Abstrax TECH

Best Practices, General Guidelines, and Standard Operating Procedures

Terpene-Infused Pre-Rolls

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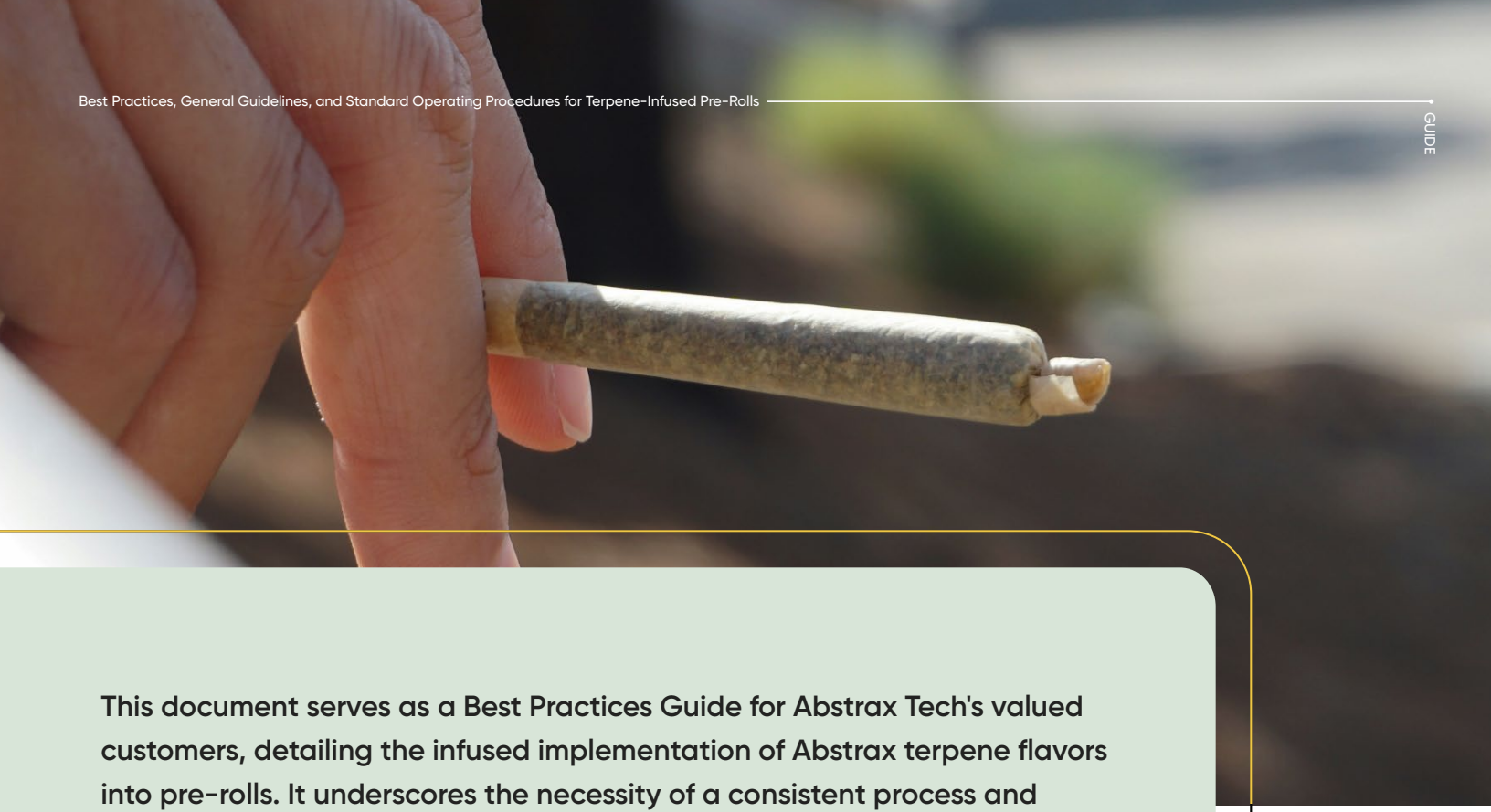


This document serves as a Best Practices Guide for Abstrax Tech's valued customers, detailing the infused implementation of Abstrax terpene flavors into pre-rolls. It underscores the necessity of a consistent process and adherence to established Quality Assurance (QA) and Quality Control (QC) metrics to produce high-quality pre-rolls.

