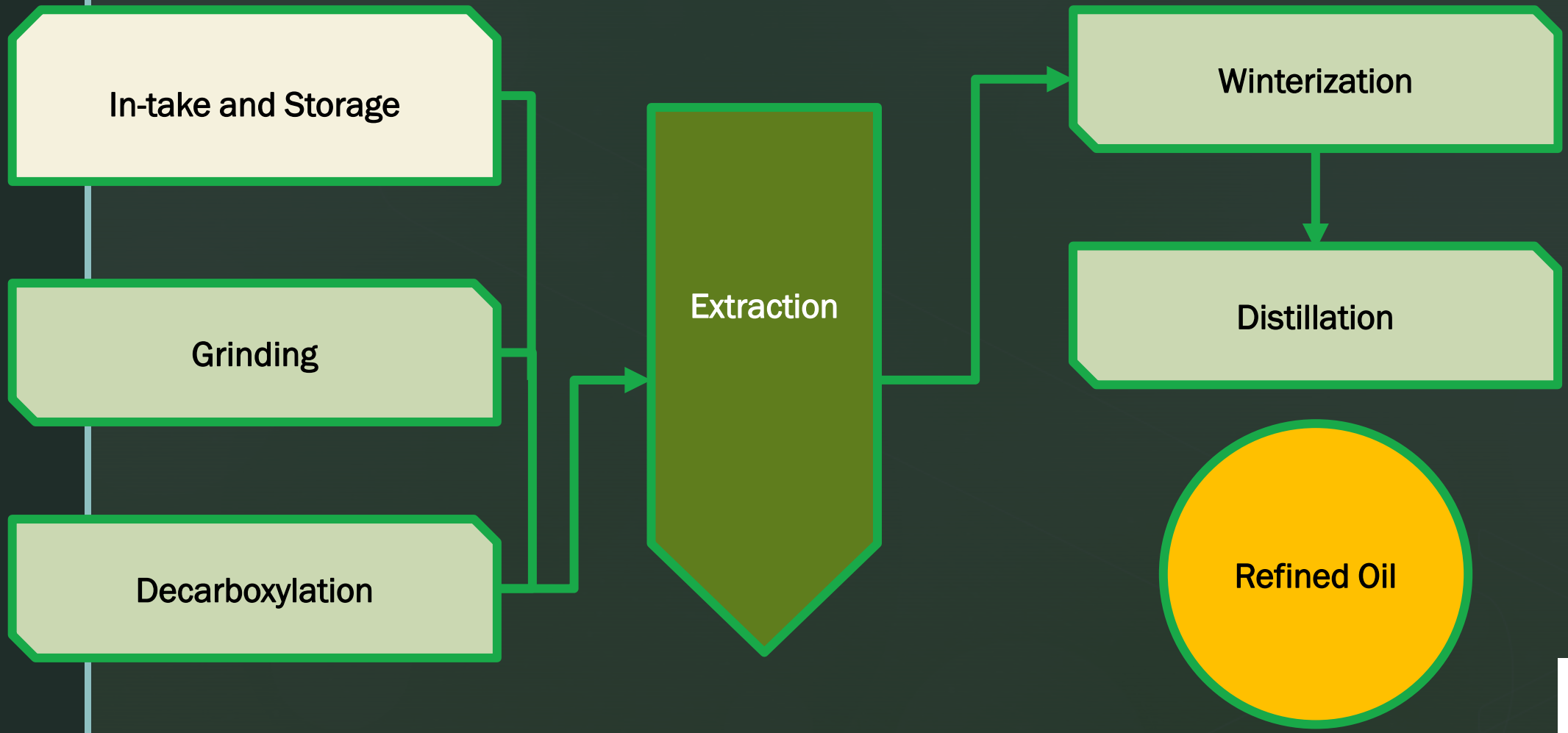
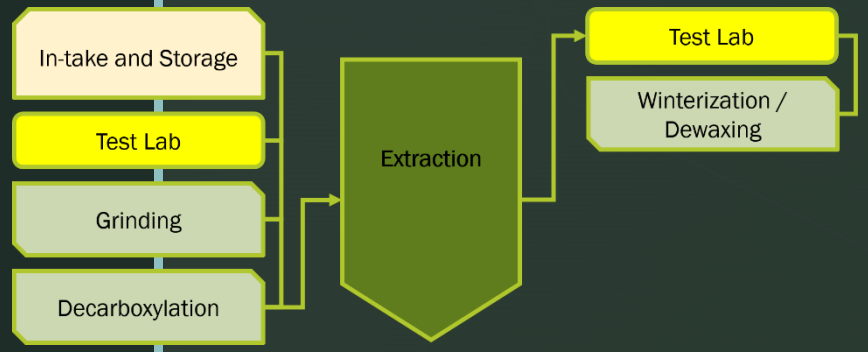
Supercritical Extraction Overview

