Fractional Distillation Unit

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FRACTIONAL DISTILLATION

Fractional distillation, also known as fractionation, is the process of separating liquid mixtures based on differences in boiling points. It is widely employed to purify petroleum, alcohol, chemicals, flavors, fragrances, and more. Compared to traditional distillation, fractional distillation offers enhanced separation for components with closer boiling points.

Labfirst Scientific provides both glass and stainless steel fractional distillation apparatuses with a volume going from 1L to 100L, available from lab scale to pilot scale. With over 20 years of expertise in crafting borosilicate glass and stainless steel solutions for the chemical, food, and pharmaceutical sectors, Labfirst Scientific is committed to delivering innovative systems that seamlessly integrate purity, reliability, and superior quality.

KEY FACTS

- Glass or stainless steel type available
- Multiple of distillation column packings for different needs
- Modular design makes it easy to set up and maintain
- A great variety of customization options available to meet your specific needs
- Made of quality stainless steel and glass for maximum durability and easy cleaning.
- One year warranty, lifetime support

STRUCTURE

Boiling Flask

- Size: 1L, 2L, 5L, 10L, 20L, 50L, 100L, customizable
- Quality glass boiling flask with excellent chemical performance.
- Optional stainless steel boiling flask
- Multiple of heating method available

Reflux Ratio Controller

- Electromagnetic type，1% to 99% adjustable

Condenser

- Coil condenser with outstanding condensing effect

Distillation Column

- Inner diameter: 15-150mm Length: 500 to 1500mm. The size is customization
- Built with 15～50 theoretical stages for efficient distillation Multiple packing options available

Heating Mantle

- Uniform heating, up to 350℃
- Optional jacket fluid circulating heating

Fraction collector

- The quantity can be customized
- Continuous sampling available

FEATURES

Discover More of LAB1ST Fractional Distillation Unit

Modular Design

Easy Scale-up

Our fractional distillation unit features a modular design with easy assembly and high flexibility. The separate and stackable distillation columns makes it easily scalable to industrial applications. The thin film evaporator can also be integrated into the fractional distillation unit to separate heat-sensitive compounds with close boiling points.

Reliable Quality

Reproducible results

Labfirst scientific has over ten years of experience in manufacturing distillation system. The innovative and advanced design of our fractional distillation unit guarantees high distillation efficiency and long life-span.

High Efficiency

Save Time

A major benefit of the fractional distillation process is its high efficiency. The height of our standard column is approximately 1 meter, offering 15 to 50 theoretical stages. For different applications, up to three columns can be stacked together, effectively tripling the number of theoretical stages and significantly enhancing separation efficiency.

Customization Capacity

Highly Flexible

For different applications, the configuration of the fractional distillation unit will differ. We offers a comprehensive of custom options like stirring method, sizes, voltages, distillation column, vacuum system, and more to meet your specific needs. Each component is meticulously crafted to ensure durability and quality.

UPGRADE OPTIONS

Size

- The standard size is from 1L to 100L. Larger size larger than 100L is customizable.
- For different applications, the diameter and height of the distillation column can be customized.

PTFE Material

- PTFE offers excellent chemical resistance, high thermal stability and durability, making it ideal for various industrial and medical applications.

PLC Controller

- PLC controller with 15 inch color touch screen, enable you to observe real time parameter and adjust accordingly.
- Historic curves and data can be reserved
- Up to 100 sets of programs with 100 steps each can be pre-configured, enabling automated control and repeat-able operations.

-80°C Refrigeration System

- -80°C refrigeration system with coiled condenser

Heating & Insulation

- For the boiler: heating mantle or jacket fluid heating
- For the distillation column: electric heating, and vacuum jacket insulation or vacuum jacket insulation with silver plating is optional.

Mixing

- We provide multiple of mixing method: bottom magnetic stirring, top mechanical stirring, top magnetic stirring or thin-film evaporation.

Certification

- Our standard fractional distillation is CE certified. It can be upgraded to UL or ETL certified. The UL/ETL certification is a key electrical safety standard in the United States that applies to industrial control panels.