This Best Practices Guide provides an overview of quality considerations and consequences, highlighting how quality practices serve as preventative measures during infused pre-roll processing. This expanded section clarifies key aspects to consider when creating an infused pre-roll and discusses the distinct roles of concentrates and terpenes in infused pre-rolls. This guide aims to set the stage for detailed discussions on best practices for terpene application, ensuring that the document is comprehensive and serves as a valuable guide for producing safe, high-quality, terpene-infused pre-rolls.

OVERVIEW OF INFUSED PRE-ROLLS

An infused pre-roll is a pre-made cannabis cigarette (also known as a joint) that is enhanced with either concentrates or terpenes to cater to various consumer preferences and experiences. Pre-rolls are made using three main materials: rolling paper, a mouthpiece or crutch, and cannabis flower.

Concentrates, such as hash, bubble hash, distillate, rosin, liquid diamonds, and kief, are incorporated to intensify the overall experience. On the other hand, terpenes are added to pre-rolls for their ability to enrich the flavor, aroma, and mood effects, offering a nuanced consumption experience.

Concentrates Vs. Terpenes

Concentrates

Used for enhancing the potency of pre-rolls. Concentrates like hash, bubble hash, distillate, rosin, liquid diamonds, and kief add an extra layer of experience to the consumer, making the product more appealing for those seeking heightened effects or more nuanced and cannabis centric flavor experiences.

Terpenes

Used for adding value through flavors and aromas, terpenes are essential in creating a unique and enjoyable experience, aligning the product more closely with consumer mood and flavor preferences. Terpenes provide the advantage of offering a consistent and scalable flavor as well as the flexibility of unique flavoring options that may be difficult to achieve otherwise. The application of terpenes is a delicate process, ensuring that the integrity of the cannabis flower is preserved while achieving the desired effect.

This guide places a special emphasis on the application of terpene blends, considering their significance in crafting a superior product that stands out in terms of taste, smell, and the psychological impact on the consumer. The document will detail the important general practices involved in the selection, blending, and application of terpene profiles to ensure consistency, quality, and compliance with established QC metrics.

PROCEDURE

This section will provide a general procedure on how to infuse pre-rolls using Abstrax terpene blends.

Personnel and Facility Requirements

- Powder-free nitrile gloves
- Safety glasses or goggles
- Lab coat
- Long pants and closed-toed shoes.
- Hair and beard net, if applicable

Materials

1. Cured cannabis flower
2. Moisture content meter
3. Smoking papers
4. Scale
5. Parchment papers (optional)
6. Rolling machine (optional)
7. Abstrax terpene blend of choice
8. Carrier (Ethanol, distillate, etc.)
9. Plastic pipette OR a glass pipette and a plastic syringe
10. 5 mL (about 0.17 oz) Chemical-resistant spray bottles OR infusion device such as a Vape-Jet "Fuel Injector" or "HALO" from Willow Industries.
11. Cannabis grinder

PREPARATION OF INGREDIENTS:

Cannabis Flower:

- Use customer-preferred strain.
- Mill the cannabis flower. Consider the grind size based on the desired THC per puff and joint lifespan.

Distillate:

- Store at room temperature.
- For application, heat up to 60-80°C to ensure mobility. If mixing with flavor, heat to 60°C as this is the recommended maximum temperature flavor/terpenes should be exposed to.

Terpenes:

- Use terpenes as per the customer's preference.
- Follow handling instructions on the bottles. Some terpene blends may require refrigeration or shaking before use.

Personnel should have proper training on established QA/QC metrics

Wrapping Paper, Joint Crutch/Filter:

Select based on customer preference.

01 After the cured cannabis has been analyzed, the personnel should check the cured cannabis with the moisture meter to ensure a range of 9-11.5%

02 Determine the desired moisture content value to attain the correct initial moisture content range based on the terpene and cannabis flower moisture content.

03 If the moisture content is too high, dry the cannabis material until it reaches the desired moisture content of the recommended range 9-11.5%.

04 Weigh the amount of cannabis needed to make a large batch of pre-rolls. For this example, we will base this trial on a 10g batch, to make about 8 pre-rolls.

05 Remove stems from each cannabis bud. Gently tear apart the bud into smaller pieces. If using an industrial-sized grinder, the stems should be screened, and hand removed.

