



# Distillation Column

## Catalog





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# GLASS DISTILLATION TOWER

## / IDT Series

QINGDAO INNOVA DISTILLATION SYSTEM TECHNOLOGY ORIGINATED FROM THE NATIONAL HIGH-EFFICIENCY SEPARATION TOWER PACKING AND DEVICE TECHNOLOGY RESEARCH AND PROMOTION CENTER. INNOVA TECHNICAL TEAM AND SEPARATION TOWER PACKING RESEARCH CENTER WORK TOGETHER TO PROVIDE HIGH-QUALITY PROFESSIONAL TECHNICAL SERVICES AND SUPPORTING EQUIPMENT FOR USERS IN FINE CHEMICAL, ENVIRONMENTAL PROTECTION, PETROCHEMICAL, PHARMACEUTICAL, FERTILIZER, PESTICIDE, FOOD AND OTHER INDUSTRIES AROUND THE WORLD.



Tower Reactor



Continuous Discharge Valve



Tower Column Insulation



Fraction Collection Device



## Product Introduction

The distillation tower is a tower type gas-liquid contact device for rectification. Taking advantage of the fact that each component in the mixture has different volatility, that is, the vapor pressure of each component is different at the same temperature, the light components (low boilers) in the liquid phase are transferred to the gas phase, while the vapor pressures of the components in the gas phase are different. The heavy components (high boilers) are transferred to the liquid phase for separation purposes. The glass distillation column is also a mass and heat transfer device that is widely used in experiments in the chemical industry.

## User Interests



Modular design, flexible replacement of configuration parts or upgrades.



The high vacuum sealing method can effectively reduce the distillation temperature and reduce energy consumption.



Compact structure and easy disassembly



Multi-stage temperature control, flexible design of distillation conditions.



IDT-2



IDT-10

## Application Fields



Concentration and purification of bio-ethanol, methanol, as an alternative fuel.



Improve the quality of wine, keep the quality and fragrance of wine while reducing harmful substances to the extreme.



Refine spice extracts, including natural and synthetic spice flavors.



Recycling of solvents in the electronics industry to reduce the amount of pollutants.



Separation and purification of petrochemical products.



Solvent recovery and recycling in biopharmaceutical and chemical industries.



