

## Short Path (Molecular) Distillation System

**Molecular Distillation / Short Path Distillation** is a comparatively new separation technology. It can separate liquid-liquid mixture under temperature that is far lower than boiling point by the difference of mean free path of molecules under high vacuum condition. Such separation is difficult or unable to achieve on normal distillation equipments. Molecular Distillation is especially **suitable to separate substance of high boiling point, heat sensitive and easy to be oxidized.**

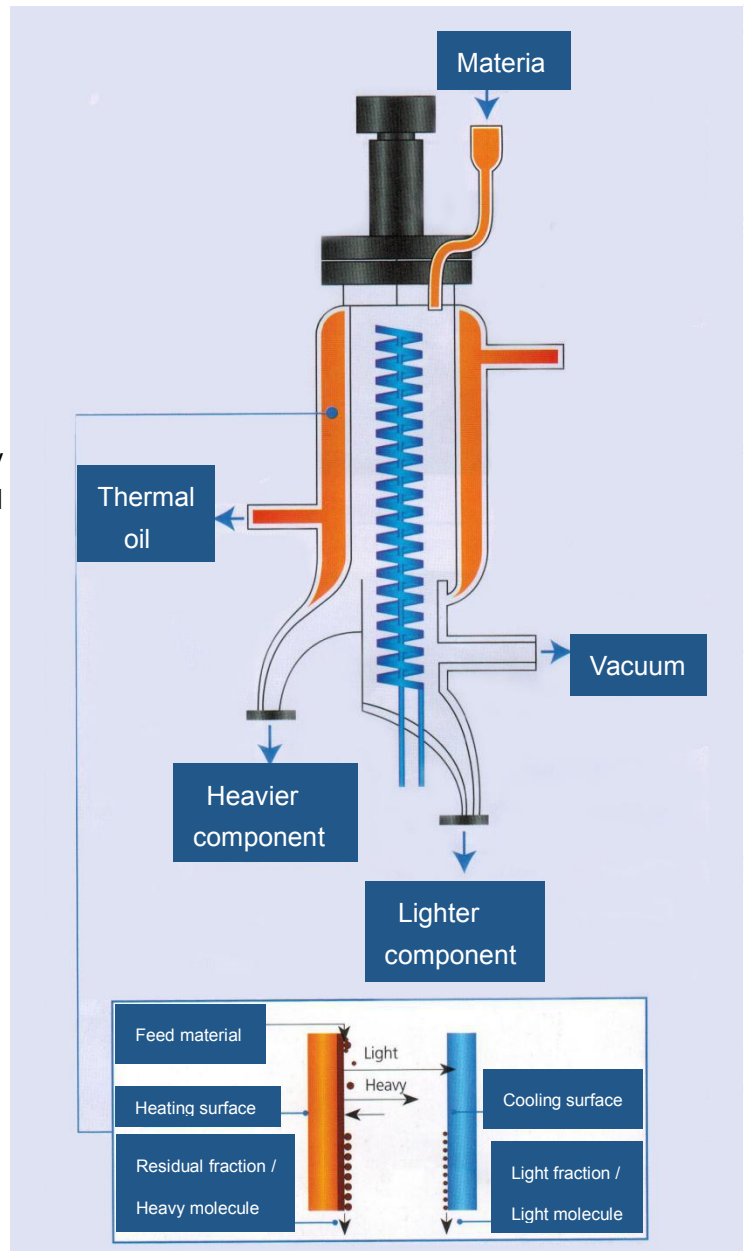
**Main application field:** Separation process in trades like Food, Pharmaceutical, Fine chemical, Electronic materials, Polymers ( Polyols, fatty acids, Polyphenols compounds, polyurethane, epoxy resin, lactate, glycerol monostearate, flavors and fragrances, fuel oil and paraffin oil), etc.

### Features and working principle of short path distillation:

- 1. Distilling temperature far lower than the material boiling temperature**
  - Has advantages on dealing with materials that is heat sensitive, of high boiling temperature, belongs to biological acids or lipids.
- 2. Heating process of material is very quick**
  - It may take only few tens of seconds to finish a separation on short path distillatory when it takes hours on a normal evaporation apparatus.
- 3. It is a physical separation process**
  - A natural and gentle separation process that is widely applied on deodorization, decolorization, and purification on materials with high value.

