



THE ULTIMATE TERPENE MIXING GUIDE

HOW TO MIX TERPENES WITH
D9 / D8 / D10 / HHC / CBD AND MORE

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PURPOSE

This document outlines the standard operating procedure (SOP) for Abstrax Tech's customers to properly mix our terpene blends into cannabinoid solutions. The exact percentage of terpenes you need can vary from 0.5% to 17%, but most of our customers successfully use around an 8% concentration.

This protocol should only be carried out by trained professionals with formulation experience in a licensed facility that is properly suited for this SOP. Ensure that all personal and facility safety requirements are inspected prior to the beginning of the procedure. In addition, we highly recommend having another operator perform a QC check on the final formulation once it is completed to ensure the utmost quality.



If you have any questions about this SOP, please contact us by visiting us at AbstraxTech.com, emailing us at hello@abstraxtech.com, or by giving us a call at (562) 294-5805.

**Thanks for mixing
with Abstrax!**

TOOLS AND MATERIALS

Employees must have these tools and materials on site to fulfill this SOP:

- 1. Abstrax Tech terpene blend**
This guide will work for any BDT/HDT/CDT sold by Abstrax
- 2. Cannabinoid Solution**
D9 THC, D8 THC, D10 THC, HHC, Liquid Diamonds, CBD Distillate, or CBD Isolate
- 3. Lab test (COA) confirming cannabinoid percentages of your extract**
You need to know the potency of your cannabinoids
- 4. Liquidizer/dilution-agent (optional)**
This is not always needed but, when it is, we recommend using TEC Temper
- 5. Data sheet**
Use either paper or digital methods to record your formulation information
- 6. Large Pyrex Mixing Beaker**
*Rule of thumb for beakers:
The volume of the beaker = double the mass (g) of your finished solution*
- 7. 2 Small Pyrex Mixing Beakers**
One for terpenes and one for the Liquidizer
- 8. Scale (5 kg max, 0.01 g precision)**
Please reach out if you plan on formulating batches above 4 kg
- 9. Stainless Steel Micro-Spatula**
- 10. Mixer with clean attachments**
- 11. Homogenizer (optional but strongly recommended)**
- 12. Pipette Pump**
- 13. Glass Pasteur Pipette**
- 14. Infrared (IR) thermometer gun**
- 15. Forced air oven or vacuum oven**





Employees must have the following personal protective equipment (PPE) to be in the formulation area:



Powder-Free Nitrile Gloves



Safety Glasses Or Goggles



Lab Coat



Long Pants



Closed-Toed Shoes



Hair Net (Including Beard Net, If Employee Has Facial Hair)



Mask (Optional)

Location: Formulation Room

This room should not contain any flammable solvents. Small amounts of isopropyl alcohol and ethanol are allowed for cleaning purposes only. Keep solvents away from the formulation area to avoid cross-contamination and ensure that they are always capped. Make sure to check the room's filtration system to avoid cross-contamination from outside conditions.

PRE-FORMULATION PROCEDURE

Before getting started...

1. Have all materials clean and available before starting the flavoring process.
2. Use isopropyl alcohol or ethanol to clean beakers and tools. Wipe them clean with a lint-free towel and then use a heat gun to dry them thoroughly.
3. After cleaning, rinse all beakers and tools with Reverse Osmosis (RO) or Deionized (DI) Water. Do not use tap water. Dry the water by wiping with a lint-free towel followed by the heat gun.

Warning: Do not use heat gun on any flammable solvents.

We have two pre-formulation procedures depending on your use case:

Version A:

Formulating **WITHOUT**
a Liquidizer

Version B:

Formulating **WITH**
a Liquidizer



VERSION A

Formulating **WITHOUT** a Liquidizer

START

CHOOSE GOAL WEIGHT

How many grams of finished product are you looking to make? Write down the solution's final goal weight on your data sheet.

Ex: 500 g of SFV OG vape solution

TERPENES TO CANNABINOIDS RATIO

If you know it already, write down your brand's preferred percentage of terpenes to cannabinoids.

Ex: Terpenes = 8%, Cannabinoids = 92%. This ratio may vary depending on the vape hardware used.