06 Mill the cannabis flower.

a. If using a grinder: take the smaller pieces and place them inside the chamber of the grinder. Place them between the prongs of the grinder chamber. Begin grinding several times in each direction until there is no friction.
b. If using an industrial-sized grinder ensure it is fully sterilized with sieve sizes based on customer grind sizes 3mm (about 0.12 in) and 5mm (about 0.20 in).

Scan the QR code to read Dr. Markus Roggan's white paper on grind size and joint performance.

07 Repeat until all the cannabis flower is ground if using a hand grinder. Measure to ensure 9 grams of ground flower.

08 Spread the ground flower onto the parchment paper.

09 Before adding the terpenes, two things must be considered:
a. Dilute terpenes correctly using a carrier.
b. Determining the correct initial moisture content.

10 To get 5% of terpenes onto the flower, a 1 gram 50% dilution of the terpene blend and ethyl alcohol can be made.
a. Using a scale, measure 2.5 grams of terpenes and transfer it to a 5 mL chemical resistant spray bottle.
b. Measure 2.5 grams of ethyl alcohol and transfer it to the chemical resistant spray bottle.
c. Mix for 1 minute and set aside. 1 gram of this solution will be used.

11 Place the tray with the ground flower on a scale and evenly spray 1 gram of the terpene solution on the flower. Let it sit for 20 minutes to allow the ethanol to evaporate.

12 Test the moisture content to ensure that it is within range.

13 Place the parchment paper on the table to begin making the pre-rolls.

14 Weigh 1 gram of the infused flower. Take the smoking paper and begin making the joint.

15 After all pre-rolls are made, begin the sterilization process.

16 Different Options: Terpenes & Distillate
a. Mix a solution of 7% terpenes and 93% distillate by mass. This ratio provides an ideal blend, ensuring the perfect viscosity for infusion into joints via injection methods, such as with the Vape-Jet "Fuel Injector". This prevents under or over-saturation of flavor.

BEST PRACTICES / TROUBLESHOOTING

Different issues can arise during trial and production runs, making it crucial to follow established quality control metrics and SOPs to prevent or guide personnel in troubleshooting. Common issues include "bleeding" through the pre-roll paper, rolling paper being cut, cannabis material changing color, flavor burn, uneven burning, improper packing of cannabis material in pre-rolls, inconsistent weight or size, excess moisture, or contamination. Troubleshooting in pre-roll production often involves balancing material quality, equipment calibration, and skilled labor. Regular monitoring, maintenance, and quality assurance checks throughout the production process can help promptly identify and address issues, ensuring a high-quality final product.

GENERAL PRACTICES

Material Quality Check:
Upon receiving cannabis material, it is important to analyze that the cannabis flower is cured and within established quality parameters before accepting and proceeding to the next steps of pre-roll processing. These quality parameters should include checking the color, texture, moisture, and searching for any mold growth. It is also important to keep these preventative factors in mind through every step of pre-roll processing because microbial growth can occur at any moment. The following parameters could also depend on strain type, so determining whether the cured cannabis buds are faulty should be based on several signs and knowledge of the particular strain being used in the pre-rolls. Here are a few parameters to look out for when inspecting cannabis flower.

Documentation:
When receiving material, proper documentation should also be obtained to ensure that testing for microbial contamination has been conducted. A Certificate of Analysis (COA) should be kept on record, as it verifies the composition, safety for human consumption, and potency of the material. COAs typically confirm the presence or absence of pesticides, mycotoxins, aflatoxins, heavy metals, and microbial counts. Ensuring these safety measures at the initial stages of processing helps reduce the risk to consumers and ensures the integrity of the final product.

Analytical Testing Overview:
Microbial growth, including bacteria, yeast, and mold, can be prevented by controlling environmental conditions during harvest, drying, curing, and storage. Testing for aflatoxins, pesticides, and heavy metals is also essential. Most contamination occurs due to improper handling practices and inadequate storage conditions. Ensuring proper handling and maintaining optimal environmental conditions throughout the process are crucial steps in preventing contamination and preserving product quality.

Bacteria:
Common bacteria found on cannabis flower include Salmonella, Enterobacter, Streptococcus, and Klebsiella.