A Quality Process



APPLIED EXTRACTS

Generalized Equipment List



In-take and Storage

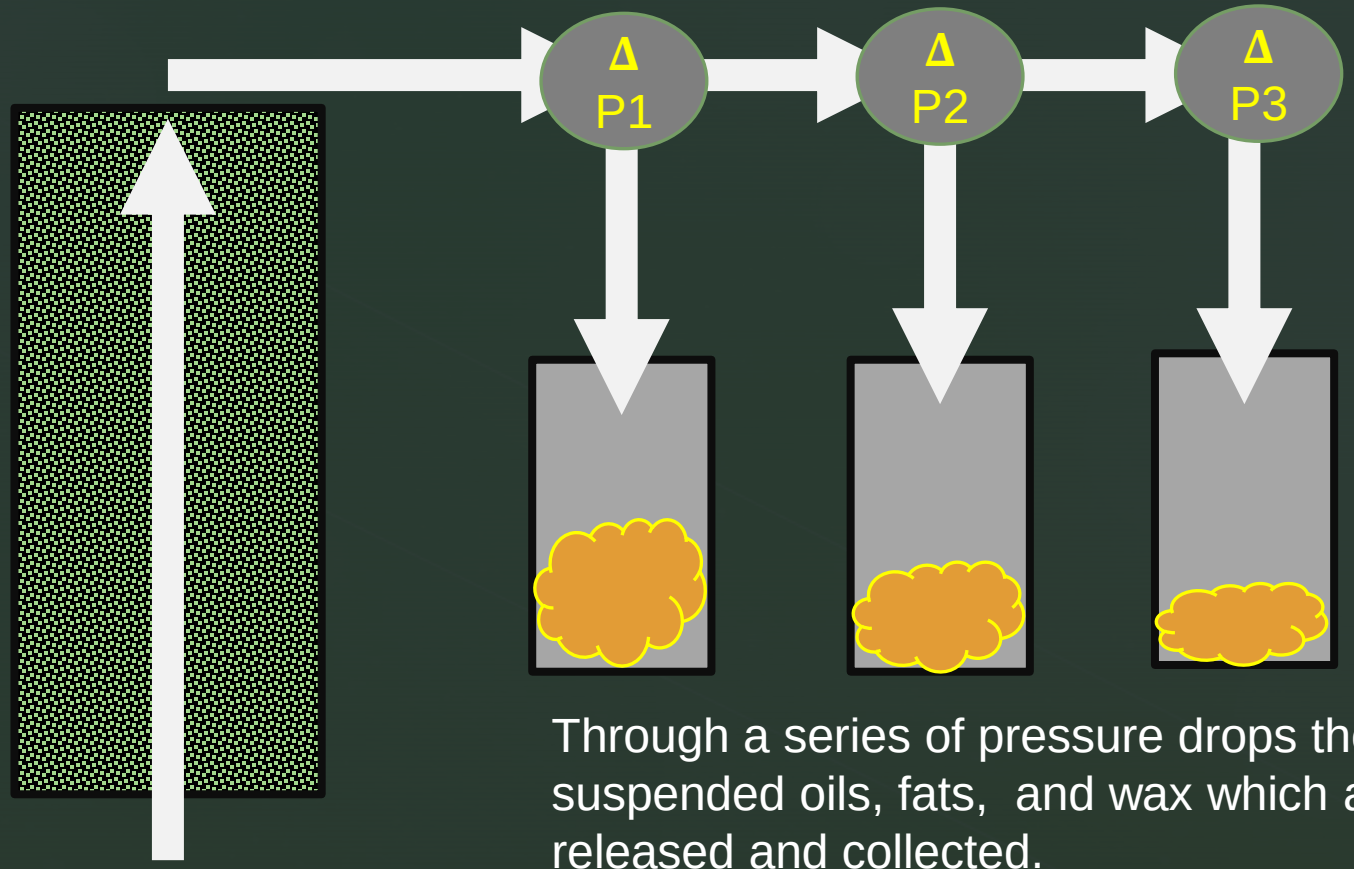
Laptop / PC
Barcode printers / scanners
Barcode / inventory tracking program
Locking, airtight storage containers (preferably nitrogen purged)
Appropriate space for drying
Hanging baskets for drying and associate materials