Glass distillation tower  
PLC



Distillation tower technical parameters		IDT-2	IDT-5	IDT-10	IDT-20	IDT-50	IDT-100
Main equipment material		High borosilicate glass 3.3					
Volume (L)		2	5	10	20	50	100
Column internal diameter (mm)		25mm	25mm	32mm	32mm	40mm	40mm
Receiving flask volume & quantity (L)		1*2pcs	2L*1pc, 3L*1pc	5L*2pcs	10*2pcs	20L*1pc, 30L*1pc	50L*2pcs
No. of receiving flask (pc)		2	2	2	2	2	2
Effective height of distillation column packing (m)		1	1	2	2	2	2
Whether the column is segmented		NO	NO	YES	YES	YES	YES
Column heating method		Heating wire	Heating wire	Heating wire	Heating wire	Heating wire	Heating wire
Total height (mm)		≈2770	≈2800	≈3350	≈3500	≈4200	≈4500
Tower reactor heating (Can be selected according to customer application)		Heating mantle	Heating mantle	Heating mantle	Heating mantle	Thermal fluid	Thermal fluid
Tower reactor opening	Distillation port	RS40	RS40	RS50	RS50	RS60	RS60
	Feeding port	24/40	24/40	34/45	34/45	34/45	34/45
	Temperature port	24/40	24/40	24/40	24/40	29/42	29/42
	Spare port	24/40	24/40	34/45	34/45	34/45	34/45
Tower reactor working temperature (°C)		RT+10°C-300°C	RT+10°C-300°C	RT+10°C-300°C	RT+10°C-300°C	RT+10°C-300°C	RT+10°C-300°C
Ultimate vacuum at zero load (Standard ports)		0.1mbar	0.1mbar	0.1mbar	0.1mbar	0.1mbar	0.1mbar
Tower top opening	Temperature port (outer diameter)	Ø12mm	Ø12mm	Ø12mm	Ø12mm	Ø12mm	Ø12mm
Condenser opening	Inlet	RS40	RS40	RS50	RS50	RS60	RS60
	Outlet	RS40	RS40	RS40	RS40	RS40	RS40
	Vacuum port	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb
Condenser	Condenser type	Vertical	Vertical	Horizontal	Horizontal	Horizontal	Horizontal
	Condenser heat exchange area (m²)	0.2	0.2	0.5	0.5	0.8	0.8
collection tank opening	Inlet port	RS40	RS40	RS40	RS40	RS40	RS40
	Air vent port	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb	12mm Hose barb
	Discharge port	10mm Hose barb	10mm Hose barb	10mm Hose barb	10mm Hose barb	16mm Hose barb	16mm Hose barb
Continuous sampling valve		YES	YES	YES	YES	YES	YES
Temperature display		YES	YES	YES	YES	YES	YES
Reflux ration control		YES	YES	YES	YES	YES	YES
Power supply		220V 50/60HZ 1P	220V 50/60HZ 1P	220V 50/60HZ 1P 380V 50/60HZ 3P	220V 50/60HZ 1P 380V 50/60HZ 3P	220V 50/60HZ 1P 380V 50/60HZ 3P	220V 50/60HZ 1P 380V 50/60HZ 3P
Supporting heating device		Heating mantle	Heating mantle	Heating mantle	Heating mantle	Heating recirculator	Heating recirculator
Vacuum pump	Type	Rotary vane	Rotary vane	Rotary vane	Rotary vane	Rotary vane	Rotary vane
	Cossive resistance	NO	NO	NO	NO	NO	NO
	Pumping speed	16mm³/h	16mm³/h	16mm³/h	16mm³/h	16mm³/h	30mm³/h
Optional	PLC control	/	/	/	/	/	/
	Pressure detection port	/	/	/	/	/	/
	Cold trap before vacuum pump	/	/	/	/	/	/
	Column wall winding insulation cotton	/	/	/	/	/	/
	Packing Type Specifications	/	/	/	/	/	/



# STAINLESS STEEL DISTILLATION TOWER

## / IDT-S Series

The lab and pilot scale distillation column are made of stainless steel, and can be designed for normal, reduced and pressurized use. The tower kettle can be designed with electric heating, transfer oil heating, steam heating and other heating methods. The specifications of the tower section are  $\Phi 38 \sim 200\text{mm}$  and the height is  $0.5 \sim 8.0\text{m}$ . Each section of the tower section can be equipped with a feed port/temperature measurement port, and various non-standard products can also be designed and manufactured according to the specific requirements of customers. In order to avoid the heat loss of the tower body as much as possible during the operation, modern intelligent instruments are used to set the temperature of the tower body to compensate the heat, so that the experimental process is closer to the ideal state to a greater extent and achieves better experimental results.

## User Interests

- High efficiency separation and wide application range;
- The structure of the tower is simple and suitable for the separation of small and high value materials;
- The control of the reflux ratio is precise, which is conducive to the exploration of experimental adjustment;
- Accurate temperature control, more conducive to the adjustment of experimental conditions;
- It can be batch distillation or continuous distillation;
- In the process of device development, computer simulation was introduced to make the operation of distillation experiments more intelligent;
- At the same time of parameter optimization, temperature and concentration distribution curves can be obtained;