Inspection	Fresh Signs	Low Quality
Visual	Vibrant green and/or purple color. Fine orange hairs, abundant trichomes	Washed out color, muddy brown, yellow. *Can depend on strain
Taste and Smell	Different strains give unique terpene profiles. Generally, should be strong, fresh, and have the expected profiles of the strain used. Taste should be rich, clean, crisp that complements the aroma	Lack of aroma, hay-like smells, musty, moldy, damp, mildew-like. Harsh tastes can indicate the presence of pesticides, chemicals, etc.
Texture	Spongy, sticky, not overly dry	Dry, brittle, crumbles: signs of aging, over-drying, and/or improper storage.
Mold Check	All the above. You want zero signs of mold.	Unusual spots, web structures, fuzzy structures, powder substances that can be white, gray, or greenish on buds or leaves. Moldy/sweat smells.

Table 1: Flower inspection

Yeast and Mold:
Wet and humid conditions are optimal for mold fungal infections, with strains of Aspergillus being highly reported. Other strains may include Penicillium, Cryptococcus liquefaciens, Cladosporium, and Fusarium. Common mold growth on cannabis flowers includes mildew and botrytis.

Aflatoxins:
Aflatoxins are toxic fungal spores produced by certain species of Aspergillus and are harmful to the human body. These toxins thrive in damp and humid environments. Dangerous aflatoxins include Aflatoxins B1, B2, G1, and G2, all of which are classified as Group 1 carcinogens, posing significant risks to consumers.

Pesticides:
Pesticides may be used for pest control, microbial growth prevention, preservation, or vegetation management. However, limitations are required based on state regulations to prevent consumer harm. Insecticides, herbicides, fungicides, and growth regulators are typically tested for and may include chemicals such as myclobutanil, bifenazate, acephate, imidacloprid, Spinosad, and more.

Heavy Metals:
Heavy metals can accumulate in the trichomes of the cannabis plant after being absorbed from the stalk to the leaves and flowers. These metals typically include mercury, lead, and cadmium.

Storage Conditions:
Storage conditions are imperative for maintaining fresh cannabis flower buds. Properly managing humidity, temperature, light, and choosing the right container are crucial for product storage. Inadequate storage and aging can cause cannabis buds to lose potency and flavor, and increase the risk of microbial growth.

Humidity:
When considering humidity, the recommended levels range from 57-62%. Too much moisture allows for microbial growth, while too little moisture affects the integrity of the plant, potentially impacting trichomes, terpenes, flavorants, and other cannabinoids.

Temperature:
Temperatures should not exceed 78°F (25.5°C) because optimum mold growth occurs between 78-86°F. Elevated temperatures also affect the integrity of the plant, destroying cannabinoids and terpenes.

Light:
Cannabis should be stored in a dark container or room. The recommended container materials include airtight glass containers, ceramic containers, or vacuum bags. Clear plastic bags are not recommended because they cause the plant to release inner moisture, leading to rapid drying and possible loss of volatile aroma. Overall, the best storage conditions are a moderately dry and cool place in a tightly sealed glass jar.

Moisture Content

Moisture content is critical from the initial stages of pre-roll development to packaging, influencing the quality and consistency of the final product. **It is simply any water that is included in a product.** Moisture can be affected by atmospheric moisture, packaging, or storage conditions. Most importantly, ensuring the correct moisture content prevents contaminant development such as mold, yeast, and bacteria. Additionally, ensuring the correct moisture content in each stage improves the infusion process and longevity of the product. It's important to note that if flower material is too moist (above 11.5%) you may not be able to infuse a significant amount of terpene flavors due to potential oversaturation or too much added moisture from the terpenes.

01 **Starting Moisture Point for Infusion**: A good starting moisture point for cannabis that is going to be infused with terpenes depends on the active amount of terpenes that will be infused.

a) **The lowest moisture content recommended is 6%**

b) When the moisture content is too low:

i. Trichomes, which contain essential oils and cannabinoids, may become brittle, causing them to break and release their contents. This results in the cannabinoid compounds “bleeding” onto the rolling papers. When the cannabinoids bleed onto the paper it will lead to staining and potential spotting. Spotting can sometimes make the joint paper appear moldy, but it's merely cannabinoids staining the paper.

ii. Added terpenes may not effectively absorb, leading to an inconsistent flavor experience.

iii. Overly dry cannabis will give a harsh smoking experience and may give a short burn time, resulting in an overall unpleasant experience.

