

PREFORMULATION INSTRUMENTS

Thyr-2 vibration sieve



Application:

- particle size measurement
- particle fractioning

Properties:

- adjustable amplitude
- max. 5 Retsch sieves
- programmable sieving time
- „Easy Sieve” software

Responsible: sovany.tamas@szte.hu

Zuma semi-automatic capsule filler



Application:

- Filling of powders or granules into hard capsule shells

Properties:

- Consecutive filling of 150 capsules
- Available capsule sizes: 1 and 2
- Gravity, vibrational and tamping-pin filling

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Rhopoint MFFT apparatus



Application:

- determination of the minimum film forming temperature of polymers
- determination of the film forming time

Properties:

- 5-60 °C full measurement range
- 6 selectable temp. ranges

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Erweka DT-700 dissolution tester



Application:

- Dissolution test of tablets, capsules or medicated films
- Permeability tests

Properties:

- 6 parallel measurements
- Automatic sampling
- Paddle and basket method
- Enhancer cell for permeability tests

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Erweka ZT-1 disintegration tester



Application:

-Disintegration tests for tablets, capsules and coated dosage forms

Properties:

- Single workstation
- 6 parallel measurements
- Automatic endpoint detection
- Programmable protocols

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Kraemer checkmaster apparatus



Application:

-Investigation of the physical parameters of tablets and capsules

Properties:

- Measurable parameters: mass, height, diameter, hardness
- Programmable measurement protocols
- Report printing

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Erweka friability tester



Application:

-Friability test of tablets

Properties: -

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Niro-Aeromatic Strea-1 fluid-bed apparatus



Application:

- Fluid-bed drying
- Granulation
- Coating of pellets and minitablets

Properties:

- Upper (counter-current) spraying
- Lower (direct current) spray, Wurster method
- Liquid dosing: peristaltic pump
- Capacity: 100-1500 g
- Spray pressure (max. 5 bar)
- Drying air flow rate (50-150 m³/h)

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Freund CF-360 centrifugal granulator



Application:

- Wet granulation
- Film coating of pellets

Properties:

- Tangential spray
- Capacity: 500-3000 g
- Drying air flow rate: 50-400 nL/min
- Spray air: max. 5 bar
- Additional powder dosing is possible

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ProCepT 4M8 high-shear granulator



Application:

- Powder mixing
- Wet granulation
- Thermoplastic agglomeration

Properties:

- Capacity: 50-200 g
- Glass and metal chambers
- Double walled chamber (for controlled temperature)
- Liquid dosing: titrator
- Recording of process parameters is possible

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Caleva mini extruder és spheronizer



Application:

-Pellet production

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Properties:

-Single-screw extrusion

-5-10 g capacity

-Spheronizer capacity: max. 150 g

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Korsch EK0 instrumented eccentric tablet press



Application:

- Tableting
- Investigation of deformability

Properties:

- Compression force measurement on upper and lower punch
- Displacement measurement of upper and lower punch
- Single and multitip punches in different sizes and shapes
- Software-based compression force evaluation
- Calculated parameters: Lubrication coefficient, Friction work, Stamm-Mathis plasticity

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Manesty F3 instrumented eccentric tablet press



Application:

-Tableting

Properties:

- Compression force measurement on upper and lower punch
- Displacement measurement of upper and lower punch
- Single and multitip punches in different sizes and shapes

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Ronchi AM8S rotary tablet press



Application:

-Tableting

Properties:

- 8 pair of punches
- Round flat, and curved punches in different sizes
- Compression force measurement on upper and lower punches
- Detection of pre-compression and ejection forces
- Software-bases evaluation of compression force curves

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ProCepT Pancoat perforated pan coater



Application:

-Film coating of tablets and capsules

Properties:

- Capacity: 200-1000 g
- No. of spray guns: 1, spray shape: round
- Liquid dosing: peristaltic pump
- Controlling and data logging software

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Blisterboy 300D semi-automatic blister packaging apparatus



Application:

-Blister packaging of tablets and capsules

Properties:

- Available capsule sizes: 1 and 2
- Available tablet size: (up to) 10 mm (round)

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Hanson Microette Plus Automated Diffusion Testing System

Application:

The Hanson Microette Plus Automated Diffusion Testing System is an ideal research tool for studying topical and transdermal drug delivery of liquid and semi-solid dosage forms (gels, ointments). It is suitable for both synthetic membrane and human skin experiments.

