed for single use to eliminate cross-contamination risks. * Must be disposed of according to laboratory waste management protocols.   This document ensures that the filter tips meet laboratory standards for precision pipetting, sterility, and contamination control, making them a reliable choice for critical laboratory applications. |  |  |  |
| **21** | **Optical Microscope for GSR Analysis (Leica DM750 P or equivalent)**  **General Description:** A high-performance optical microscope designed for the preliminary analysis of Gunshot Residue (GSR) particles. It provides rapid detection and morphological evaluation of forensic samples prior to confirmatory SEM/EDX testing. Suitable for both forensic laboratories and on-site examinations, the system enhances overall efficiency in GSR-related investigations.  **Key Specifications:** • **Magnification Range:** 40× to 1000×, including a 100× oil immersion objective for high-resolution analysis. • **Optical System:** Achromatic or plan-achromatic lenses for clear, high-contrast imaging. • **Illumination:** Adjustable LED or halogen illumination for consistent brightness and contrast. • **Contrast Techniques:** Brightfield, darkfield, and polarized light imaging (mandatory for GSR visualization). • **Objective Lenses:** Minimum set of 4×, 10×, 40×, and 100× oil immersion objectives. • **Eyepieces:** Wide-field 10× eyepieces with diopter adjustment for user comfort. • **Mechanical Stage:** Precision-controlled, two-axis mechanical stage for accurate sample positioning. • **Digital Imaging (Optional):** High-resolution digital camera (minimum 5 MP) with PC connectivity for image capture and documentation.  **Applications:** • **Forensic Analysis:**  – Screening and identification of suspected GSR particles on hands, clothing, and surfaces.  – Morphological differentiation between GSR and non-GSR particulate matter. • **Ballistics & Firearm Investigations:**  – Microscopic examination of metal fragments and residue from firearm discharge. • **Judicial and Laboratory Use:**  – Sample preparation for further confirmatory analysis using SEM/EDX instrumentation.  **Warranty & Support:** • **Warranty Period:** Minimum 3 years for optical and mechanical components; minimum 1 year for electronic parts, including LED illumination and digital modules. • **Service Availability:**  – Availability of authorized service centers in the country of use (Ukraine).  – Remote technical support for calibration, configuration, and diagnostics.  – Access to firmware and software updates for digital imaging systems.  **Training & Documentation:** • **Basic Operator Training:**  – Illumination setup, polarization alignment, and oil immersion use.  – Calibration and verification procedures.  – Sample preparation techniques for GSR analysis. • **User Materials:**  – Instruction manual in English or Ukrainian (preferred).  – Video tutorials covering assembly, disassembly, and basic maintenance.  **Note:** Alternative models from reputable manufacturers may be proposed, provided all technical requirements listed above are fully met or exceeded. |  |  |  |