If you are conducting your own R&D, we strongly encourage you to try our formulations in small batches (5 g) at an initial concentration of 4% and then adjust the concentration to your liking. We suggest increasing by increments of 2% and then fine-tuning from there

AMOUNT OF TERPENES AND CANNABINOIDS

Calculate the necessary amount of terpenes and cannabinoids for the formulation.

FOR TERPENES (@8%):

Multiply the final goal weight by the desired percentage of terpenes.

Ex: $500.0 \text{ g} \times 0.08 = 40.0 \text{ g}$ of Abstrax's terpene blend needed

FOR CANNABINOIDS (@92%):

Subtract the grams of terpenes from the total.

Ex: $500.0 \text{ g} - 40.0 \text{ g} = 460.0 \text{ g}$ of distillate needed

Alternatively, multiply the final goal weight by the percentage of distillate.

Ex: $500 \text{ g} \times 0.92 = 460.0 \text{ g}$ distillate

END

Pre-Formulation Procedure:

VERSION B

The steps outlined below use D9 THC as a reference, but they can be applied to all cannabinoids. Just be sure to update your percentages based on your materials. We feature our recommended formulation percentages in the next section.

Formulating **WITH** a Liquidizer

START

CHOOSE GOAL WEIGHT AND POTENCY

How many grams of finished product are you looking to make and at what potency? Write down the solution's final goal weight with desired potency on your data sheet.

Ex: 500 g of D9 SFV OG vape solution with 75% total THC

CHOOSE LIQUIDIZER/DILUTION AGENT

If you are using CBD distillate/isolate or hemp-derived cannabinoids (like D8/D10 THC) then a Liquidizer/dilution-agent is recommended to obtain a less viscous formulation.

We prefer and recommend a Liquidizer like TEC Temper.

TERPENES TO CANNABINOIDS RATIO

If you know it already, write down your brand's preferred percentage of terpenes to cannabinoids.

Ex: Terpenes = 8%, Cannabinoids = 92%. This ratio may vary depending on the vape hardware used.

If you are conducting your own R&D, we strongly encourage you to try our formulations in small batches (5 g) at an initial concentration of 4% and then adjust the concentration to your liking. We suggest increasing by increments of 2% and then fine-tuning from there.

CALCULATE AMOUNT OF TERPENES, LIQUIDIZER, AND CANNABINOIDS

It's now time to figure out how many grams are needed of each ingredient. Use the following steps to determine what's needed:

01. In this hypothetical scenario, our goal is to create a vape solution with 75% total THC. To achieve this, it's important to prioritize the final amount of total THC in the product.

Based on the previous step, we have determined that our formulation should contain 8% terpenes.

02. Calculate the total THC content. Multiply the solution's goal weight by the desired total THC potency.

Ex: $500 \text{ g} \times 0.75 = 375 \text{ g}$ total THC content

03. Calculate how many grams of distillate we need. Distillate is never 100% pure THC.

Ex: Let's assume that the lab results indicate a 90% THC concentration in the distillate.

1. Divide the total THC content by the THC% indicated in your distillate's lab test results.

$375 \text{ g THC content} / 0.90 = 416.7 \text{ g of distillate}$

04. Calculate the percentage of solution that is distillate.

We calculated that we'll need 416.7 g of distillate. The final goal weight is 500 g.

1. $416.7 \text{ g} / 500 \text{ g} = 83.3\%$. The final solution will be 83.3% distillate.

05. Multiply the final goal weight by the desired terpene blend mixing ratio.

Ex: We previously identified that our brand prefers an 8% concentration of terpenes.

1. $500 \text{ g} \times 0.08 = 40 \text{ g of terpenes}$

06. Use the following formula to calculate the necessary amount of Liquidizer:

Add the grams of distillate and terpenes required and then subtract from the final goal weight.

1. $416.7 \text{ g distillate} + 40 \text{ g terpenes} = 456.7 \text{ g}$

2. $500 \text{ g final desired weight} - 456.7 \text{ g} = 43.3 \text{ g Liquidizer required}$

Convert this weight into a percentage.

