



## MODEL ESDT1 LABORATORY SPRAY DRYER

A cost effective solution for entry level Spray Drying with all the features required for the testing and development of powders within the laboratory.

### FEATURES

- Two fluid nozzle
- PID automatic control
- CALgrafix Process Monitoring Software
- Integral Compressor
- Mobile design

### BENEFITS

- Ease of cleaning
- Robust design
- Wide range of operating parameters
- Electrical heating
- Simple service connections
- 'Plug and Play'

A compact laboratory spray dryer with a maximum temperature of 200°C and liquid flow rate up to 1.6kg/hr. The unit is ideal for R&D and sample preparation of many products. The unit incorporates all parts necessary for the spray drying process and allows control of inlet temperature, liquid sample flow, drying airflow and compressor pressure. Incorporating an integral compressor, the spray dryer remains extremely compact requiring less than 0.2m<sup>2</sup> bench space.

The ESDT1 spray dryer is manufactured using the highest quality materials including 316 stainless steel, PTFE and borosilicate glass 3.3. A screw cap assembly allows for easy mounting of the atomizer onto the unit, which is easily dismantled for cleaning.

### Technical Specifications

Parameter	Unit	ESDT1
Inlet Temperature	°C	150 - 200
Power Supply	V - ph - Hz	230 - 1 - 50/60
Electrical load	kW	3
Maximum solids	%	60 subject to viscosity
Height of unit	mm	1040
Width of unit*	mm	330
Depth of unit	mm	500
Shipping weight	Kg	52

\* Excludes glassware



## How the spray drying process works?

Spray drying involves 3 fundamental processes; liquid atomisation, evaporation and separation/ collection of the dried product.

The material to be dried is sprayed, in the form of small droplets, into a vertical drying chamber. At the same time a large volume of hot gas (air) is fed into the chamber to evaporate the liquid content of the sample. Heat and mass transfer takes place as the dispersed droplets are in direct contact with the hot air. On completion of drying, the hot air and solids are separated.

Dried product is transferred from the base of the chamber and conveyed to a high efficiency cyclone where the powder and drying gas are separated.

The ESDT1 series atomising spray nozzle delivers fine atomisation at low pressures and low flow rates. This is advantageous for abrasive and high viscosity liquids. The internal mix nozzle design provides for the gas (air) and liquid to mix internally in the nozzle. Increases or decreases in the gas pressure can control the droplet size.

## Applications

The most successful drying applications for spray dryers are for solutions which:

- Cannot be dewatered mechanically
  - Are heat sensitive and cannot be exposed to high temperatures for long periods
  - Contain ultra fine particles that will agglomerate and fuse if dried in any state other than a dilution.
- Spray drying is especially applicable to heat sensitive products due to the exceptionally short residence time in the dryer hot zone. Pharmaceuticals, foodstuffs, pigments and dyes, detergents, urea and plasma are all examples of products that have been successfully spray dried.

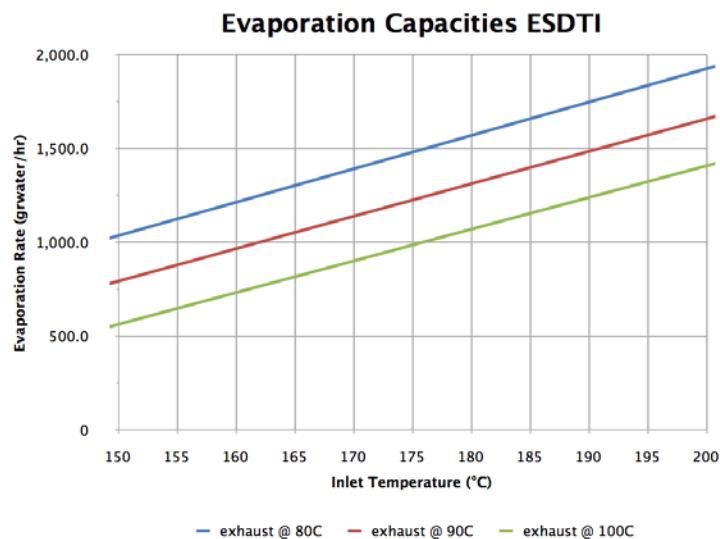
## CALgrafix Process Monitoring Software – supplied as standard.

CALgrafix is designed for applications where there is a requirement to monitor and record temperature data. A real-time graphic presentation displays the temperature profile of your process.

CALgrafix features logging, charting, alarm indication, networking and configuration within a simple Windows™ based user interface.

Advantages of using CALgrafix:

- Access to detailed process data via the charting and logging features
- Simple set-up, no programming skills required
- Export logged data to other applications



Evaporation capacities quoted are based on drying gas @ 20°C and 15°C feed temperature.

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