LabPlant™

SD-06A & SD-06AG

Laboratory Scale Spray Dryers

Introduction

The LabPlant SD-06 range of Laboratory Scale Spray Dryers is the result of 30 years continuous development in the field of laboratory scale spray drying systems. Our units are self-contained and supplied complete and ready for immediate operation. All major components are housed within a stainless steel cabinet and can be used on a bench top or with an optional stainless steel stand.

The SD-06A is suitable for use with aqueous substances only.

The New SD06AG has all the advantages of the SD06A plus an integral inert gas unit and can be used for both aqueous and solvent based solutions. The unique design of the "inert gas unit" allows easy processing with air or inert gas. Also, warm up and cool down of glassware can be done with air, whilst processing with gas; this reduces gas usage and cost. The SD06AG also allows the adjustment of gas flow to suit process requirements.

Both systems (SD06A & SD06AG) have infinitely variable temperature controls, product injection and gas flow rates giving the widest possible process conditions. With the addition of the stainless steel stand, we can offer a double cyclone allowing the collection of smaller particles, this system is designed to be used with an extra cyclone, large main chamber & stand.

Both the SD-06A and SD-06AG require connection to a 13 amp, 220/240 V, 50-60 Hz power supply (Other Power Requirements Available) and provision for exhausting the evaporated moisture to atmosphere or to an existing extraction system.

Additional, optional, extras area available with both models (see p.4) and we are always happy to consider adjustments or modifications to meet the special requirements of our customers.

PLEASE NOTE: CONTINUOUS NITROGEN SUPPLY IS REQUIRED FOR USE WITH SOLVENT-BASED PRODUCTS

Technique

A menu driven microprocessor controller allows the selection of inlet temperature, airflow, automatic de-blocker frequency and pump speed. The controller features an RS 232 output for connection to a PC or data logger and software allows the remote control and monitoring of all functions and printing of results.

The self-priming peristaltic pump delivers the sample liquid from a container through a small diameter jet into the main chamber. At the same time an integral compressor pumps air into the outer tube of the jet which causes the liquid to emerge as a fine atomised spray into the drying chamber.

The Integrated fan pumps heated air through the main chamber evaporating the liquid content of the atomised spray. The solid particles of the material, which are normally in a free flowing state, are then separated from the exhaust air flow by a cyclone and collected in the sample collection bottle. The exhaust airflow is directed through a flexible 50 mm diameter hose direct to atmosphere or to an existing extraction system.

The Specially designed Gas Injection System allows the glassware to be heated (and cooled) using air and, in the case of the SD-06AG, the inert gas to be quickly and easily introduced for Solvent Based products. An (optional) Integrated Oxygen Sensor can ensure that the solvent cannot be introduced until oxygen levels have been reduced to the required level.

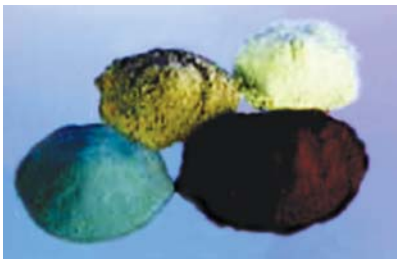
Applications

Spray drying can be used in a wide range of applications where the production of a free-flowing powder sample is required. This technique has successfully processed materials in the following areas:

- **Beverages** • **Flavours & Colourings**
- **Milk & Egg Products** • **Plant & Vegetable Extracts**
- **Pharmaceuticals** • **Heat Sensitive Materials**
- **Plastics** • **Polymers and Resins** • **Perfumes**
- **Ceramics & Advanced Materials**
- **Soaps & Detergents** • **Blood** • **Dyestuffs**
- **Foodstuffs** • **Adhesives** • **Oxides** • **Textiles**
- **Bones, Teeth & Tooth Amalgam and many others**

Most solutions and suspensions can be spray dried providing that the resulting product has the characteristics of a solid material.

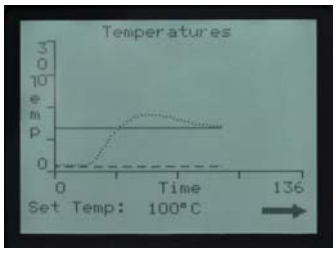
The spray drying process usually produces a free flowing powder sample >



Controls & Functionality

The unit is designed to ensure that all functions are simple to select and adjust to quickly achieve the optimum conditions for Spray Drying. Using a clear Touch Screen and LCD display which is protected to IP65, the operator can control the following functions :

- **Inlet temperature**
- **Airflow Volume**
- **Pump speed**
- **De-blocker frequency**
- **Temperature Graph**



Two Fluid Nozzle

The stainless steel spray assembly consists of an inner tube for the liquid sample leading to a small diameter jet. An outer tube directs the supply of compressed air to the nozzle and the close tolerance gap between the nozzle and the jet ensures a fine vaporised spray. The SD-06 is supplied as standard with 0.5 mm jet and other sizes are available as accessories.

The spray assembly incorporates an automatic de-blocking device that prevents the jet nozzle from becoming blocked. The de-blocking needle is activated by an integral compressor.

De-blocking is sometimes necessary with materials which may solidify or when large particles in suspension cause blockages in the jet.

Construction

A robust chemically resistant 316 grade stainless steel cabinet houses all mechanical and electrical components necessary to perform the spray drying process. All clamps and fittings are designed to allow assembly and removal of the glass components in only a matter of seconds.

The rear of the cabinet includes an inlet filter designed to remove 99.99% of air laden particles ensuring that the drying air does not include contaminants.

A specially designed stainless steel support stand is available where bench space or height restrictions are a consideration.

Technical Information

Evaporation rate of 1ltr water at inlet temperature of 250°C using Standard Chamber	Approximately 1000ml/hour
Air inlet temperature range	50°C to 250°C
Drying air throughput	Variable from 10 to 30m³/HR
Heater capacity	3kW
Compressor	2m³HR @ 2 bar / 1.7m³/HR@ 4 bar
Sample feed	Peristaltic pump with flow rate variable up to 32ml/min (2.0l/Hr)
Jet de-blocking	Integral 2.8 bar compressed air supply with variable de-blocking plunger frequency
Spray system	2 fluid nozzle with standard 0.5mm jet and options of larger diameters
Spray/hot air flow	Downward co-current
Power supply	220/240 v 50/60Hz -13 amps (Other Power Requirements Available)
Dimensions	1110* x 825 x 600mm (H x W x D * without jet assembly)
Unit weight	80KG

We reserve the right to change information given without prior notice

SD-06A&SD-06AG Standard Available Parts

GLASSWARE & ACCESSORIES

Standard > glassware & accessories for SD-06 range

< Long main chamber for SD-06

VARIATIONS AVAILABLE:

Large main chamber for SD-06

With the addition of the stainless steel stand, we can offer a double cyclone allowing the collection of smaller particles, this system is designed to be used with an extra cyclone and large main chamber.

Double cyclone

< SD-06-001 Stainless steel base support unit for floor standing operation

< SD-06 Exhaust air filter

SD-06AG with inert gas unit

< SD-06 Exhaust wet scrubber

For further information, quotations or advice please contact us at:

Labplant UK Limited, Unit 4c Hunmanby Industrial Estate, Hunmanby, Filey, North Yorkshire YO14 0PH
Tel: +44(0)1723 892262 Fax: +44(0)1723 890872 Email: sales@labplantuk.com www.labplantuk.com