1. $43.3 \text{ g} / 500 \text{ g} = 8.7\% \text{ Liquidizer}$

07. Goal Achieved

Based off our calculations, our lab report, and our brand's preferred mixing ratios, we arrive at the following:

Final Goal Weight: 500 g

Desired THC Potency: 75%

1. Distillate Required: 416.7 g

2. Terpenes Required: 40 g

3. Liquidizer Required: 43.3 g

4. Mixing Ratio: 83.3% distillate, 8% terpenes, 8.7% Liquidizer

SANITY CHECK

We strongly recommend double checking your calculations. It's better to measure twice and formulate once.

Double check your math using the dilution equation $C1V1 = C2V2$

1. $C1 = \text{Concentration 1 (Distillate's 90\% THC potency} = 0.9)$

2. $V1 = \text{Mass 1 (distillate needed in grams)}$

3. $C2 = \text{Concentration 2 (Desired 75\% THC potency} = 0.75)$

4. $V2 = \text{Mass 2 (final goal weight} = 500 \text{ g)}$

$C1V1 = C2V2$

$(0.9)(V1) = (0.75)(500)$

$V1 = (0.75)(500)/(0.9)$

$V1 = 416.7 \text{ g, distillate needed in grams}$

END

FORMULATION PROCEDURES

Abstrax Recommended Formulas

Version A:

D9 THC

Option A:

 92 % distillate

 8 % terpenes

This is the simplest and most common formulation procedure. If you have a cannabinoid extract and terps, you're ready to go!

Click below to jump to this formulation procedure:

Version A:

Version B:

D9/D8/D10 THC & HHC

 87 % distillate

 8 % terpenes

 5 % TEC Temper

D8, D10, and HHC can often solidify and clog up your vape hardware. We strongly recommend using a Liquidizer to reduce the viscosity so that it can properly wick.

Click below to jump to this formulation procedure:

Version B:

Version C:

CBD

Isolate:

 50 % isolate

 8 % terpenes

 42 % TEC Temper

We strongly recommend using a liquidizer like TEC Temper with CBD Isolate. TEC Temper helps to prevent it from crashing out or crystallizing in solution.

Distillate (90% potency):

 55 % distillate

 8 % terpenes

 37 % TEC Temper

CBD distillate varies heavily. The goal is to get close to 50% CBD by weight without having crash out.

Click below to jump to this formulation procedure:

Version C:









Formulation Procedure:









VERSION A

These steps are SIMPLIFIED for when you've got the hang of the process. Skip to the next page for a DETAILED step-by-step guide.

SIMPLIFIED formulation steps for D9 THC **without** a Liquidizer

START

-  01 Ensure scale is level and calibrate using standard weights
-  02 Weigh and record empty formulation beaker, tare the scale with the beaker
-  03 Add distillate to room-temperature vessel made of glass, stainless steel, or Pyrex
-  04 Heat distillate in forced air oven at 190°F, monitor temperature with IR thermometer
-  05 Once distillate reaches 150°F, mix thoroughly to ensure all the oil is heated evenly
-  06 Use heat-resistant gloves to remove solution from the oven
-  07 Pour distillate into tared formulation beaker until it reaches goal weight
-  08 Record exact weight of transferred distillate and remove from scale, keep warm

-  09 Weigh and record smaller Pyrex beaker, tare the scale with the beaker
-  10 Carefully add the necessary amount of terpenes as calculated in pre-formulation
-  11 Remove terpene beaker and replace with heated distillate, tare the scale again
-  12 Add terpenes to distillate when temperature falls below 150°F, ideally at 135°F
-  13 Document the total weight and temperature of solution
-  14 Slowly mix terpenes and cannabinoids using a clean micro-spatula
-  15 Increase mixing speed with clean mixer or homogenizer once solution is homogeneous
-  16 Measure final temperature and record on the data sheet

END

Formulation Procedure:

VERSION A

These are the full DETAILED steps for formulating D9 THC without a Liquidizer. Head back to the previous page for the simplified step-by-step guide.

DETAILED formulation steps for D9 THC **without** a Liquidizer

START

01

If your scale has a leveler, it is important to ensure that it is completely level before moving forward. Make sure to calibrate the scale using the standard weights from the manufacturer.

02

Weigh the larger empty beaker that you will be using for your formulation.

03

Record the beaker's weight on your data sheet and then tare the scale.

04

Add distillate to a room-temperature vessel made of glass, stainless steel, or Pyrex. Ensure the vessel is at room-temperature. **NEVER heat a vessel straight out of the fridge or freezer**, as it has a high chance of breaking the glass and contaminating the product.