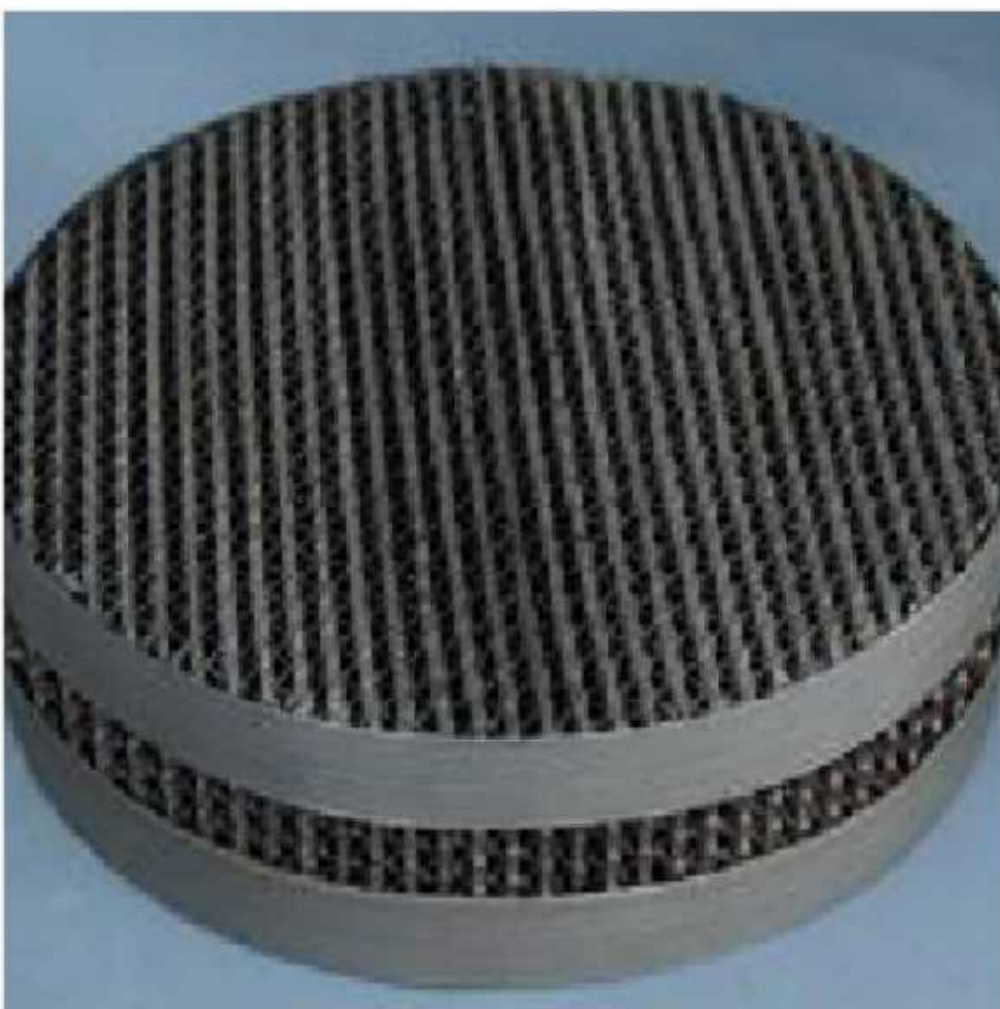


## Distillation Tower Function

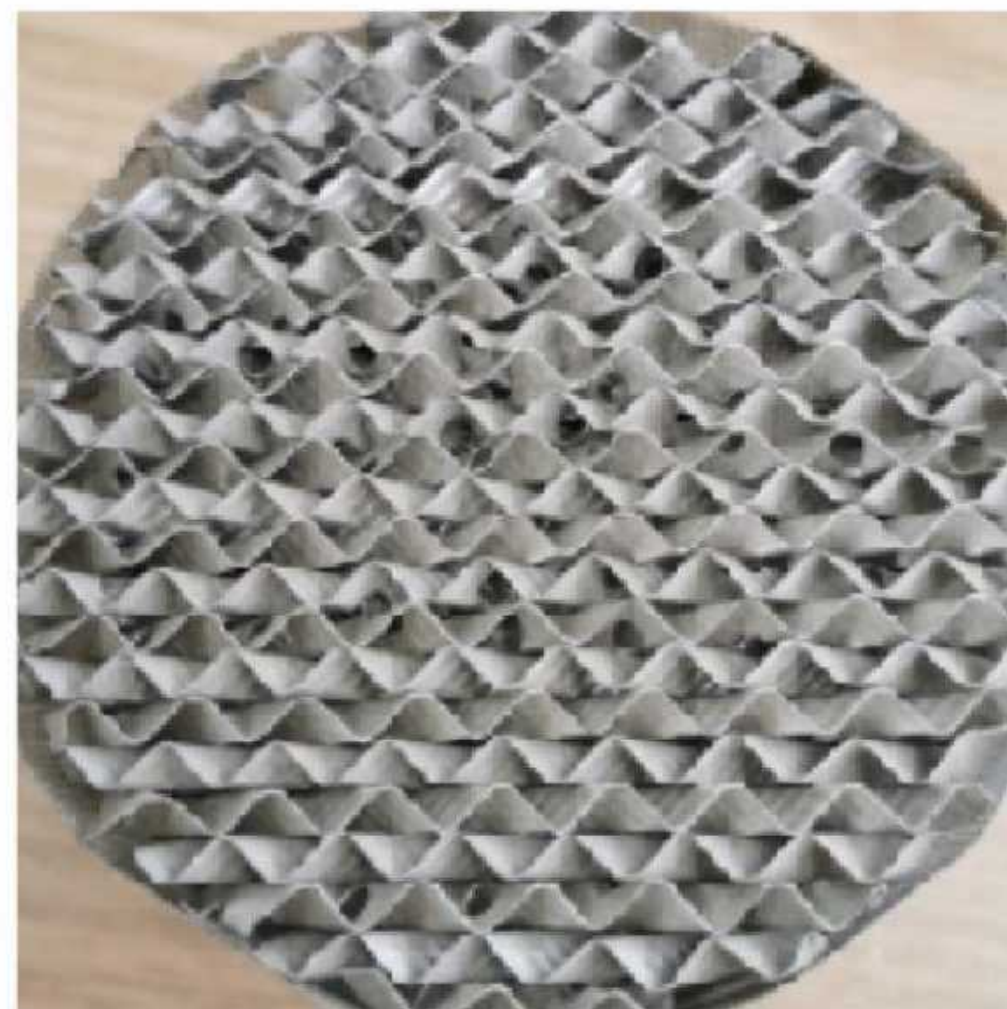
- Operation mode Normal and negative pressure operation, the best vacuum degree can reach 1mmHg;
- The thermal insulation material of the tower body is a transparent heating film, and the experimental phenomenon can be observed;
- The device frame is specially designed, and the verticality of the tower is easy to adjust;
- All industrial control point panels are centrally installed, and it's easy for operator to operate;
- The designers of distillation tower thinks deep and long-term. The expansion space of the device function is large, which not only work for targeted experiment, but also maximizes the contribution of the device;

