

KIRIYAMA SAFE EVAPORATOR

SAFE (Solvent Assisted Flavor Evaporator)



Easily extract very small quantity ingredients from natural resources in the low temperature and very short time easily.

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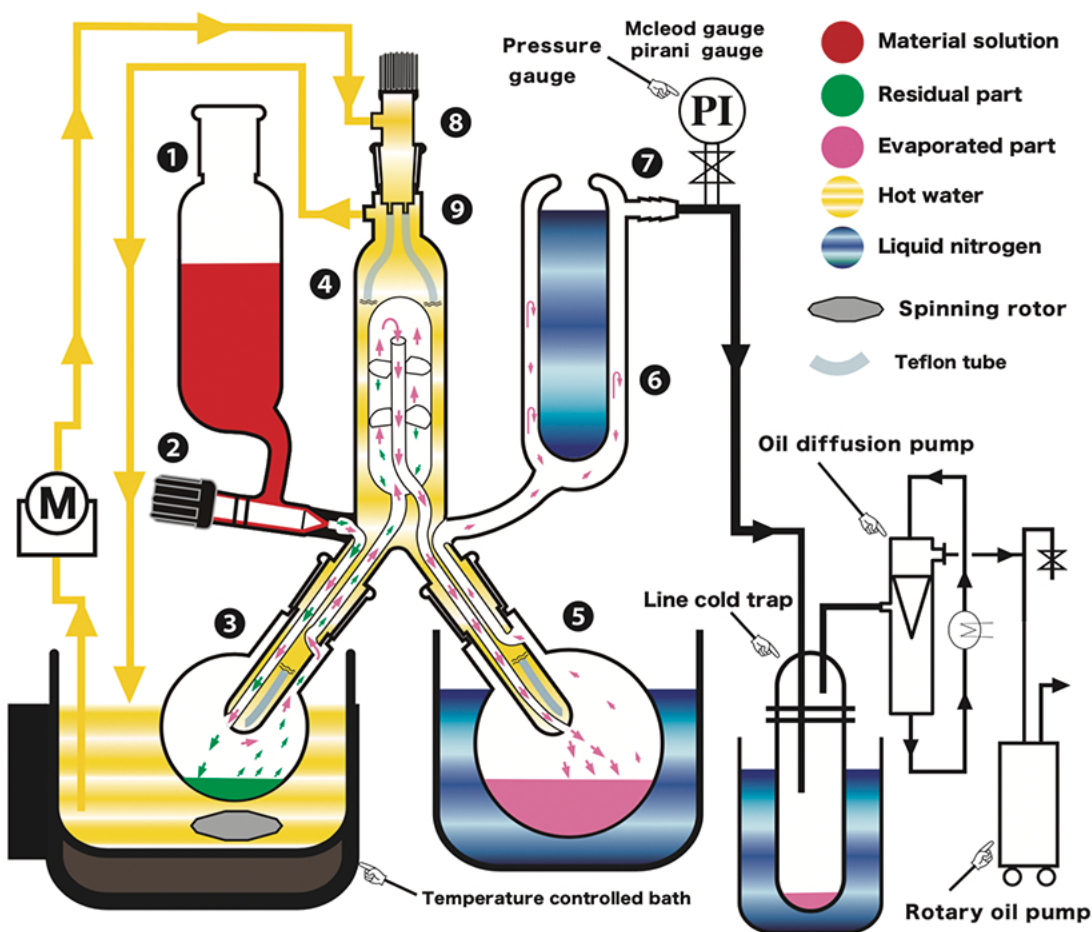
This apparatus can extract various useful ingredients of very small quantity in the natural resources by evaporation with the assistance of a light boiling solvent, such as diethyl ether etc.

It's possible to get heat sensitive substances efficiently.

[Outline Figure & Main Features]

1. Useful for extraction of natural ingredients.
2. Low temperature (usually around 30deg.) operation.
3. Correspond to very high pressure (10^{-3} mmHg).
4. Correspond to very small quantity.
5. Possible to eliminate high boiling substances effectively.
6. Easy handling & short term operation (30min~60min..).
7. Compact system.

- ① Raw material Server
- ② Feed control needle valve.
- ③ Residual substance receiver
- ④ Control column (with mist separator)
- ⑤ Evaporate receiver.
- ⑥ Cold trap.
- ⑦ Vacuum nozzle.
- ⑧ Hot water inlet connected to the teflon tube.
- ⑨ Hot water outlet.



