STANDARD OPERATING PROCEDURE OF SPRAY DRYER

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	SUBJECT: SOP FOR SPRAY DRYER	**EFFECTIVE DATE:** 25/2/2022
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Purpose:

To provide a procedure for the operating of Spray Dryer

Scope:

Applicable to operation of Spray Dryer

References:

Instrument Manual

Safety Issues and Precautions:

- Were Head cap, Mask, Hand glows and other safety requirements during the performance of stated activity
- Please make the entry of Usage with require details in the Instrument log book
- Handle the Instrument properly with care
- After using the apparatus please clean the instrument and accessories and keep it clean

Procedure:

Operation steps of lab spray dryer:

1. Plug the main power cord into the prepared socket.

2. Turn on the main power switch, and the digital block on the panel starts to display.

3. Set the circulating air volume of the ring fan, and set it arbitrarily within the range of 20% - 100%. Turn on the ring fan after setting.

4. Set the temperature of the air inlet according to the user's needs. It can be arbitrarily set between room temperature + 5 ° C-240 ° C. After setting, turn on the heating switch.

5. Turn on the rotary switch of the magnetic stirrer to make the material mix well and stir for later use.

6. Set the rotation speed of the peristaltic pump to be selected within the range of (0- 100%).

7. When the air inlet temperature display is the same as the set temperature display or the outlet temperature display has exceeded 90 ° C, test spraying can be performed.

- Turn on the air compressor and adjust the outlet pressure between 5Kg and 8 Kg.
- Turn on the high-pressure gas flow meter so that the gas output is about 10 liters / minute.
- Insert the infusion tube of the loading peristaltic pump into clean water.
- Turn on the peristaltic pump for loading and adjust the pressure plate of the peristaltic pump so that the roller of the peristaltic pump rotates smoothly and liquid flows.
- Observe the atomization state of the nozzle at the upper end of the drying tower and the drying condition in the drying tower, and observe the temperature display of the air outlet. At this time, you can set the flow of high-pressure gas, the amount of sample pump solution, and the temperature of the air inlet. , Circulating air volume and other comprehensive adjustments, until the spray dryer system is stable, the test spraying work is over.

8. After confirming that the spray dryer system has reached the preset targets and the operation is normal and stable, you can enter the spray drying process of the formal liquid material.

Spray drying is a one-step continuous unit operation that employs liquid atomization to produce droplets that are dried to individual particles when moved

in a hot gaseous drying medium. The three stages that occur in a spray dryer before drying is accomplished include atomization, spray-air mixing, and moisture evaporation, and dry product separation from the exit air. The spray drying process begins with atomization. During atomization, a nozzle or rotary atomizer turns the liquid feed stock into small liquid droplets. This is followed by the separation of the solute or suspension as a solid and the solvent into a vapor. It is during this stage that many of the desired product qualities such as particle size and viscosity are developed. When droplets exit the nozzles or atomizer, they are dried to form a powder that is easily packed and transported. Solids form as moisture quickly leaves the droplets. The solid is usually collected in a drum or cyclone. The nature of the final product depends on the design and operation of the spray dryer and the physicochemical properties of the feed. Drying of the powder is commonly completed using hot air. The final moisture content in the powder is controlled by adjusting the hot air temperature. The recovery process is the last step that takes a few seconds to recover the powder from the exhaust gas within the cyclone.

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