



How to Mix Crystalline CBD Isolate with Flow Diluting Agent

Atlas Technologies & Terpenes.net Mixing Guide & Standard Operating Procedure

SOP Document Purpose

This Standard Operating Procedure (SOP) document is intended for the valued customers and partners of Terpenes.net and is meant to establish the proper guidelines for mixing our proprietary terpene strain profile formulations, terpene Experiences and Flavors into a crystalline CBD isolate with Flow — our crystallization-resistant diluting agent solution.

Note: This SOP is a guideline. The exact range or percentage of flavonoids and terpenes appropriate for your particular product can vary from 0.25% for flavors, to as much as 25% or more for terpenes with tailor-made terpene profiles — viscosity determines much of this.

This SOP protocol is provided and intended to be a guide for a lab technician, chemist, or trained professional in a licensed facility that is properly suited for carrying out this SOP. This SOP is best utilized in a designated, formulation area in an USDA-licensed food processor production facility.

All personnel and facility safety requirements should be inspected before beginning this procedure. It is the responsibility of the facility manager or managing formulation chemist to carry out inspection tasks.

The formulation chemist takes primary responsibility and the compliance officer takes secondary to verify the SOP is followed accurately, precisely, and yields a quality product, with completed data and samples, for Quality Control (QC) testing.

Before you start, make sure the facility and all required materials are sterilized and cleaned using Department of Health (DOH) and Food and Drug Administration (FDA) food safety guidelines.

We highly encourage our partners to apply an iterative process when using this SOP in order to create your own in-house SOP that captures the development chemistry of your custom formulations. The purpose of our SOP guide only allows for helping manage or mitigate the failure created by crystallization when using CBD isolate as an ingredient in an e-liquid, e-juice, or blended solution of crystallized CBD isolate or CBD distillate in a concentrate for vaping.

Personnel and Facility Requirements

Personnel must have the following personal protective equipment (PPE) to be in the formulation area during application of the procedures:

- Powder-free, nitrile gloves
- Lab-issued safety glasses or goggles
- Lab-issued lab coat
- Long pants
- Closed-toed shoes
- Hair net (including beard net, if employee has facial hair)
- Respirator or mask (optional)

Recommended Heating Method

We recommend heating your reaction-mixing beaker via a secondary mixing beaker of water allowing for indirect and gentle heating of your blended solution.

Required Tools and Materials

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

- Reaction beaker: a PyrexTM or glass mixing beaker (Volume of Pyrex/glass reaction beaker = double the mass (g) or volume (mL) of your final product.)
- Secondary mixing beaker: This beaker is used directly on the hot plate to create the warm water bath. It must be large and with enough volume to place the reaction beaker into the warm water bath for indirect heating.
- Scale (5000g MAX, 0.01g precision. We recommend 0.0001g precision.)
- Stainless Steel Laboratory Micro-Spatula Flat Square/Spoon Ends
- Smaller Pyrex/glass beaker for terpene transfer
- Mixer with clean attachments
- Overhead homogenizer with clean attachments
- CBD Isolate or CBD Distillate
- Terpenes.net Terpene Strain Profile Blend
- Graduated Pipette
- Glass Pasteur Pipette
- Disposable Plastic Pipettes
- Flow crystal-resistant diluting agent
- Hot Plate (recommended)

Procedure

This procedure makes a 1000 g final product formulation made with ...

- 40% CBD Isolate
- 10-15% Terpenes.net blend of a terpene strain profile
- 25-35% Flow crystal-resistant diluting cutting agent

If you would like more or less terpenes by 5-10%, or to alter the amount of Flow Diluent used by 5-10%, never add more CBD Isolate unless you have added too much Diluent or cutting agents or you may not be able to fully dissolve any crystallization.

1. Weigh out 400 grams of CBD isolate into your Pyrex/glass reaction mixing beaker.
2. Weigh out 250 grams of crystal-resistant Flow diluting agent solution into the Pyrex/Glass reaction mixing beaker.
3. Gently heat your reaction beaker while mixing contents with the micro-spatula to dissolve the CBD isolate into the crystal-resistant Flow diluting agent solution.
4. Once the CBD isolate has fully dissolved in the solution, cool the beaker down to room temperature and homogenize with an overhead mixer.
5. Weigh out 150 grams of Terpenes.net terpenes into your terpene-weighing beaker. Then pour the terpenes into the reaction mixing beaker. *
6. Add 200 grams of CBD distillate or carrier oil like VG/PG or Diluent to achieve a stable viscosity standard to prevent failure like leakage.
7. With overhead mixer, mix solution for 5 to 20 minutes until the formulation is completely homogenized.
8. Dispense into a calibrated filling syringe or machine and add into the Atlas Lead-Free Vape Carts or desired delivery device or cartridge.

* We recommend adding the terpenes and flavors to the reaction mixing beaker only *after* your solution of CBD isolate and crystal-resistant Flow diluting agent have cooled down to room temperature.

Learn more about our cannabis-based strain profiles using all-natural, botanically derived terpene formulations at:

Website: [Terpenes.net](https://terpenes.net)

Email: sales@terpenes.net

Instagram: @StrainProfiles

Disclaimer

Please note: The percentages are guidelines only for your products based on the stability of tested formulations. The percentages can range from .25-25%. Try our formulations at an initial 1% for sublinguals and 5% for e-liquids and work up the concentration iteratively in the development chemistry of your own SOP for your desired flavor profile.