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TECHNICAL SPECIFICATION

LABORATORY

CALEVA

MINI COATER/DRIER -2

Bench-top Spray coater / Fluid Bed Drier

TECHNICAL SPECIFICATION

MINI COATER DRIER - 2 TECHNICAL SPECIFICATION

DESCRIPTION

The MCD - 2 Bench Top Spray Coater – Drier is a small-scale combination film spray coater and fluid bed dryer. This bench top formulation research tool is designed to apply a liquid coating onto the external surface of as little as one tablet or capsule or a small quantity (typically 1 – 20 grams) of beads, pellets, spheroids or similar solid or hollow–shaped pieces and thereafter, dry the applied coating.

Examples of typical pieces and sizes include (but are not limited to) the following:

◯ Round, flat faced tablet	1 mm up to 10 mm diameter
◯ Oblong, oval or caplet shaped tablets	1 mm up to 10 mm length
◯ Cylindrical shaped pellets	1 mm up to 10 mm length
◯ Hollow or solid ball shaped pieces	1 mm up to 10 mm diameter
◯ Beads or spheroids	Equal or greater than 500 u (micron) diameter

The maximum operating air temperature is 60 C. The maximum sustainable air velocity is 16 meters per second. The MCD - 2 Bench Top Spray Coater / Dryer is compact and simple to operate.

OPERATION

A fluid bed is produced by the application of a variable, controllable and heated air flow that works in combination with a user selectable electrically controlled, mechanical vibration mechanism. The vibration of the conical chamber helps to prevent product sticking to the chamber walls and screen. Air flow is generated by means of a fan is introduced from the bottom of the chamber. The temperature of the airflow is controlled by means of an electric heater with a temperature feedback loop. The heated air is used to simultaneously fluidize the product and dry the coating as it is applied via the coating spray nozzle.

The electrically controlled mechanical vibration mechanism oscillates and is variable in frequency (10 – 25 Hertz). The amplitude is fixed at 3.0 millimetres. All of these parameters are controlled from the front of the machine enclosure.To apply a coating to the product surface a binary (compressed air / gas + the liquid coating) nozzle is vertically positioned over the centre of the open top of the conical coating / drying chamber.

A precision peristaltic pump meters the liquid flow rate between 5 and 50 ml per hour the binary nozzle/ atomizer. The liquid coating is atomized in a downward conical spray pattern and propelled onto the external surface of the product. The net effective conical

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spray angle is ~ 18 degrees. The pressure of the compressed atomizing air / gas is manually controlled by means of a pressure regulator with an analogue pressure gauge. The peristaltic pump, the pressure regulator and its pressure gauge are all located on the front of the stainless steel control enclosure.

Coating rates will be influenced and determined by:

- Geometry, weight and quantity of pieces to be coated
- Type and concentration of liquid coating
- Liquid coating rate
- Nozzle net effective spray angle, spray pattern, and compressed air / gas pressure
- Air flow, air velocity and air temperature

TYPICAL ELAPSED TIME

The typical elapsed time (to spray apply a coating liquid on to the external surface area of sample piece(s) is approximately 15 - 30 minutes. A resettable timer is included in the scope of supply. It's purpose is to display elapsed coating times.

CONTROL

LCD display:	115 mm wide x 65 mm high
Elapsed timer	With START / STOP button and RESET button
Agitator	Pushbutton with indicator light and separate adjustment dial
Fan	Pushbutton with indicator light and separate adjustment dial
Heater	Pushbutton with indicator light and separate adjustment dial
Pump	Pushbutton with indicator light and separate adjustment dial

ANTI-STATIC PROBE

Spraying generates static electricity with most formulations. This can cause pellets with low mass to stick together or to the sides of the application chamber. With larger pellets of tablets the antistatic forces are insignificant compared to the mass of the particles being sprayed. The effect static electricity can be minimized by using the incorporated anti-static gun. The gun is mounted into a custom built mount incorporated into the spray head and the required high voltage electronics and controls are incorporated in the body of the MCD-2.

MATERIALS OF CONSTRUCTION

All internal piping is constructed of 316 stainless steel. The external and internal surfaces of the two - fluid nozzle atomizer are constructed of stainless steel. The

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translucent, plastic coating / drying chamber is constructed of solvent- resistant Polytetrafluoroethylene (PTFE) and Polypropylene.
The disc-shaped support screen located at the bottom of the drying chamber, is constructed of a polymeric mesh, or alternately, stainless steel.

MECHANICAL DESCRIPTION

The electric heater, mechanical agitation mechanism and the radial fan are all contained inside a 304 stainless steel control enclosure. The two - fluid atomizing nozzle, coating / drying chamber, air pressure regulator with an analogue pressure gauge, manually operated controls, LCD display screen, and the peristaltic pump are individually located on the front exterior of the 304 stainless steel control enclosure.

UTILITY REQUIREMENTS

Electrical Supply: 110 or 220 Volts 1 Phase, 50 or 60 Hertz (must be specified with order).
Compressed air up to 2.5 bar required through a 4 mm external diameter supply pipe. AIR Air flow required = 60 l/min at 2 bar.

APPROXIMATE OVERALL WEIGHT AND DIMENSIONS

500 mm wide x 550 mm deep x 380 mm high (plus 240 mm for the vertical stand holding the spray head). Positioning fluid nozzle atomizer assembly on top of the enclosure brings the overall height to approximately 762 mm. Approximate Nominal Weight is 32 kilograms.

The Base Machine as supplied is fully functional and no optional items are required.

Please contact us for additional details about available options.

TALK TO US

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