Ending Moisture Point After Infusion: After the infusion of terpenes, the ending moisture content of the cannabis flower should ideally be within 9-11.5%. It is recommended that the maximum moisture content shouldn’t exceed 11.5%.

Adjustments If Not at Desired Moisture Content: If the moisture content is too high, you will need to dry the flower further before infusion. This can be done by spreading the flower out in a controlled environment with low humidity and good air circulation until the desired moisture content is reached. Ensuring the flower is at the correct moisture content before and after terpene infusion is key to maximizing absorption, quality, and potency of the final product.

Estimating Initial Moisture Content:

To estimate a good starting moisture content based on the added moisture in the terpene blend, you can use the following calculations. For example, if you need to dry your cannabis flower due to the additional moisture from terpenes, these steps can help you determine the estimated value:

STEP 01

Determine the Initial Moisture Content (IMC):
Measure the current moisture content of your cannabis flower using a moisture meter.

STEP 02

Calculate the Moisture Added by Terpenes (MAT):
Determine the percentage of moisture added by the terpenes to the cannabis flower.

STEP 03

Calculate the Desired Final Moisture Content (DFMC):
Decide on the target moisture content you want to achieve after accounting for the added moisture from terpenes.

STEP 04

Adjust the Initial Moisture Content (AIMC):
Subtract the moisture added by the terpenes from the desired final moisture content to find the initial moisture content you should aim for before adding terpenes.

FORMULA

AIMC = (DFMC x Mass of Cannabis) - (MAT x Mass of Terpenes)

EXAMPLE

- If your Desired Final Moisture Content (DFMC) is 10%
- And the Moisture Added by Terpenes (MAT) is 2%
- Mass of Cannabis is 100g
- Mass of Terpenes is 10g

AIMC = (10% x 100g) - (2% x 10g)

AIMC = 10 - 0.2 = 9.8%

So, to achieve a final moisture content of 10%, dry your cannabis flower to 9.8% before adding the terpenes.

Estimating Final Moisture Content:

To estimate the Final Moisture Content (FMC) on ground cannabis when you are unsure if your terpene load might increase the moisture content too much, you can use the following formula as a guide:

STEP 01 **Calculate the Adjusted Initial Moisture Content (AIMC) of the ground cannabis.**

STEP 02 **Determine the Weight of the Cannabis (W_1) before adding terpenes.**

STEP 03 **Calculate the Moisture Added by Terpenes (MAT) based on the percentage of moisture in the terpene blend.**

STEP 04 **Measure the Weight of the Terpenes Added (W_2) to the cannabis.**

By plugging these values into the formula, you can estimate the Final Moisture Content of your ground cannabis after the terpene blend has been added.

FORMULA

$$FMC = \frac{(AIMC \times W_1) + (MAT \times W_2)}{W_1+W_2}$$

EXAMPLE

- **Initial Moisture Content (AIMC) of cannabis: 9.8%**
- **Moisture Added by Terpenes (MAT): 2%**
- **Weight of cannabis before adding terpenes (W_1): 100 grams**
- **Weight of terpenes added (W_2): 10 grams**

FMC = (AIMC x W_1) + MAT x W_2) / W_1+W_2
FMC = (9.8% x 100) + (2% x 10) / (100+10)
FMC = (9.8 x 100) + (2 x 10) / 110
FMC = (980+20) / 110
FMC = 1000 / 110
FMC = 9.09%

So, the Final Moisture Content of the ground cannabis would be approximately 9.09%.

Adding Terpenes

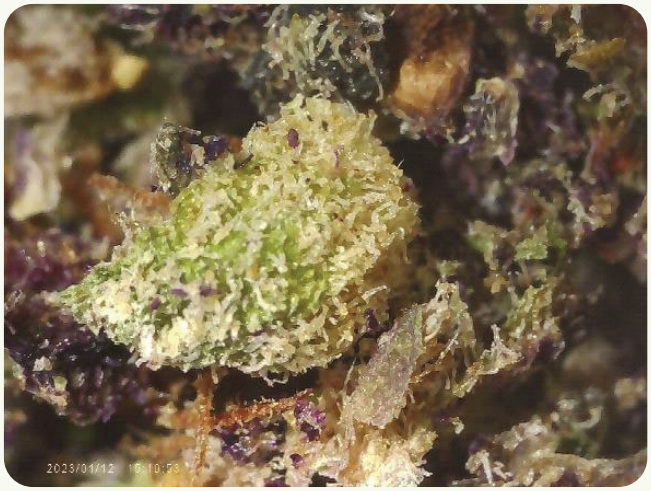
The optimal method for adding terpenes to ground cannabis flower is to incorporate 1-5% of the terpene blend in a carrier, such as ethanol or a cannabinoid distillate. When infusing your flower with terpenes, it's crucial to consider the starting moisture content, as this will be affected by the amount of terpenes added. Estimate the moisture content before applying the terpenes, particularly if a significant amount of moisture will be introduced. Conducting small trial batches is always recommended, allowing you to measure the moisture content after production to ensure it remains below 11.5%.