Other

- Fraction collector: the quantity depends on your needs
- Special voltage: 480V, 3P, 60Hz; 460~480V, 3P, 60Hz

PRODUCT PARAMETER

Model	FDG-1L	FDG-2L	FDG-5L	FDG-10L	FDG-20L
Evaporation					
Vessel Type	Single-Layer Flask (Standard); Jacketed Reactor with Insulation or Double-Layer Jacketed Reactor (Optional)				
Total Volume [L]	1	2	5	10	20
Working Volume [L]	0.75	1.5	3.7	7.5	15
Heating					
Heating Method	Electric Heating Mantle (Glass Fiber Insulation) + Lifting Platform [Standard]; Fluid Heating [Optional]				
Heating Power [W]	650	650	1100	2100	3000
Design Temperature Range	RT+10℃ - 380℃ ; ±1℃				
Operating Temperature Range	RT+10℃ - 350℃ ; ±1℃				
Temperature Sensor	External + Internal Temperature Sensors; PT100				
Stirring					
Stirring Method	Magnetic Stirring Bar + Brushless DC Motor (Standard); Overhead Stirrer + Brushless DC Motor (Optional)				
Stirring Power [W]	40	40	40	40	40
Maximum Stirring Speed [rpm]	50-1800	50-1800	50-1800	50-1800	0-2000
Distillation Column					
Type	Double-Layer Electric Heating + Insulation (Standard)				
	Double-Layer Electric Heating + Vacuum Insulation or Double-Layer Electric Heating + Silver-Plated Insulation (Optional)				
Column Inner Diameter [mm]	30	30	35	40	40
Column Height① [mm]	1000 (Standard) ; User-Specified (Optional)				
Top Temperature Measurement	PT100				
Packing Type					
Condensation & Reflux	Stainless Steel Pall Rings, Ceramic Raschig Rings, Glass Spring Packing, Stainless Steel Triangular Packing, or User-Specified				
Condenser Type	Vertical Coil	Vertical Coil	Vertical Coil	Horizontal Coil	Horizontal Coil
Condensation Area [㎡]	0.25	0.25	0.35	0.45	0.7
Reflux Ratio Controller	Magnetic Reflux Ratio Control, Adjustable from 1:99 to 99:1, Adjustment Unit 0.1s				
Vacuum Monitoring	Vacuum Gauge, Display Range -0.1MPa~Atm (Standard); Digital Vacuum Gauge (Optional)				
Fraction Collection					
Quantity of Collection Bottles	2	2	2	2	2
Collection Bottle Capacity [L]	1	1	2	5	5
Utilities					
Power Supply	208~240V, 1P, 50/60Hz or 100~120V,1 P, 60Hz				
Cooling Water	Pressure ≥1bar, Circulation Flow Rate ≥10L/min				
High-Low Temperature Control Unit [Optional]	DC-05-06L	DC-05-06L	DC-05-06L	DC-05-15L	DC-05-15L
Vacuum Pump [Optional]	EV-5	EV-5	EV-5	EV-10	EV-10
Low-Temperature Cold Trap [Optional]	Dry Ice Liquid Nitrogen Cold Trap or Dry Ice Liquid Nitrogen Cold Trap + Stainless Steel Coil				

Note: ① The column height refers to the effective height of the packing material.

Let's Meet!

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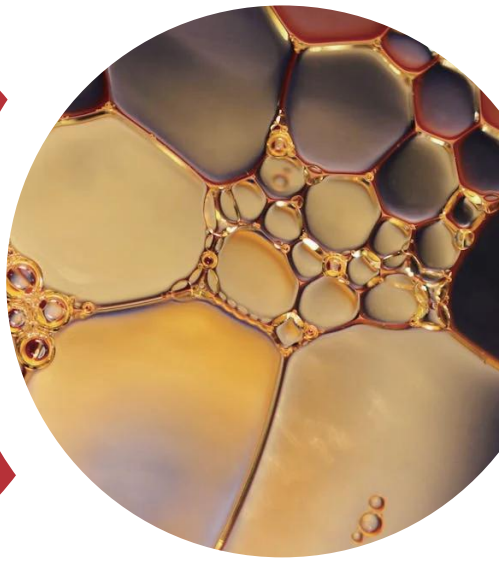

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