

VKS-70-5RS standard operating procedures for distillation of cannabis oil

To begin this process you are going to start out by winterizing your crude oil

1. Dilute the crude oil 4 parts ethanol to 1 part oil. Ex: 500g oil = 2000g ethanol
2. Homogenize the oil/ethanol solution on a magnetic hot plate stirrer to 50c and let cool
3. Put the oil/ethanol solution into a freezer for no less than 24hrs to allow the lipids to fall out
4. Once the lipids have separated from the oil remove them by filtering via vacuum assisted Büchner funnel using cold ethanol to wash the oil through until clear
5. Recover ethanol via rotary evaporation
6. Oil that is fresh out of the rotary evaporator will have residual amounts of ethanol left in it, you will need to evaporate this utilizing a magnetic hot plate stirrer
7. Transfer the oil from the rotary evaporator to a griffin beaker that has a stir bar inside "don't forget to record the tare weight before hand"
8. Evaporate the residual ethanol on the magnetic hot plate stirrer making sure not to let the oil foam over
9. Once the ethanol is fully evaporated you will begin the decarboxylating stage
10. Decarboxylating emits co2 gasses which will affect later stages of the process if not completed, so be sure to fully decarboxylate @ 150c until no bubbles are left forming within the oil. After you have still oil "no bubbles" let oil spin off for an additional 1-2hr to flash off any ultra light end terpenes
11. Your oil is now ready to be sent to the wiped film molecular separation unit to be refined
12. Heat the oil that is to be refined to lessen viscosity
13. While the oil is pre heating set the first cut parameters on your machine
Feed @ 115c
Residue @ 115c
Evaporator @ 158c
Cold trap @ -40c
Condensor @ 50c

Bring machine under vacuum, the diffusion pump will **NOT** be utilized during the terpene cut

14. Pour your pre heated oil into the pre heated 115c feed tank

15. Your first pass/cut on the oil will target the terpenes

16. Feed the oil to the evaporator at 90-100Hz, once the oil reaches the evaporator start the wiper basket at minimum rpm's and let it saturate the evaporator for a few seconds

17. Once saturated you can set your wiper rpm to 400 rpm's

18. Keep an eye on your vacuum level, this will dictate if you can speed up your feed rate. You want to be sitting in the 3.5×10^{-1} to 7×10^{-1} Mbar for the terpene cut

19. The faster you feed the more it will affect the vacuum. If you find yourself running the first pass at 90-130Hz and your vacuum is deeper than 3.5×10^{-1} Mbar you can throttle the vacuum with the regulator valve located to the right of the vacuum gauge, this will bring your vacuum within the correct range **ONLY BLEED ATMOSPHERE DURING A FIRST PASS WITH DIFFUSION PUMP OFF**

20. Be sure to watch the discharge arms and keep the oil level just visible in the sight glasses, do not let oil back up in the neck, if oil backs up too far you have a chance of bumping and contaminating your separation.

21. Once first pass sample has been completed, use roughly 200ml of cut oil from the residue side to charge the feed line with oil that has been cut of terpenes by running through the machine.

Second/final cut

The second pass will be nearly identical to the first pass with a few paramount adjustments made to the machine for targeting cannabinoids instead of terpenes

1 Set your bath temperature parameters to

Feed @ 115c

Residue @115c

Evaporator @ 172c

Cold trap @ -40c

Condensor @ 76c

2. You will now be using the diffusion pump for the final cut... **WARNING: the diffusion pump must not be turned on unless you have a vacuum level of at least -1Mbar disregarding this will compromise the silicone diffusion pump oil and possibly ruin the diffusion pump itself.** once you have -1Mbar you can switch on the diffusion pump, manually check that the pumps fan is running, and allow 20 minutes for the diffusion pump to get to operating temperature.
3. Start feed at 90-100Hz keeping an eye on the vacuum level making sure that you have atleast -2Mbar or deeper. we suggest a max feed rate of 130Hz to achieve a satisfactory separation of cannabinoids “dont forget to utilize the wiper basket at 400rpm”
4. keep an eye on the discharge sight glasses and disperse oil at a rate thats fast enough to not back up into the arms but slow enough that the pumps are not ran dry
5. seeing as the condensing coil as well as the discharge arm and pump body are full of terpenes, you will be using the cannabinoid distillate to wash these zones out. pump roughly 100ml out of the distillate pump before swapping to a clean collection vessel for the remainder of the run
6. Once you are finished with your run, start the shutdown of the machine
7. **Warning you must shutdown the diffusion pump and leave the vacuum pump running! leave the vacuum on and diffusion pump off for at least 15 minutes to allow the diffusion pump to cool down. this is necessary as to not ruin your silicone diffusion pump oil.**
8. once the diffusion pump has cooled for 15 minutes you can shut down the vacuum pump and utilize the vacuum regulator valve to break the system to atmosphere
9. turn off all HUBER heat baths making sure that the pumps have come to a complete stop before powering down heat baths and chiller
10. shut down the power switch for the frequency convertors and the rear top power strip if you want the signage to be powered down