## Structured Packing

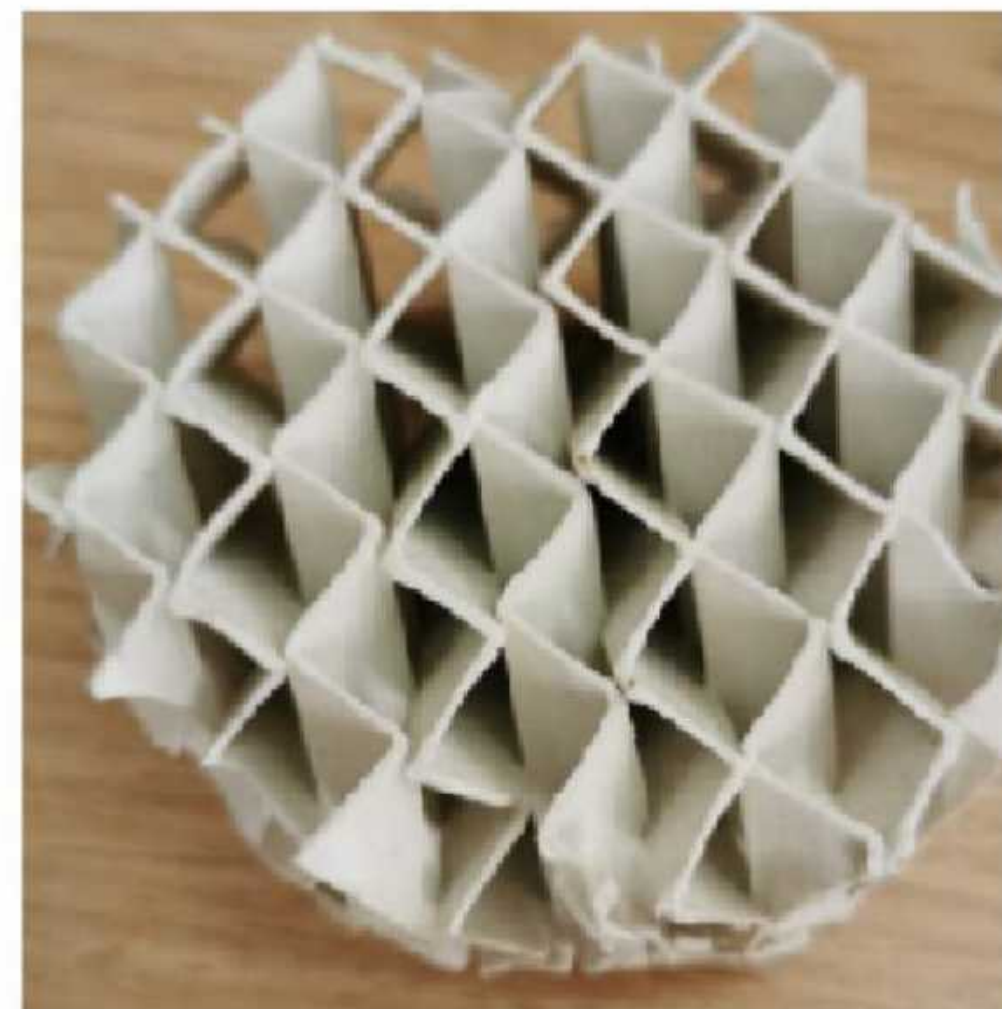
INNOVA can provide various of packing: different type, specifications and materials.



Wire Mesh  
Corrugated Packing



Metal Orifice  
Corrugated Packing



Ceramic Corrugated  
Packing



Silicon Carbide  
Corrugated Packing

## Tower Components

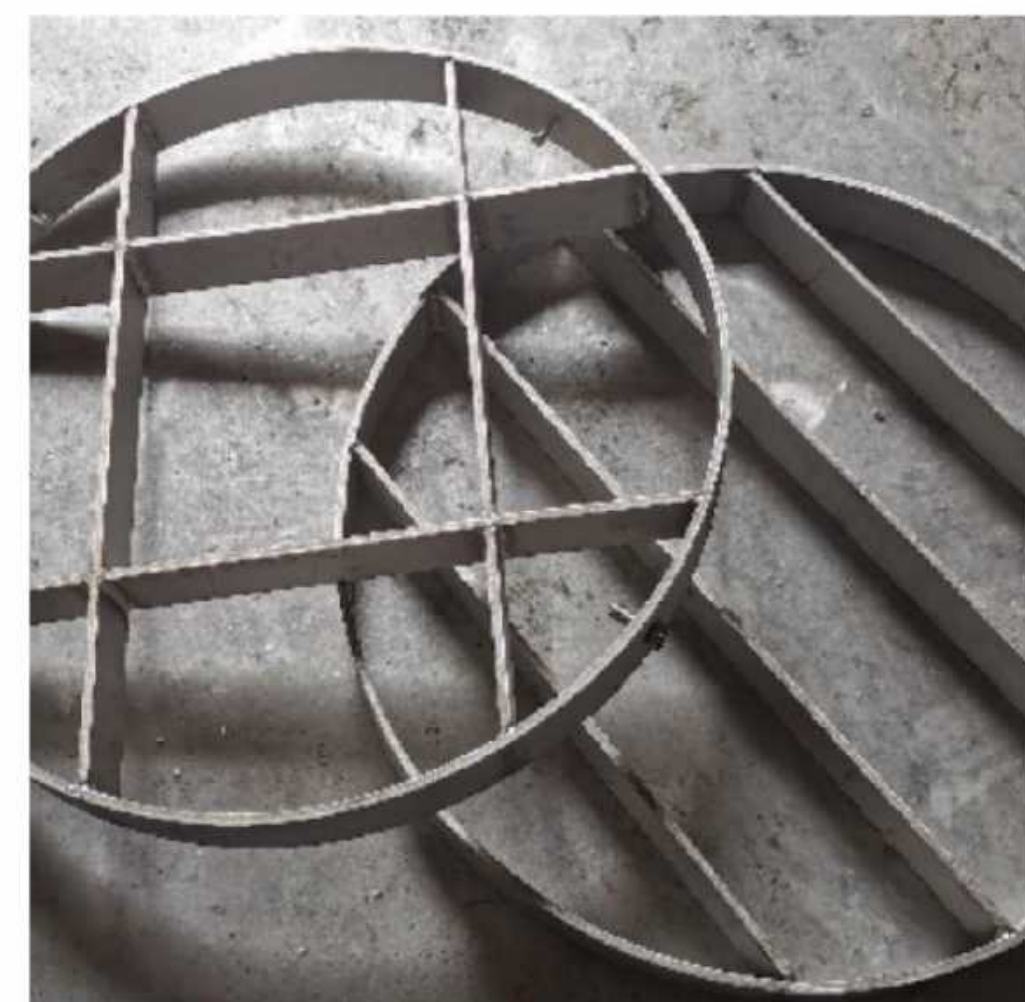
The rectification process is equipped with liquid distributor design software, which is efficient and accurate; the machining adopts wire cutting and argon arc welding technology, and the manufacturing error is small; at the same time, a spray anti-corrosion coating distributor is developed to replace ordinary plastic materials, with a maximum temperature resistance of 150 °C. It can meet the requirements of different corrosion conditions.