Carrier Use Considerations

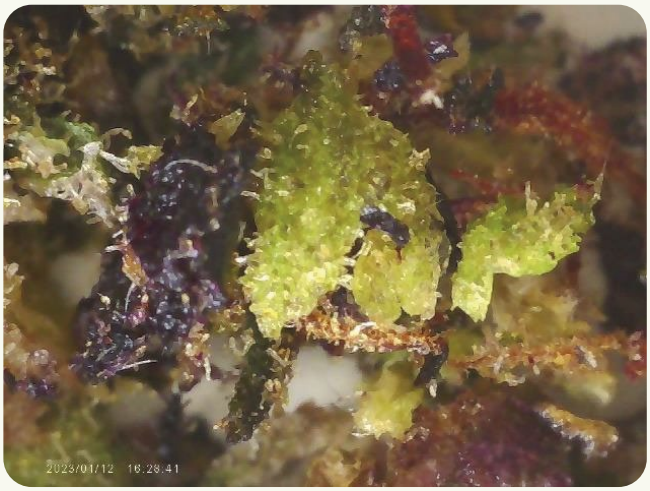
Carriers are used to distribute terpenes uniformly, and ethanol is a potential carrier due to its intrinsic volatility. However, it's crucial to note that while carriers aid in flavor distribution, they can also damage the plant structure. Trichomes, which are very delicate, can be easily destroyed, leading to bleeding on the rolling paper and reduced overall plant quality. Avoid soaking the ground flower, as this can compromise plant integrity. Ethanol is a popular choice because it evaporates, leaving the terpenes absorbed into the plant. For infusing cannabis material, a concentration of 1-5% terpenes in ethanol is recommended. Later in this guide, we'll discuss other equipment that can be used instead of solvent carriers.

Examples of what happens during infusion with improper application:

Cannabis flower before infusion



Cannabis flower after infusion of a 50% terpene/ethanol solution (flower loses structure and is drenched in terpenes)



Cannabis flower after infusion of a 5% terpene/ethyl alcohol solution (flower kept structure, is closer to flower prior to infusion and most of ethyl alcohol has evaporated)

Example of cannabis flower drenched in ethanol (flower loses structure and is permanently damaged)

SUGGESTED QA/QC METRICS TO CONSIDER ESTABLISHING

Several QA/QC metrics should be established prior to pre-roll processing.

Documentation

Proper documentation must be received and maintained. This includes Certificates of Analysis (COAs) for all materials, records of inspections, potency data, and third-party testing results if in-house testing is not available. Additionally, documentation and accurate labeling of batches should be carefully managed.

Testing

Pesticide testing, raw material screening, and solvent testing should be conducted based on state requirements to ensure quality. It is advised to test for pesticides, microbial presence, and microbial toxins to ensure they are absent or within acceptable ranges according to state regulations. Please refer to your state's specific limitations and regulations for detailed guidance.

Moisture Content

Capturing moisture throughout the product development cycle, from start to finish, is incredibly important. This allows you to establish a required moisture amount and tolerance (e.g., 9% +/- 0.5%) for all incoming materials for a specific infused pre-roll SKU, as well as the outgoing final product. By establishing quantifiable moisture levels for both received and outgoing materials, you can reduce the risk of product quality drift. Examples of quality drift include pre-rolls burning differently than anticipated, paper staining, flavor drift, or a harsher user experience. Moisture content should be checked before processing, after infusion, and at the end of processing prior to packaging.