05

Heat the distillate in a forced air oven set to 190°F until the distillate reaches 150°F. This should take 30-60 minutes. Use an IR thermometer gun to monitor the temperature.

06

Make sure the distillate stays at 150°F by mixing it to ensure that all of the oil is heated evenly. **Warning:** Be careful not to overheat the solution, as degradation or isomerization can occur and alter your results.

07

Be sure to use appropriate heat-resistant gloves when removing the distillate from the oven to protect your hands.

08

Carefully pour the distillate into the tared large beaker until it reaches the goal weight indicated on the data sheet. Pour slowly and steadily. It should be in liquid form at this point.

09

Record the exact weight of the distillate that was transferred. It should match the weight calculated in the pre-formulation phase.
If the transfer is not exact, you can repeat the pre-formulation process to correct the amounts if necessary, or you can stop and try the transfer again.

10

After transferring the correct amount of distillate, remove the solution from the scale.
Keep it warm.

11

Add one of the smaller Pyrex beakers and tare the scale.

12

Into the small beaker, carefully add the appropriate amount of terpenes as calculated in the pre-formulation phase.

13

Record the exact weight of the terpenes that was transferred and remove from the scale.
Take special care to transfer the exact weight of terpenes needed.

14

Place the distillate back on the scale and tare it.

15

Measure the temperature of the distillate by using the IR thermometer.

16

If the temperature is below 150°F, carefully add the terpenes into the distillate.

Important Note: Only add the terpenes to the solution when the temperature is below 150°F, **ideally at 135°F**. Adding terpenes below 120°F tends to be too cold and makes the rest of the process more difficult.

17

On the data sheet, document the temperature at which the terpenes were added to the distillate and the total weight of the solution.

18

Mix the terpenes and cannabinoids together slowly at first using a clean micro-spatula.

Seriously, mix slowly. Don't spill or splash any of the solution out of the beaker.

19

As the solution becomes more homogeneous, you can speed up the process by using a clean mixer or homogenizer.

20

Make sure to scrape the bottom and sides of the beaker, as distillate can stick to these surfaces.

If not thoroughly mixed, it can yield an inconsistent final product. It is crucial to mix everything evenly.

21

Once fully mixed, measure the temperature and record it on the data sheet.

22

Remove the mixed solution from the scale and cover to avoid contamination.

END









Formulation Procedure:









VERSION B

These steps are SIMPLIFIED for when you've got the hang of the process. Skip to the next page for a DETAILED step-by-step guide.

SIMPLIFIED formulation steps for D9/D8/D10/HHC with a Liquidizer

START

-  01 Ensure scale is level and calibrate using standard weights
-  02 Weigh and record empty formulation beaker, tare the scale with the beaker
-  03 Add distillate to room-temperature vessel made of glass, stainless steel, or Pyrex
-  04 Heat distillate in forced air oven at 190°F, monitor temperature with IR thermometer
-  05 Once distillate reaches 150°F, mix thoroughly to ensure all the oil is heated evenly
-  06 Pour distillate into tared formulation beaker until it reaches goal weight
-  07 Record exact weight of transferred distillate and remove from scale, keep warm
-  08 Weigh and record smaller Pyrex beaker, tare the scale with the beaker

-  09 Carefully add the necessary amount of terpenes as calculated in pre-formulation
-  10 Remove terpene beaker and replace with other small beaker, tare the scale again
-  11 Carefully add the necessary amount of Liquidizer as calculated in pre-formulation
-  12 Remove Liquidizer beaker and replace with heated distillate, tare the scale again
-  13 Document the total weight and temperature of solution
-  14 Slowly mix together using a clean micro-spatula
-  15 Increase mixing speed with clean mixer or homogenizer once solution is homogeneous
-  16 Measure final temperature and record it on the data sheet

END

Formulation Procedure:

VERSION B

These are the full DETAILED steps for formulating D9/D8/D10 THC & HHC with a Liquidizer. Head back to the previous page for the simplified step-by-step guide.

DETAILED formulation steps for D9/D8/D10/HHC **with** a Liquidizer

START

01

If your scale has a leveler, it is important to ensure that it is completely level before moving forward. Make sure to calibrate the scale using the standard weights from the manufacturer.