APPLIED EXTRACTS

Generalized Equipment List

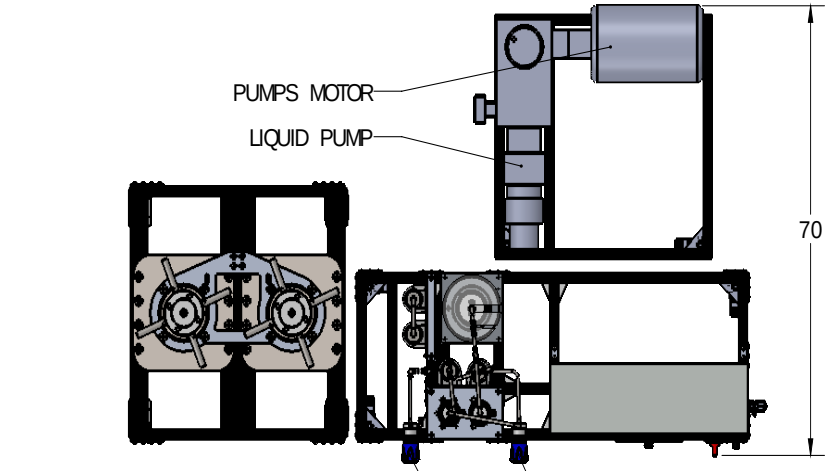
Extraction	
	Super Critical CO_2 Machine
	Liquid CO_2 source
	Heat gun
	Floor mats
	Stainless steel scope
	Sample tubes and product containers
	Balance and scale
	Cleaning supplies, spray bottles, etc.