Particle Size of Ground Flower

As demonstrated by Dr. Markus Roggen et al., the particle size of the ground flower in a joint directly impacts the burn time and potential THC consumption. This provides developers with an additional tunable metric for creating infused pre-rolls. Smaller grind sizes have been shown to require fewer puffs to finish the pre-roll, have shorter burn times, and provide higher potency. In contrast, larger particle sizes last longer, are less potent, and require more puffs to finish the joint. For instance, another study found that 1mm particle size joints had a smaller puff count and delivered the most cannabinoids per puff compared to 3mm and 5mm joints. Overall, particle size should be considered based on customer preference. Refer to the end of this guide for links to these studies.

Spraying & Drying Time Critical Control Point (CCP)

Establishing a specific time for spraying and drying is crucial for maintaining consistency and reproducibility in each pre-roll batch. Depending on the flavor or terpene used, determining the precise time required to complete the flavoring process ensures uniform application and prevents under or over-application. Additionally, setting a maximum drying time is essential to minimize oxidation, which occurs when the product is exposed to air. Drying temperatures should be carefully managed to prevent product degradation while maintaining moisture levels between 9% and 11.5%.

Shelf-Life Study

Establishing a shelf-life study for the final pre-roll product is crucial for several reasons, primarily focusing on maintaining quality and providing valuable information to consumers. A well-defined shelf life helps manage expectations and guides decisions across the supply chain, from manufacturing to final consumption. Shelf-life studies involve exposing the pre-roll to various conditions, such as different temperatures, locations, humidity levels, and more. The product is then evaluated for quality and stability, including microbial growth, chemical degradation, and physical qualities, within its intended packaging. This process ensures the pre-roll maintains its intended quality throughout its shelf life.

Weight Accuracy

Establishing consistent weight for each product is essential for ensuring quality, consumer satisfaction, maximizing product yield, and managing costs. Some examples of weight accuracy as a quality control measure include randomized weight checks, calibrating instrumentation as needed, providing proper training for personnel, and using standard operating procedures (SOPs) to minimize human error. Implementing these practices helps maintain consistency and reliability in the final product.

Storage and Packaging

Proper storage and packaging for infused pre-rolls are essential to maintaining product integrity, preventing microbial growth and contamination, ensuring shelf-life, and protecting the product from potential damage. Adhering to established storage parameters, such as specific temperatures and light exposures, is crucial for maintaining product quality and minimizing degradation or microbial growth. Proper packaging protects the products during handling, aids in preservation and longevity, prevents contamination, and provides important information for consumers. Suitable packaging may involve containers or materials that are compatible with the product and can prevent exposure to moisture, oxygen, or light. It is also important to ensure that the storage and packaging of infused pre-rolls comply with state regulations.

Waste Management

Proper waste management must comply with state and/or city regulations and is critical to quality control. Adhering to industry-specific standards and certifications often requires implementing sustainable waste management practices, which can also reduce costs and ensure workplace safety and health. Effective waste management in quality control may include auditing waste streams to identify minimization opportunities, training employees on proper disposal methods, and hiring specialized waste management services. These practices help maintain compliance, enhance operational efficiency, and support a healthier workplace environment.

Proper Hygiene of Personnel

Proper hygiene of personnel and the correct use and maintenance of personal protective equipment (PPE) are fundamental components of quality control in any production or service environment. These practices effectively prevent contamination, ensure compliance with regulations, protect employees, and ensure product safety. Implementing proper hygiene may include thorough training, enforcing established hygiene policies and PPE usage, providing sufficient supplies such as handwashing stations, and conducting regular audits and inspections.

Equipment Maintenance

Equipment that comes into direct contact with the product must be maintained and cleaned to prevent contamination with pathogens, foreign materials, or cross-contamination between products. Proper maintenance directly impacts product safety, quality, and regulatory compliance. Implementing equipment maintenance for quality control may include establishing validation parameters (such as temperature, pH, and pressure) and monitoring them, adhering to calibration schedules, providing proper training and using SOPs, thorough documentation and record-keeping, and repeated verification of procedures and parameters. Equipment also requires operation at low temperatures and low humidity, as well as consistent cleaning to remove cannabis material buildup, such as kief.

Grinding Methods and Considerations

The particle size of ground cannabis plays a significant role in the performance of a joint. When milling the cannabis flower, the grind size must be considered based on the desired THC per puff and the joint's lifespan. The ideal particle size for your infused pre-roll application can heavily influence the smoothness, burn length, burn quality, and overall consumer experience, as detailed in a study by Dr. Markus Roggen with Delic Labs. This study demonstrated that varying particle sizes should be considered: smaller sizes enhance fill volume, while larger sizes improve airflow. For a more in-depth look at the impact of particle size on joint performance, refer to the publication "The Science Behind the Perfect Joint."