Wire Mesh  
Corrugated Packing



Metal Orifice  
Corrugated Packing



Ceramic Corrugated  
Packing



Item		IDT-5S	IDT-10S	IDT-20S	IDT-50S	IDT-100S
Main equipment material		Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Volume (L)		5	10	20	50	100
Column internal diameter (mm)		25mm	25mm	32mm	40mm	50mm
Receiving flask volume (L)		2.5	5	10	25	50
No. of receiving flask (pc)		2	2	2	2	2
Effective height of packing (m)		2	2	2	2	2
Total height (m)		5	5	5	5.5	6
Reflux ration controller		1 : 99	1 : 99	1 : 99	1 : 99	1 : 99
Condenser heat exchange area(m2)		0.25	0.4	0.65	1.15	1.75
Tower reactor opening	Thermal fluid inlet	DN25	DN25	DN25	DN25	DN25
	Thermal fluid outlet	DN25	DN25	DN25	DN25	DN25
	Feeding port	DN15	DN15	DN15	DN15	DN15
	Temperature port	DN20	DN20	DN20	DN20	DN20
	Pressure port	DN25	DN25	DN25	DN25	DN25
	Liquid level port-up	DN25	DN25	DN25	DN25	DN25
	Liquid level port-down	DN25	DN25	DN25	DN25	DN25
	Thermal fluid temperature port	DN20	DN20	DN20	DN20	DN20
Discharge port		DN25	DN25	DN25	DN25	DN25
Tower reactor working temperature (°C)		-20-200	-20-200	-20-200	-20-200	-20-200
Tower reactor working pressure (Mpa)		-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1
Column insulation method		Insulation cotton winding	Insulation cotton winding	Insulation cotton winding	Insulation cotton winding	Insulation cotton winding
Column working temperature (°C)		-20-200	-20-200	-20-200	-20-200	-20-200
Column working pressure (Mpa)		-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1
PLC control module		1set	1set	1set	1set	1set
Heating cooling circulator		3kw	3kw	3kw	3kw	3kw
Vacuum pump		Pumping rate:6m³/h	Pumping rate:8m³/h	Pumping rate:10m³/h	Pumping rate:12m³/h	Pumping rate:14m³/h
Distillation tower top opening	Tower internal pressire port	DN25	DN25	DN25	DN25	DN25
	Tower internal temperature port	DN20	DN20	DN20	DN20	DN20
Condenser opening	Circulating water inlet	DN25	DN25	DN25	DN25	DN25
	Circulating water outlet	DN25	DN25	DN25	DN25	DN25
	Vacuum port	DN25	DN25	DN25	DN25	DN25
Condenser shell working temperature (°C)		-20-50	-20-50	-20-50	-20-50	-20-50
Condenser shell working pressure (Mpa)		0.3-0.5	0.3-0.5	0.3-0.5	0.3-0.5	0.3-0.5
Condenser tube working temperature (°C)		-20-120	-20-120	-20-120	-20-120	-20-120
Condenser tube working pressure (Mpa)		-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1	-0.1-0.1
Collection tank opening	Inlet port	DN15	DN15	DN15	DN15	DN15
	Vacuum port	DN15	DN15	DN15	DN15	DN15
	Pressure port	DN25	DN25	DN25	DN25	DN25
	Liquid level port	DN10	DN10	DN10	DN10	DN10
	Discharge port	DN25	DN25	DN25	DN25	DN25
Collection tank discharge port distance above the ground(mm)		300	300	300	300	300
Power supply		220~240V , 50/60HZ, 1P 380V , 50/60HZ, 3P	220~240V , 50/60HZ, 1P 380V , 50/60HZ, 3P	220~240V , 50/60HZ, 1P 380V , 50/60HZ, 3P	220~240V , 50/60HZ, 1P 380V , 50/60HZ, 3P	220~240V , 50/60HZ, 1P 380V , 50/60HZ, 3P



