



ZPG Spray Dryer for Chinese Traditional Medicine (Herb Medicine)



Traditional Spray Dryer for Chinese Traditional Medicine Extract normally is centrifugal type with closed structure. All parts in contact with materials, product and air inlet are manufactured by high quality stainless steel. By the three grade purification device, the filtered air could meet requirement of 10,000 class. The wall cooling device is installed to keep temperature below 80 °C, so that the materials will not be coked or deteriorated even stick on the wall. The powder collecting efficiency could be highly increased (more than 98-99%).

According to product characteristics and customer requirements, air sweeping or wall scraping device can be configured correspondingly to improve the yield.

Based on the early technology of home and abroad, the Spray Dryer For Chinese Traditional Medicine Extract is suitable for drying the materials that are low in melting point and high in sugar contents, and the machine owns the characteristics that its product will not stick onto the wall, uneasy to absorb the moisture etc. The technological conditions for spray and drying are decided according to features and property of the products to be dried in the machine. The automation level of the dryer is high, the operation is simple and meets the GMP requirements.

According to the characteristics of product and equipment, the pressure type Spray Dryer for Chinese Traditional Medicine Extract is newly developed to avoid wall sticking, improve product quality, simplify the process, increase the particle size and solubility of product.

Basic working principle:

Traditional spray dryer for Chinese traditional medicine extract is the centrifugal spray drying technology applied in the drying of specific material. High speed centrifugal type atomizer is utilized to disperse the materials into mist. After in full contact with hot air, the materials complete instant drying to form dry powder products.

If we use LPG high speed centrifugal spray dryer for drying Chinese traditional medicine, there might be following problems:

1. The materials are easy to stick on the wall, so powder collecting rate is low
2. Long time of material on the wall will lead to material coking or deterioration.
3. It cannot be cleaned easily which does not conform to GMP requirement.
4. Low capacity: The actual capacity of LPG-150 can only treat liquid material of 50-60kg/h.

Based the above situation, we have designed specialized spray dryer for Chinese traditional medicine. The product after drying has good color and quality. Compared with LPG, it has following features:

1. Three-grade air purification is used to make air inlet with cleanness of class 10,000.
2. Wall cooling device is applied to make inner wall temperature maximum 80 °C, so that the material will not get coking on the wall.
3. The volumetric capacity is 3.5 around times of normal LPG.
4. Quick washing device is adopted to fit production requirement of various kinds.
5. Wet scrubber is used to ensure no loss of dust, which meets the environmental protection requirements.
6. Air sweeping device is used.
7. Two sets of atomizer with inverter adjustment.
8. PLC control and screen display of programmable control system.
9. Washing device as option.
10. Dry air closed pneumatic transportation on request.

We've developed new pressure spray type spray dryer for Chinese Traditional Medicine. Except the features above, it also has the following features:

11. Big particle size and good flowability of final product.
12. Wall sticking problem is solved, and the product quality is improved
13. High quality and good solubility of product.
14. The configuration is simple and the operation is simple
15. The structure is simple and maintenance cost is low.

The main disadvantage of pressure spray type is higher investment cost, mainly because of the drying tower is high, and workshop is also high, so the investment on workshop is high. It is normally applicable for high requirement product and high value-added product.

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. Technical parameters

(). Traditional Spray Dryer for Chinese Traditional Medicine Extract (Centrifugal type)

Specification	ZPG-5	ZPG-25	ZPG-50	ZPG-100	ZPG-150	ZPG-200
Air Inlet temperature	140-220 , adjustable					
Air exhaust temperature	60-100 , depend on the product properties and processing requirement					
Nominal water evaporation capacity (Kg / h)	5	25	50	100	150	200
Extract Processing Capacity (Kg/h)	5.59-9.5	27.9-47.5	55.9-95.0	111.7-190.0	167.6-285.0	223.5-380.0
Output (Kg/h)	0.59-4.5	2.9-22.5	5.9-45.0	11.7-90.0	17.6-135.0	23.5-180.0
Feeding Solid contents (%)	10-45					
Final moisture contents (%)	3-5%					
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	5300	6000	6800	7500	8000	8500
Overall Dimensions (m)	14×9×14	16×10×15	16×12×17	18×13×18	19×14×19	20×15×20
Fines collecting method	Two grade cyclone / washing tower					
Product collection rate	95-98%, depend on the product properties and processing requirement					

