FLUIDNATEK®
by BioInicia

MCIK
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MATERIAL CHARACTERIZATION INSTRUMENTS, KOREA

BioInicia
Innovative Polymer Applications

TECHNICAL DATASHEET

FLUIDNATEK™ eSpinning Pilot Tool (LE-500)

I. Stainless steel, aluminum and glass frame and enclosures: The cabinet is chemically resistant to organic solvents, enabling proper solvent cleaning. It is designed with a focus on the creation of sterile conditions.

II. Two HV power supplies (up to 60kV): Equipped with two high voltage power supplies, is able to create maximum emitter-collector electrical voltage drop of 60kV (to +30 kV and -30kV the emitter and the collector, respectively). This feature allows the accurate control of the process and improves the collection of atomized particles/fibers avoiding them to stick to grounded undesired locations.

III. Transversal axis. Automated motion: Automated nozzle motion to create homogeneous samples. Adjustable speed and stroke. Max speed: 100 mm/s. Minimum speed: 1 mm/s. Maximum stroke: 500 mm.

IV. Taylor cone visualization system: Camera and lenses for the visualization of the Taylor cone, enabling a much better control of the eSpinning process. Especially recommended for coaxial and multi-axial eSpinning.

V. Temperature and humidity display.

VI. Special safety-encapsulated diffuse LED lighting: To enable proper visualization of the process.

VII. Control from Touch Screen: The tool is controlled from a touch screen interface through which the user can interact with intuitive software, controlling all the parameters and functionalities.

VIII. Special castors: Easy positioning of the equipment. Proper anchoring to the floor.

IX. CE compliance: Designed to ensure a completely safe operation. Although the equipment supplies up to 60kV, the user is completely protected against electrical discharges. FLUIDNATEK™ Tools are CE compliant, fulfilling all the corresponding EU Directives (2009/127/CEE, 1999/5/CE, 2004/108/CEE, 2006/95/CE).

X. LABORATORY MODE (non-continuous batch operation): ideal for the production of small samples.

- Two syringe pumps: Allowing single liquid and coaxial eSpinning. Minimum death volume (down to <0,1 mL). Accurate liquid infusion is made by syringe pump systems. Syringes: up to 140 mm of diameter. Max-min flow rates: 1.257-0,73 ml/h.

Linear force: 100-200 N. All the parts in contact with the liquids are highly chemically resistant, enabling to operate with most of solvents and materials.

- Single phase nozzle: Allows replacing and changing the needle very easily. Can use a broad range of needle dimensions (OD: 3,2 – 0,15 mm; ID: 2,6 – 0,002 mm).
- Coaxial nozzle: Spinneret for coaxial eSpinning. Needles can be easily replaced and interchanged, allowing the use of a broad range of dimensions (OD: 3,2 – 0,15 mm; ID: 2,6 – 0,002 mm). Horizontal atomization.
- Drum collector: Made of stainless steel. Dimensions: 200 mm diameter x 300 mm width. Speed: Up to 2000 rpm.

XI. PRODUCTION MODE (continuous operation): Conceived as the previous step to industrialization. Ideal for demonstrators and pre-series.

- Automatic regulation of the collector-nozzle distance: Automated regulation of the nozzle-collector distance. Range: 0-300 mm. Accuracy: 1mm. Upwards atomization.
- Roll to roll system for continuous collection. 500 mm width. Adjustable linear velocity: 1mm/s to 100 mm/s.
- 2 parallel injection heads (24 single phase / coaxial nozzles each). U*p to 4 heads.*
- Two stainless steel vessels of 2L capacity for continuous dosing.

XII. OTHER TECHNICAL DATA

- This equipment can be used with both water and organic solvents based solutions/dispersions/emulsions.
- Dimensions: 1200 mm x 1200 mm x 2100 mm.
- Input: 120-230V, 50/60Hz. 6 bar.
- Gas exhaust fan: The equipment is provided with a ventilation fan to properly exhaust evaporated solvents.

Cabinet climate control (optional)

- Humidity control (from 5% to 95%. Accuracy 1%)
- Temperature control (from 20ºC to 50ºC. Accuracy 0.5ºC)

Laminar flow cabinet (optional)

It creates the cleanliness conditions inside the working area in order to avoid contamination of samples. Includes blower and HEPA/ULPA filters to meet cleanliness standards down to Class 10,000 (ISO 7).

Sterile cabinet (optional)

Proper wavelength UVC lamps provide a germicidal effect to sterilize the cabinet surfaces.