### Technical specification:

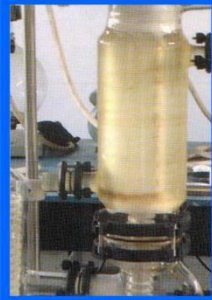
Model	Diameter (mm)	Surface (m <sup>2</sup> )	Processing measures (kg/h)
TWF38-1	38	0.01	0.01-0.2
TWF70-4	70	0.04	0.1-2
TWF70-5	70	0.05	0.1-2
TWF125-10	125	0.1	0.3-4
TWF125-12	125	0.12	0.4-5
TWF125-15	125	0.15	0.5-6
TWF200-45	200	0.45	0.7-8
TWF300-75	300	0.75	1.0-11



## Features Of TOPTION Molecular Distillation System

1. **Transparent** - Allow an easy observation in whole experiment process on materials (color, fluidity, film effect, start point of distilling, ect.) when changing of settings of pressure, temperature, feed and rotation speed. The convenience does help to get the optimum technological parameters and the experimental data.
2. **High Pressure tightness** - Magnetic coupling drive system plus TOPTION fine processing technics, both guarantee system vacuum down to 0.001mbar.
3. **Cleaness** - Material can only touch glass and PTFE during separation process.
4. **Easy Maintenance** - Quick disassemble structure and specially designed cleaning kits make maintenance job fast and simple.
5. **Cow Distillation Receiver** - Allow user to collect 3 samples during separation process which increases experiment efficiency and assists process analysis.

Roller / Scraper  
filming system



Quick disassemble  
and easy clean  
structure



Diffusion pump set



Whole gamut  
pressure display

Glass evaporator, has no metal exposed  
filming system mounted. Featured as  
clean and transparent.



Magnetic drive  
rotation



System Heating  
/ cooling arrangement



Cow distillation  
receiving



Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogenization Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

# Scraped Film Evaporator

The **thin film evaporator** is a new highly effective evaporator blows the film installment through tube in vivo revolving to cause the material continuously evenly to force the membrane in the heating surface, carries on under the high vacuum condition falls. It has many advantages, such as low distillation temperature, high distillation vacuum degree, short heating time, high separation degree, and so on.

## Application:

The thin film evaporator is used to **evaporate, condense, decolor, trip, react, degas, deodorant the materials with high heating-sensitive and easy to oxidate**. It is an excellent method for gently thermal treatment of heat sensitive, high boiling products. At present, there are hundreds of products used in thin film evaporator. The thin film evaporator is widely used in medical, pesticide, oil and fatty chemical industry, fine chemical industry, commodity chemical industry, biology chemical industry and so on.

## Performance character:

1. Small pressure losing.
2. Big diathermanous coefficient, high evaporating efficiency.
3. Low evaporating temperature.
4. Short heating time.
5. Strong adaptability, easy to operate.

## Technical specification:

Model	Diameter (mm)	Surface (m <sup>2</sup> )	Processing measures (kg/h)
PWF70-4	70	0.04	0.1-2
PWF70-7	70	0.07	0.2-3
PWF125-17	125	0.17	0.5-6
PWF200-45	200	0.45	0.7-8
PWF300-75	300	0.75	1.0-11



Unique customization is supported by TOPTION strong specialist team who have more than ten years technical experience.



### Scraped Film Evaporator Configuration:

Part Name	Unit	Quantity	Note
Jacketed type main reaction evaporator	set	1	Standard
Digital frequency conversion control stirring device	set	1	Standard
250ML quantitative feeding containers	set	1	Standard
Multiple glass condenser	set	1	Standard
Vacuum protect cold trap	pcs	1	optional
Scraped panel type scraped film system	set	1	Standard
Material discharge collection system	set	1	Standard
Stainless steel workbench	set	1	Standard
Tube luca pieces	set	1	Standard
Quantitate charge pump	set	1	Standard
Vacuum system	set	1	optional
High temperature heating circulator (room temp to 180 °C)	Set	1	Optional, jacketed reactor heating
Low temperature cooling circulator ( room temp to -20°C)	Set	1	Optional, condenser cooling
Secondary circulation device	Set	1	Optional
Digital thermometer	set	1	Optional, tube temperature could be measured
Digital vacuum gauge	set	1	optional
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