Specification	ZPG-300	ZPG-500	ZPG-800	ZPG-1000	ZPG-1200	ZPG-1500
Air Inlet temperature	140-220 , adjustable					
Air exhaust temperature	60-100 , depend on the product properties and processing requirement					
Nominal water evaporation capacity (Kg / h)	300	500	800	1000	1200	1500
Extract Processing Capacity (Kg/h)	335.0-570.0	558.8-950.0	894.1-1520	1117-1900	1341-2280	1676-2850
Output (Kg/h)	35.0-270.0	58.8-450.0	94.1-720	117-900	141-1080	176-1350
Feeding Solid contents (%)	10-45					
Final moisture contents (%)	3-5%					
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	5300	6000	6800	7500	8000	8500
Overall Dimensions (m)	14×9×14	16×10×15	16×12×17	18×13×18	19×14×19	20×15×20
Fines collecting method	Two grade cyclone / washing tower					
Product collection rate	95-98%, depend on the product properties and processing requirement					



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(). New type Spray Dryer for Chinese Traditional Medicine Extract (Pressure type)

Specification	ZPGY-15	ZPGY-25	ZPGY-50	ZPGY-100	ZPGY-150	ZPGY-200
Air Inlet temperature	140-220 , adjustable					
Air exhaust temperature	60-100 , depend on the product properties and processing requirement					
Nominal water evaporation capacity (Kg / h)	15	25	50	100	150	200
Extract Processing Capacity (Kg/h)	16.7-28.5	27.9-47.5	55.9-95.0	111.7-190.0	167.6-285.0	223.5-380.0
Output (Kg/h)	1.7-13.5	2.9-22.5	5.9-45.0	11.7-90.0	17.6-135.0	23.5-180.0
Feeding Solid contents (%)	10-45					
Final moisture contents (%)	3-5%					
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	1300	1500	1800	2100	2300	2500
Overall Dimensions (m)	5×2×14	6×2.5×15	7×3×16	8×3.5×17	9×4×18	10×4.5×19
Fines collecting method	Two grade cyclone / washing tower					
Product collection rate	95-98%, depend on the product properties and processing requirement					
Specification	ZPGY-300	ZPGY-500	ZPGY-800	ZPGY-1000	ZPGY-1200	ZPGY-1500
Air Inlet temperature	140-220 , adjustable					
Air exhaust temperature	60-100 , depend on the product properties and processing requirement					
Nominal water evaporation capacity (Kg / h)	300	500	800	1000	1200	1500
Extract Processing Capacity (Kg/h)	335.0-570.0	558.8-950.0	894.1-1520	1117-1900	1341-2280	1676- 2850
Output (Kg/h)	35.0-270.0	58.8-450.0	94.1-720	117-900	141-1080	176-1350
Feeding Solid contents (%)	10-45					
Final moisture contents (%)	2-5%					
Heating method	High-pressure steam, or steam + electricity, or any kinds of fuel (diesel, natural gas, liquefied petroleum gas or coal, etc.), or solid fuel (any combustible material). Please specify.					
Drying tower diameter (mm)	3200	4000	4800	5200	5500	6000
Overall Dimensions (m)	12×5×21	14×6×23	16×8×25	18×9×26	19×10×27	20×11×28
Fines collecting method	Two grade cyclone / washing tower					
Product collection rate	95-98%, depend on the product properties and processing requirement					

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Remark :

1. Nominal water evaporation capacity: It is calculated according to the inlet air temperature of 350° C, and the exhaust air temperature of 85-90° C.

2. Standard specification: The specifications listed above are named based on nominal water evaporation capacity.

3. Process specifications: For specific equipment, we normally name the equipment as per the specific processing parameters and requirements.

For the products which heat sensitive temperature is more than 110° C, the process specifications is about the same with the standard specifications. For most food or the other products which heat sensitive temperature is normally low, the process specifications are about equivalent to 2-3 times of the standard specifications. Such as LPG2000 for drying food, the drying tower is about equivalent to the standard one of LPG4000 or of LPG6000 (vary as per the properties of the product). For the products with high heat sensitive temperature, the inlet air temperature could be up to 450° C or even higher, the process specification is smaller than the standard specifications. But the requirements of the drying tower and relative configurations should be higher if the air inlet temperature is more than 450° C

4. Product yield: We provide a variety of fines collection and product recovery devices as per customer requirements and product characteristics, so to ensure it meets customer requirements.

5. Test: We have the most advanced trial facilities in China to make trials for the customers, so to ensure that the equipment reaches the customer requirements in the contract.