02

Weigh the larger empty beaker that you will be using for your formulation.

03

Record the beaker's weight on your data sheet and then tare the scale.

04

Add distillate to a room-temperature vessel made of glass, stainless steel, or Pyrex. Ensure the vessel is at room-temperature. **NEVER heat a vessel straight out of the fridge or freezer**, as it has a high chance of breaking the glass and contaminating the product.

05

Heat the distillate in a forced air oven set to 190°F until the distillate reaches 150°F. This should take 30-60 minutes. Use an IR thermometer gun to monitor the temperature.

06

Make sure the distillate stays at 150°F by mixing it to ensure that all of the oil is heated evenly. **Warning:** Be careful not to overheat the solution, as degradation or isomerization can occur and alter your results.

07

Be sure to use appropriate heat-resistant gloves when removing the distillate from the oven to protect your hands.

08

Carefully pour the distillate into the tared large beaker until it reaches the goal weight indicated on the data sheet. Pour slowly and steadily. It should be in liquid form at this point.

09

Record the exact weight of the distillate that was transferred.

If the transfer is not exact, you can repeat the pre-formulation process to correct the amounts if necessary, or you can stop and try the transfer again.

10

After transferring the correct amount of distillate, remove the solution from the scale.

Keep it warm.

11

Add one of the smaller Pyrex beakers and tare the scale.

12

Carefully add the appropriate amount of terpenes as calculated in the pre-formulation phase.

13

Record the exact weight of the terpenes that was transferred and remove from the scale.

Take special care to transfer the exact weight of terpenes needed.

14

After transferring the correct amount of terpenes, remove the beaker from the scale.

15

Add the other small Pyrex beaker and tare the scale.

16

Carefully add the appropriate amount of Liquidizer (TEC Temper) as calculated in the pre-formulation phase.

17

Record the exact weight of Liquidizer that was transferred and remove from the scale.
Take special care to transfer the exact weight of Liquidizer needed.

18

You now have the appropriate amount of distillate, terpenes, and Liquidizer.
Now we can begin mixing the solution.

19

Place the distillate back on the scale and tare it.

20

Measure the temperature of the distillate by using the IR thermometer.

21

If the temperature is below 150°F, carefully add the terpenes and Liquidizer into the distillate.
Important Note: Only add the terpenes/Liquidizer to the solution when the temperature is below 150°F, ideally at 135°F. Adding below 120°F tends to be too cold and makes the rest of the process more difficult.

22

On the data sheet, document the temperature at which the terpenes and Liquidizer were added to the distillate and the total weight of the solution.

23

Mix the terpenes and cannabinoids together slowly at first using a clean micro-spatula.

Seriously, mix slowly. Don't spill or splash any of the solution out of the beaker.

24

As the solution becomes more homogeneous, you can speed up the process by using a clean mixer or homogenizer.

25

Make sure to scrape the bottom and sides of the beaker, as distillate can stick to these surfaces.

If not thoroughly mixed, it can yield an inconsistent final product. It is crucial to mix everything evenly.

26

Once fully mixed, measure the final temperature and record it on the data sheet.

27

Remove the mixed solution from the scale and cover to avoid contamination.