* Substances with light boiling point and affinity for the solvent will substantially evaporate

(Operation)

- 1) Check the O-ring of the feed controlling valve② has no corrosion.
Then confirm the valve② shut, and charge the raw material into the raw material server①.
- 2) Let the hot water (app.30deg.) flow in from the inlet③, and flow the water through the teflon tube to the outlet④.
- 3) Receiver⑤ also should be heated in the same temperature (app.30deg.).
- 4) Cool down the receivers ③&④ with the liquid nitrogen.
- 5) Let the inner pressure reduced from the nozzle⑦.In advance, set the coldtrap between the vacuum pump and the evaporator.
- 6) Open the control valve⑥gradually under the reduced pressure, and introduce the raw material solution gradually to the flash distillation.
- 7) As soon as the solution come in through the valve, most of the solution (solvent & light ingredients) evaporate and condense in the receiver⑤ via control column④.Some of the ingredients collide the mist separator and come back to the receiver⑤.
When all of the raw material has dropped down, the operation is over.
- 8) After eliminated the liquid nitrogen in the cold trap③.
Then the evaporated solution in the receiver⑤ can be distilled off the most solvent, but some remains in the receiver⑤, Finally the residual condensate can be distilled completely using another apparatus (Claisen equipment etc).
- 9) The final condensate can be analyzed by gas chromatograph(GC), GC/MAS, or NMR analyzes.

* Usually the diethyl ether will be used as the solvent, in another case dichloromethane etc can be used.

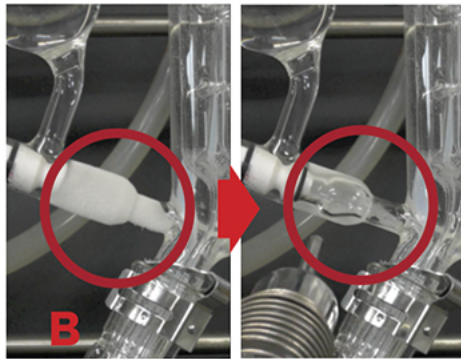
* Recovery yield of effective ingredients will be reduced in the case of existing fat substances.

A Be careful that the circulating water is always flowing, otherwise some breakage in the food parts may occur due to the freezing.

B Sometimes the frost may come out inside the pipe at the needle valve due to the latent heat of the solvent. In this case, warm the frost and melt down with electric dryer from outside.

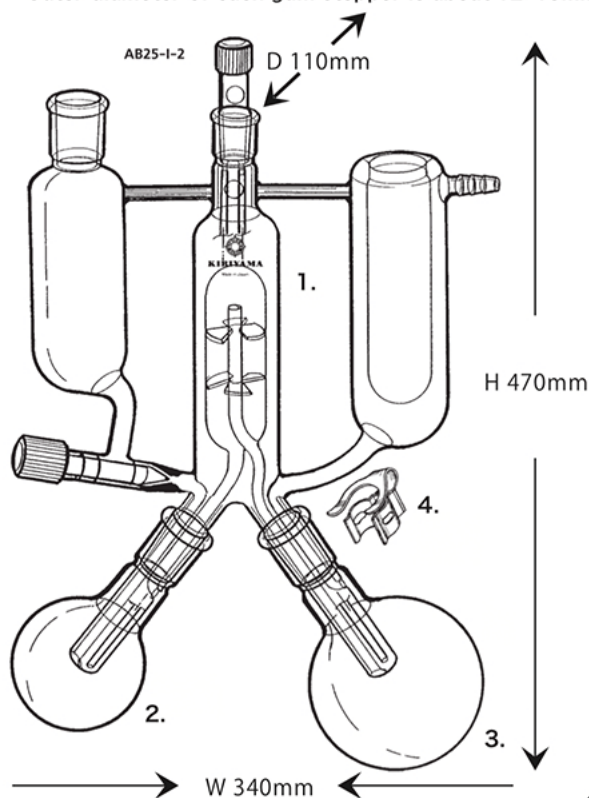


Example of the experiment.



Apparatus dimension is about as followings.

Outer diameter of each gum stopper is about 12-13mm.



Precise manipulation of the Clip adaptor can be easily controlled with very weak strength.

AB25-I-2
SAFE

Joint Size	PRICE
Catalogue No.	
AB25-I-2	¥360,000

- 1.Main body
2. Flask(100ml)
- 3.Flask(300ml)
- 4.Joint clamp
- 5.Clip adaptor

KIRIYAMA GLASS WORK COMPANY

2-31-11, Higashi-nippori, Arakawa-ku, Tokyo, Japan

TEL 03-(3802)- 0005 FAX 03-(3801)-1170

URL www.kiriyama.co.jp

E-Mail info@kiriyama.co.jp



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