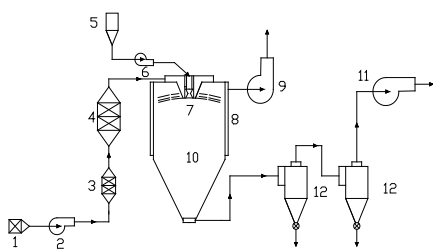
6. Configuration: Please refer to the flowcharts and instructions

7. Advanced design: we are considering the customer's requirements, low investment, low running cost and energy saving when we make a design. If we compare our machines and some other machines, the special feature is that our machine is design for energy saving.

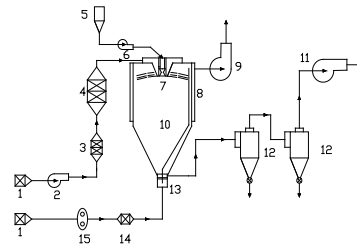
. Configuration diagram

() . New type Spray Dryer for Chinese Traditional Medicine Extract (Pressure type)

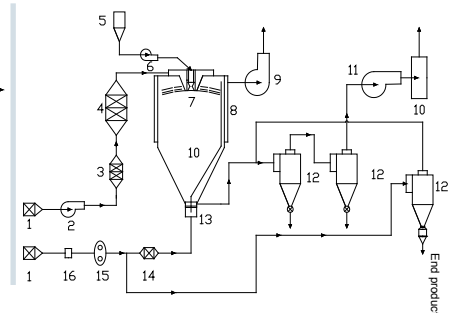
Sketch map A



Sketch map B



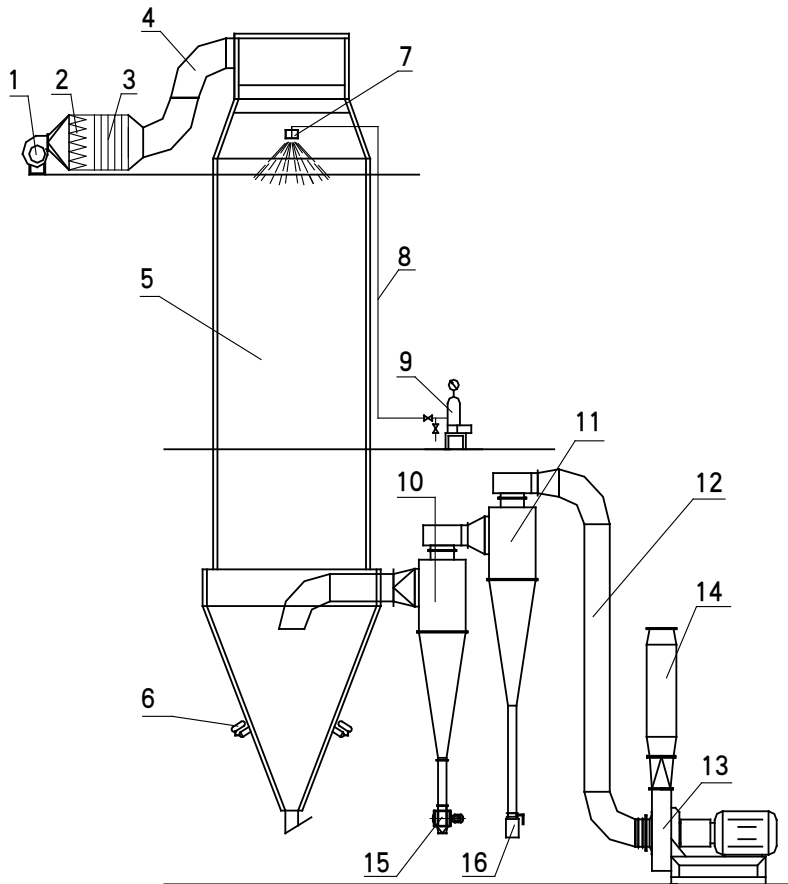
Sketch map C



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|------------------------|-----------------|--------------------------------|---|-----------------|
| 1 Air pre filter | 2 Blast fan | 3 Post and HEPA filter | 4 Electric heater of steam heat exchanger | 10 Drying tower |
| 5 Material liquid tank | 6 Feeding pump | 7 Centrifugal atomizer | 8 冷风冷却夹套 | |
| 9 Cooling air fan | 10 Drying tower | 11 Exhaust fan | 12 Cyclone | |
| 13 Air sweeping device | 14 Heater | 15 Air sweeping fan (air pump) | 16 Dehumidifier | |



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1. Blast fan
2. Filter
3. Heat exchanger
4. Air inlet ducts
5. Drying tower
6. Pneumatic hammer
7. Pressure nozzle
8. Feeding ducts
9. Feeding pump
10. First cyclone
11. Second cyclone
12. Air exhaust ducts
13. Exhaust fan
14. Silencer
15. Rotary valve
16. Product bucket