MACHINES/TECHNIQUES THAT COULD BE CONSIDERED

Vape-Jet "Fuel Injector" Pre-Roll Infusion Kit is a machine that uses needle retraction technology to evenly distribute a terpene-infused cannabinoid oil into the pre-roll in which a precise line in the center of the pre-roll is left. This type of method offers a consistent and rigid product and contributes to time efficiency. Refer to the vendor's guides and SOPs for best practices on using their equipment.

Willow Industries' HALO terpene infusion system offers a cutting-edge solution for enhancing cannabis biomass with precision and efficiency. Using a closed-loop vacuum chamber with controlled dosing mechanisms, HALO aerosolizes liquid terpenes for optimal distribution, ensuring even infusion while minimizing waste. This method provides a direct and scalable alternative to ethanol-based infusion, allowing pre-milled cannabis biomass to be infused with targeted terpene profiles. For best practices and precise operating instructions, refer to Willow Industries.

Automatic Filling machines are great for filling large scale pre-rolls with cannabis materials. Some options include, but are not limited to, the Vape-Jet 4.0 or the King Kone pre-roll 169. Refer to each vendors guides and SOPs for best practices on using their equipment.

Types of Moisture Meters:

A quick and simple option for a moisture meter is the **Triminator Moisture Meter.** It is demonstrated as the world's leading cannabis moisture meter and is ideal for checking moisture content in cannabis buds, pollen before processing, and monitoring moisture loss or gain during the drying and curing process. It provides quick and easy measurements. particularly noted for its accuracy and ease of use, offering measurements in less than 30 minutes compared to the hours it might take with traditional drying oven methods. It has also received positive reviews for its performance.

Sartorius MA 160 Moisture Analyzer is devised to retrieve quick and reliable moisture determination and is very user friendly. It also has a high record-keeping capacity and management.

Cleaning: All equipment that touches cannabis material must be cleaned and sterilized prior to all processing. General cleaning materials should be used or as recommended by the equipment supplier. Refer to the equipment supplier or handbook for all cleaning information.

General Troubleshooting

Microbial Growth on Final product

Microbial growth on an infused pre-roll can occur for several reasons, often due to inadequate cleaning or moisture checks. To prevent this, all equipment should be thoroughly cleaned and fully dried after use. Routine training and monitoring of employees are essential. Establishing cleaning SOPs for equipment and using general cleaning/sterilization products effectively train employees and ensure proper practices are followed. Additionally, lack of moisture checks can contribute to microbial growth. Regular monitoring and QA checks are crucial to ensure that moisture content remains within the specified range and that SOPs are consistently followed.

Product Structural Damage

QA/QC checks must be mandatory on finished products to ensure that rolling papers have not been damaged or compromised. Damage can occur for various reasons, such as stems or trim cutting through the rolling paper, machinery issues, or mishandling. It is important to ensure that all machines are functioning properly during production and that final checks prevent damaged materials from being packaged. Damaged products should be identified during final inspections, and corrective actions must be taken based on the type of damage.

Oversaturation

Oversaturation can lead to issues such as filling problems, inconsistent burn time, or bleeding through the pre-roll papers. When bleeding occurs, moisture levels should be checked. Adding too many terpenes can also cause bleeding and needs to be addressed. Potential causes include spraying the cannabis material for too long, not allowing sufficient drying time, or improper moisture levels in the pre-roll. The recommended moisture content is around 9-11.5%.

Equipment

It is important to refer to the supplier for any equipment troubleshooting. Employee safety must be a priority, and all employees must be properly trained before using any type of equipment.

CONCLUSION

This Best Practices Guide outlines the essential practices and requirements for creating terpene-infused pre-rolls, emphasizing general practices. The intention of this guideline is to demonstrate why recommended practices and the implementation of QA/QC metrics are necessary for producing infused pre-rolls. Considerations and potential consequences are exemplified to aid in prevention and ensure the production of quality end-products. It is in the best interest of Abstrax to guide our customers in the best and simplest way possible, providing a detailed and comprehensive document for customer use, whether as a guide or a reference point.

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AN INFUSION GUIDE BY

REVISION DATE: FEBRUARY 18, 2025