Features:

It allows the operation of six vertical diffusion cells simultaneously. The cells are closed from above. The adequate temperature is provided by the water-jacket surrounding the cell. The homogeneity of the medium in the cells is provided by a magnetic mixing unit with Helix stirrers placed in the cells.

For further information contact: berko.szilvia@szte.hu



LOGAN Automated Transdermal Diffusion Cell Sampling System

Application:

It is designed for testing permeation rate for semi-solid dosage and topical drug formulation.

It is suitable for both synthetic membrane and human skin experiments.

Features:

It allows the operation of six vertical diffusion cells simultaneously. The cells are opened from above. The adequate temperature is provided by the dry heating surrounding the cell.

The homogeneity of the medium in the cells is provided by a magnetic mixing unit with stirrers placed in the cells.

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PION Gut-box SKIN-PAMPA System

Application:

The drug release of liquid and semi-solid dosage forms, including gels, ointments, and patches, can be measured on the device.

Features:

Skin-PAMPA, developed for skin modelling, is one of the *in vitro* non-cellular permeability models for a Parallel Artificial Membrane Permeability Assay (PAMPA). In PAMPA, a “sandwich” structure is formed by a 96-well plate which models passive transport. The model is exceptional in the early stages of research as part of the physicochemical characterization of drug candidates because it is robust, has high permeability, and is cost effective.

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LEICA CM 1950 Cryostat

Application:

The LEICA CM 1950 Cryostat features an encapsulated microtome and functions to cool specimen separately. The cryostat is designed to produce frozen *ex vivo* human skin sections for RAMAN skin penetration tests.

Features:

The cooling of the chamber and the cooling of the specimen head can also be adjusted in the cryostat. The cryostat is equipped with a Peltier element, capable of cooling a specimen to -40 °C in less than one minute.

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Scanvac Coolsafe 100-9 Pro laboratory lyophilizer

Application:

- Production of powder ampoules for injection
- Production of solid nano drug delivery systems

Features:

- freeze-drying at a maximum temperature of $-40\text{ }^{\circ}\text{C}$ at a pressure of 0.013 bar
- temperature, pressure, operating time monitoring

Operator: katona.gabor@szte.hu



"Büchi-191" mini spray dryer

Application:

Spray drying from solutions, Structure modifications, Drying of suspensions, Agglomeration, Spray crystallization, Particle coating, Micro-encapsulation and coating, Modification of particle size, Agglomeration of nanoparticles, Immobilization of liquids and solid materials in a matrix, Manufacture of microcapsules

Specifications:

Max. temperature of drying air: 220 °C

Spray gas:

compressed air, 800 l/h, 5-8 bar”

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"Retsch PM 100" planetary ball mill

Application:

- improving of the dispersion degree, pretreatment, co-milling

Specifications:

- planetary ball mill
- jar of 12 ml / jar of 250 ml
- programmable RPM (depending on jar size) 100-650rpm
- programmable grinding time: 00:01-99:59 (min:sec)

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Planetary Micro Mill, PULVERISETTE 7 premium line

Application:

- micro/nano milling; dry or wet media

Specification:

Grinding bowl sizes 20, 45, 80 ml / Grinding ball diameter 0.1 - 20 mm

Final fineness (depending on material) < 0.1 μm

Typical grinding time down to analytical fineness 3 min

Gas pressure and temperature measurement

Max. rotational speed grinding bowls: 2200 rpm / Rotational speed of main disk: 100-1100 rpm

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Nano Spray Dryer B-90 HP

Small particles, small samples, high yields

Solution, fine dispersion (200 nm – 5 µm)

Max. temperature input: 120 °C

Heating control, Fuzzy logic, control accuracy $\pm 3^{\circ}\text{C}$

Spray gas: Compressed air or nitrogen / 200-800 l/h, 5-8 bar

Airflow: 80-160 L/min

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Andersen Cascade Impactor

Application:

- in vitro lung deposition for dry powder inhaler systems:

- preseparator
- 28, 60, 90 L/min flow rate

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