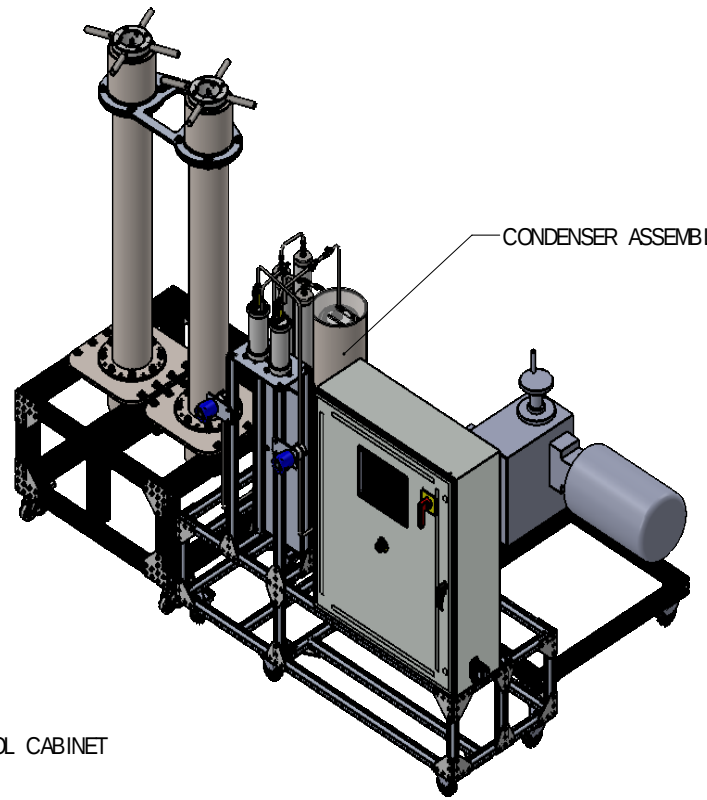
How supercritical CO_2 extraction works

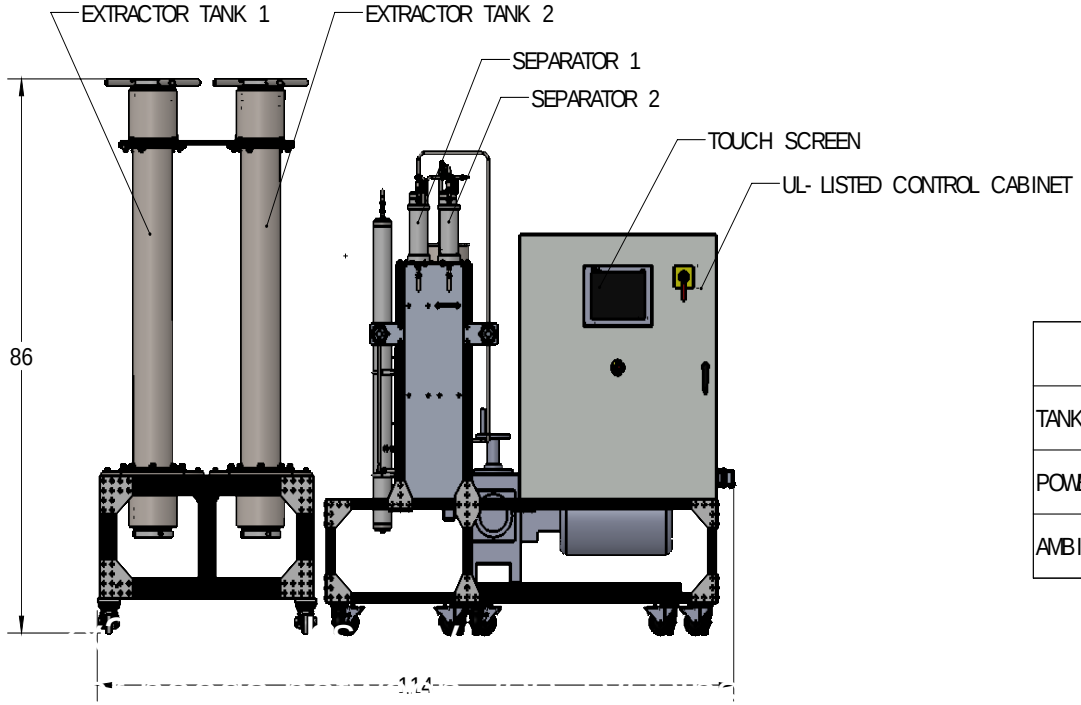


Through a series of pressure drops the suspended oils, fats, and wax which are released and collected.