END



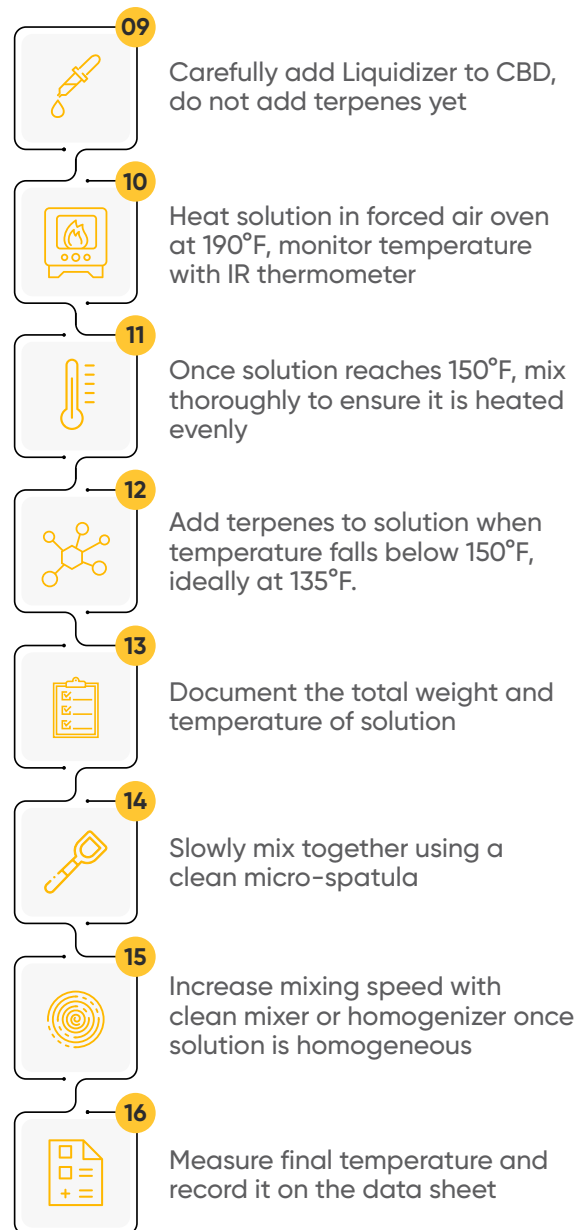
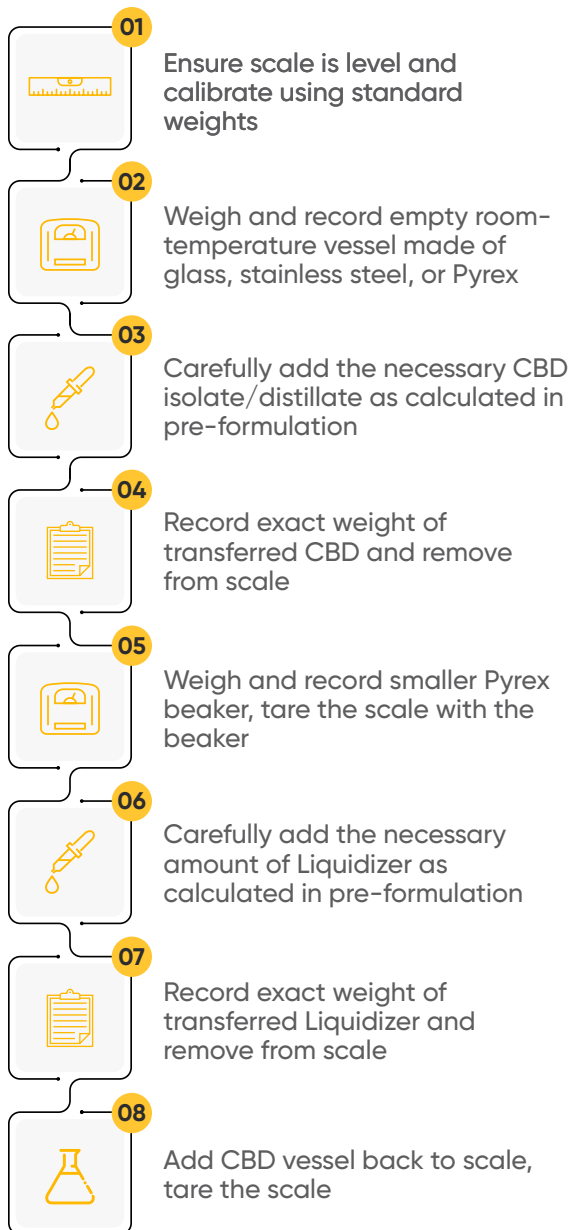
Formulation Procedure:

VERSION C

These steps are SIMPLIFIED for when you've got the hang of the process. Skip to the next page for a DETAILED step-by-step guide.

SIMPLIFIED formulation steps for CBD distillate/isolate **with** a Liquidizer

START



END

Formulation Procedure:

VERSION C

These are the full DETAILED steps for formulating CBD distillate/isolate with a Liquidizer. Head back to the previous page for the simplified step-by-step guide.