# THIN FILM DISTILLATION COLUMN

/ IFDC Series

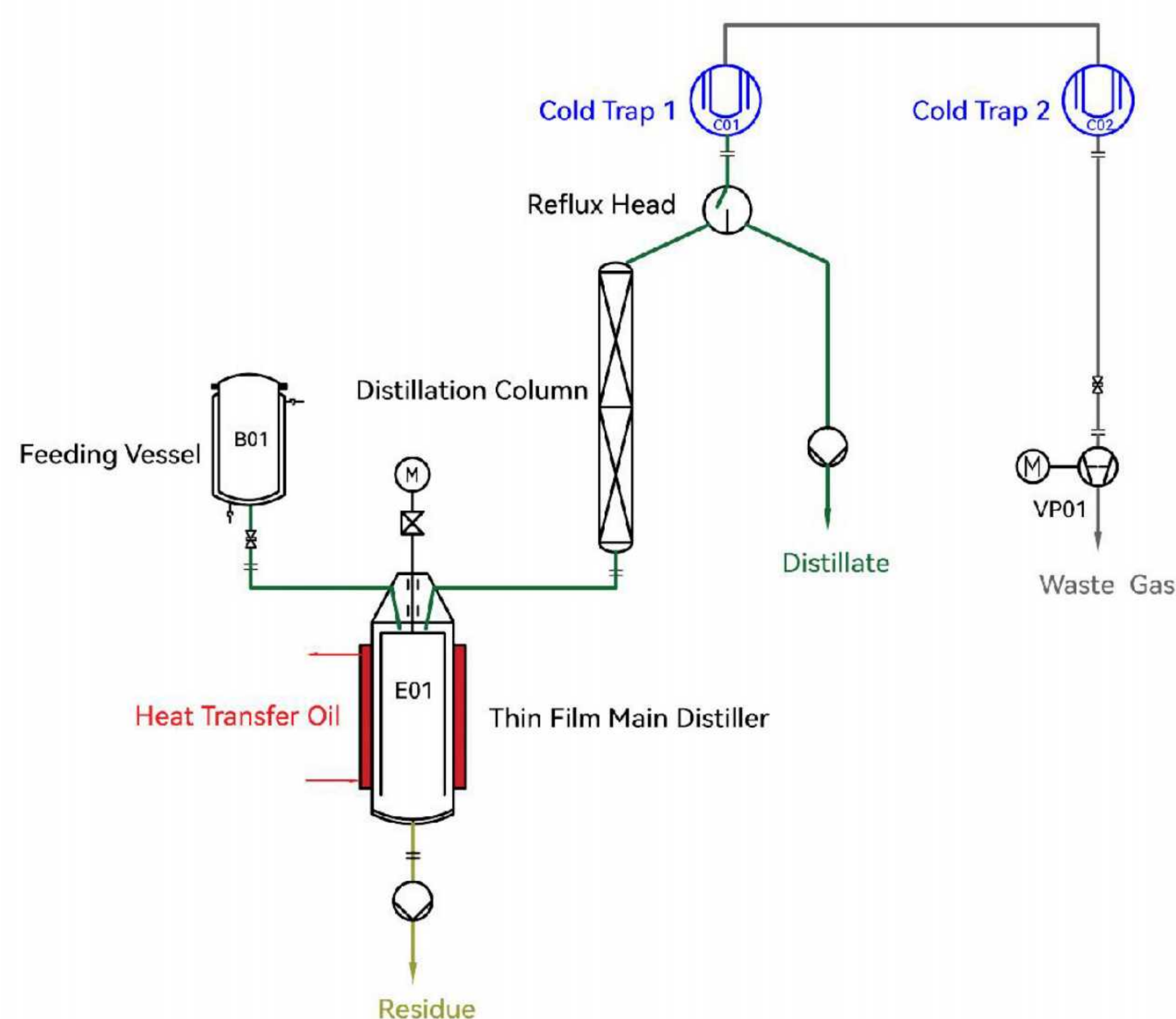


## High purity separating solution of heat-sensitive materials

### Product Introduction

Thin film distillation column is a coupling device between thin-film evaporator and distillation column. In the process of distillation, thin film distillation column can solve the problem of thermal decomposition of heat-sensitive materials, which caused by too high temperature in the tower bottom and too long residence time in the reboiler. It prevents deterioration reactions such as decomposition, polymerization and oxidation of materials when heated, and effectively protects the characteristics of product materials; At the same time, compared with the traditional thin-film evaporator, the thin-film distillation column increases the function of distillation, which can better improve the purity of products and reduce more purification process steps.

### Working Principle





## User Benefits



### Low distillation temperature and high vacuum degree

The vacuum environment with negative pressure can avoid the decomposition and polymerization of heat-sensitive materials, and reduce the distillation temperature of materials which with high boiling point. The material will have short residence time and high heat transfer efficiency.



### High degree of separation and purity

It can separate the materials which are not easily separated by conventional distillation, and under the control of distillation column and reflux, it can obtain high-purity product.



### The design of main control box , easy operation

The total control box is designed to control the rotating speed, reflux ratio and vacuum display of thin film distillation.



### Supply Customized Services

Can supply customized service according to customer's material characteristics.



# Improve your portfolio



Heating circulator



Cooling circulator



Vacuum pump



Gear pump

Model		IFDC-60	IFDC-80	IFDC-100	IFDC-150	IFDC-200
Thin film part	Raw material tank	0.5L Feeing Tank	1LFeeing Tank	1LFeeing Tank	2LFeeing Tank	3LFeeing Tank
	Feeding	Valve control, Jacket insulation				
	Evaporator	Scraper film-forming, good sealing, corrosion resistance and other characteristics.				
Distillation Column	Column length (m)	Setting according to process				
	Tower heating mode	Multiple choice				
	Condenser of distillation column head	Setting according to throughput				
	Reflux ratio control	Yes				
Supporting Equipment	Electric cabinet	Multi-functional integration of temperature display and vacuum degree.				
	Heating system	Heating and Circulating				
	Cooling system	Cooling and Circulating				
	Vacuum system	Vacuum system				





Water Purification System  
Freeze Dryer/Lyophilizer  
Biosafety Cabinet/Laminar Flow

Biofermentation Solution  
Shaking Incubator/Shaker  
Cold Storage Solution

Glassware Washer  
Autoclave  
Climate Chamber



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