This can be done in a single stage, but multiple stages offer greater efficiency. We have multiple stages



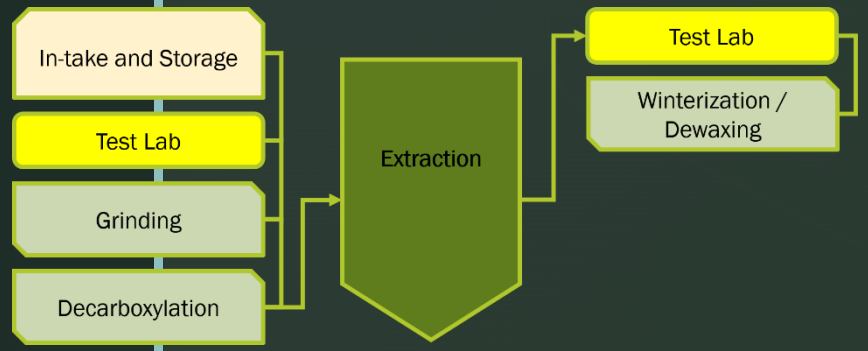




SUPERCRITICAL CO_2 EXTRACTOR	
TANK CAPACITY, EACH	25 LITERS
POWER CONSUMPTION	3 PHASE, 240V, 50A
AMBIENT TEMPERATURE	60- 80 F

DRAWN BY:	SS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: .XX ± ; .XXX ± .XXXX ± ANGLES ± °	APPLIED EXTRACTS APPLIED EXTRACTS USA 1027 S CLAREMONT ST SAN MATEO, CA 94402
DRAWN DATE:			
PROJECT ENGINEER	JAMES WHITE		
CHECKED DATE:		MATERIAL	
		FINISH	DMG NO. / REV. / SCALE 1:20
B SIZE TEMPLATE REV A	USED IN / QTY.	DO NOT SCALE DRAWING	SIZE B / 1 OF 1

We did not sell them a grinder



Grinding

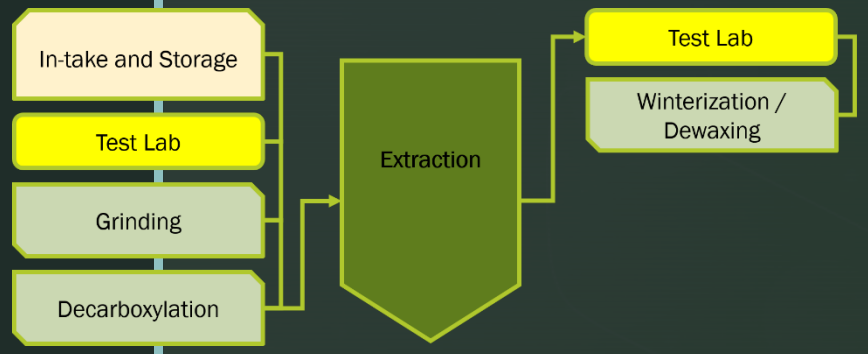
Grinder
Balances and scales
Gloves and eye protection
Sample tubes and product containers

APPLIED EXTRACTS

Across International 7.5cf Vac Oven with Pump

UL/CSA 18 Shelf Max 7.5 CF 480F 5-Sided Heating Vacuum Oven 220V

QTY - 1



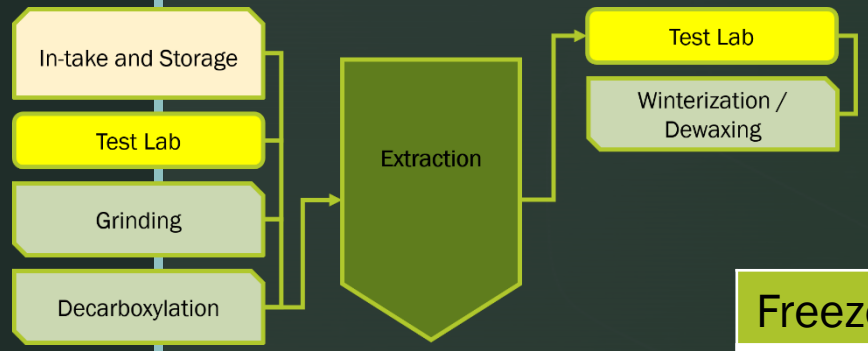
Decarboxylation

Decarboxylation is a chemical reaction that removes a carboxyl group and releases carbon dioxide (CO_2). Usually, **decarboxylation** refers to a reaction of carboxylic acids, removing a carbon atom from a carbon chain. This is done through “baking” the material. We sold GZL a vacuum oven for this process. It is critical. They were not decarbing the material during our visits. Nor did they have a process to do so, despite being given data showing its efficacy and ideas on how they might approach the process.