DETAILED formulation steps for CBD distillate/isolate **with** a Liquidizer

START

01

If your scale has a leveler, it is important to ensure that it is completely level before moving forward. Make sure to calibrate the scale using the standard weights from the manufacturer.

02

Add distillate to a room-temperature vessel made of glass, stainless steel, or Pyrex. Ensure the vessel is at room-temperature. **NEVER heat a vessel straight out of the fridge or freezer**, as it has a high chance of breaking the glass and contaminating the product.

03

Carefully add the CBD isolate/distillate into the vessel until it reaches the goal weight indicated on the data sheet. Go slow!

04

Record the exact weight of the CBD that was transferred. If the transfer is not exact, you can repeat the pre-formulation process to correct the amounts if necessary, or you can stop and try again.

05

After transferring the correct amount of CBD, remove the vessel from the scale and set aside.

06

Add one of the smaller Pyrex beakers and tare the scale.

07 Carefully add the appropriate amount of Liquidizer as calculated in the pre-formulation phase.

08 Record the exact weight of the Liquidizer that was transferred and remove from the scale.
Take special care to transfer the exact weight of Liquidizer needed.

09 Add the other small Pyrex beaker and tare the scale.

10 Carefully add the appropriate amount of terpenes as calculated in the pre-formulation phase.

11 Record the exact weight of the terpenes that was transferred and remove from the scale.
Take special care to transfer the exact weight of terpenes needed.

12 Add the vessel containing CBD distillate/isolate back to the scale and tare it.

13 Carefully add the Liquidizer to the CBD. Do not add terpenes yet.
It will likely be difficult to add the Liquidizer. We need heat in order to make the solution homogeneous.

14 Heat the solution in a forced air oven set to 190°F until the distillate reaches 150°F. This should take 30-60 minutes.
Use an IR thermometer gun to monitor the temperature.

15

Make sure the solution stays at 150°F by mixing it to ensure that all of the oil is heated evenly.

Warning: Be careful not to overheat the solution, as degradation or isomerization can occur and alter your results.

16

Add the large formulation beaker to the scale.

17

Record the beaker's weight on your data sheet and then tare the scale.

18

Be sure to use appropriate heat-resistant gloves when removing the solution from the oven to protect your hands.

19

Carefully pour the solution into the tared large beaker until it reaches the goal weight indicated on the data sheet. Pour slowly and steadily. It should be in liquid form at this point.

20

Record the exact weight of the solution that was transferred.

If the transfer is not exact, you can repeat the pre-formulation process to correct the amounts if necessary, or you can stop and try again.

21

Measure the temperature of the solution by using the IR thermometer.

22

If the temperature is below 150°F, carefully add the terpenes into the distillate.

Important Note: Only add the terpenes to the solution when the temperature is below 150°F, ideally at 135°F. Adding below 120°F tends to be too cold and makes the rest of the process more difficult.

23

On the data sheet, document the temperature at which the terpenes were added to the distillate and the total weight of the solution.

24

Mix the solution together slowly at first using a clean micro-spatula. Seriously, mix slowly. Don't spill or splash any of the solution out of the beaker.

25

As the solution becomes more homogeneous, you can speed up the process by using a clean mixer or homogenizer.

26

Make sure to scrape the bottom and sides of the beaker, as distillate can stick to these surfaces. If not thoroughly mixed, it can yield an inconsistent final product. It is crucial to mix everything evenly.

27

Once fully mixed, measure the final temperature and record it on the data sheet.

28

Remove the mixed solution from the scale and cover to avoid contamination.

END

STORAGE PROCEDURE

The formulation process is complete and the product now needs to be packaged for storage.

1. Label the vessel you choose to store the formulation in. We recommend using glass, stainless steel, or Pyrex vessels.
2. Place the vessel on the scale, tare it, and then carefully transfer the final solution into the vessel.
3. Record the final weight of the formulation, remove the vessel from the scale, and zero out the scale. It is normal to have some amount of transfer loss between transfers; account for this in future calculations after determining your transfer loss rate.

The transfer loss rate is determined by dividing your final formulated weight by your goal weight, and then converting the result into a percentage.





Thanks for mixing with Abstrax!

If you have any questions about this SOP, please contact us by visiting us at AbstraxTech.com, emailing us at hello@abstraxtech.com, or by giving us a call at **(562) 294-5805**.

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