Vacuum oven
Vacuum Pump
Storage bins, sample tubes, and appropriate racks and holders

APPLIED EXTRACTS

extraktLAB DrainDroyd
24” filtration table
QTY - 1



Winterization / Dewaxing

Freezer
Spatula for product removal
Storage bins, sample tubes, and appropriate racks and holders
Rotovap
Vacuum pump, fittings, tubing, and filters
Heatgun
Product containers
Lid sealing system
Peristaltic pump and tubing

In this stage the extracted crude is mixed with ethanol and then frozen overnight. The mixture separates into layers of oil and wax. This is called “winterization.” Next comes “dewaxing”

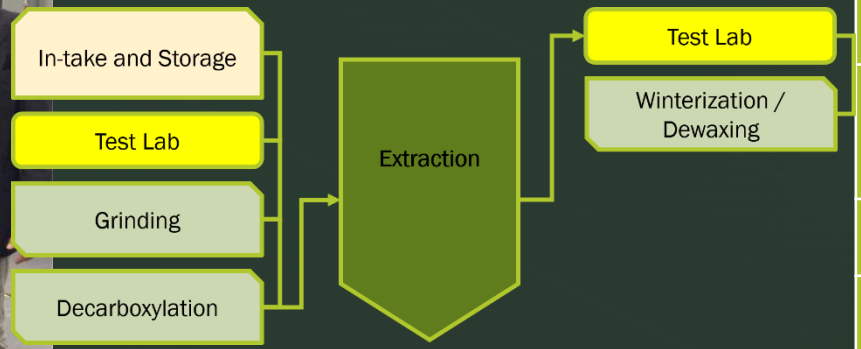
Due to freezing the wax is hard but of course the ethanol doesn’t freeze (its alcohol). You pour the mixture through the filter funnel whichis like a goant drip coffee maker, the solids are filtered out and the liquid mix of crude and ethanol flows through.

APPLIED EXTRACTS

And here they are with the rotovap we sold them – taken from LinkedIn post

USALAB 50L ROTOVAPS
w/ Upgraded Diaphragm Pump
QTY – 2

Winterization / Dewaxing



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The “rotovap” is a rotary evaporator. The big flask that Geoff is standing with his hand on, revolves around in a heated waterbath. As the ethanol/ crude mixture is heated, the ethanol evaporates at a much lower temp than the crude. The eth vapor is then condensed and recollected. It may be used again. This is a very common practice in all labs from pot to basic research.

APPLIED EXTRACTS

Cold Start Demo of AE-150

Loading

- Biomass is loaded into extraction tank. On the 2x25L Machine the tank holds apx 6Kg.
- Material is loaded into mesh bags with a 30um porosity. This eases unloading and prevents material from flying through the machine.

Lid replaced

Lid is placed on tank

No special tools are required

Method selected

Select recipe from the touch screen and start pre-heat

Balance tank pressure

Tune pressure

Adjust back pressure regulator to desired set point

Normal operating conditions are between 3700-4200psi.


BP2
24.6 °C
SP2
SV1
811
psi
24.6 °C
25.8
HE3
-9.8 °C
CHILLER
CND
SP1 P SP
1500 psi
SP1 T SP
35 °C
SP2 T SP
20 °C
SV2
Phase Timer (min)
0
1.3 °C
P 811 psi
START
10.4
HEMP2
Recipes
Log

Hit start

Blast-off