



How to Read our Certificate of Analysis

caliper[™]cbd

Table of Contents

Introduction	3
Quality Measures	5
<i>Physical Characteristics</i>	5
<i>Ingredient Listing</i>	6
<i>Product Claims</i>	8
<i>Allergen Statement</i>	10
<i>Storage Conditions & Shelf Life</i>	10
Potency Measures	11
<i>Cannabinoid Results</i>	11
Safety Measures	12
<i>Residual Solvents</i>	12
<i>Microbiological Results</i>	13
<i>Heavy Metals</i>	14
<i>Pesticides</i>	14
Parting Words	15



Introduction

What is a Certificate of Analysis, and Why Does it Matter?

Every batch of Caliper CBD is thoroughly tested to ensure safety, quality, and consistency. We believe you have a right to know the results of this testing, so we make those results available to you in the form of a Certificate of Analysis (COA)—a lab report that verifies exactly what our products contain, and confirms their safety and compliance with contaminants testing.

Why is this even necessary? Unfortunately, at this time there are no federal regulations over how CBD or other cannabis-based products are produced. That means there are no requirements that CBD products be tested to prove they're effective and safe, potentially putting consumers' health at risk.

Until "the Feds" do their job and start regulating, then, it's up to consumers to do their own diligence to check on the companies they buy from. Only choosing companies that provide COAs, and reading them thoroughly, is a good start.

But keep in mind that a COA is only as reliable as the company that offers it. With no testing standards, companies can choose what they test for—or not. Without lab standards, analytical methods, levels of detection, and safety thresholds can vary widely. And, unless companies conduct their testing using "third-party" laboratories they have no connections with, there's no guarantee of unbiased testing results.

A Certificate of Analysis (COA) is a lab report that verifies exactly what our products contain, and confirms their safety and compliance with contaminants testing.

In this unregulated cannabis marketplace, it truly is a matter of “buyer beware!” The company you choose to buy from is more important than ever.

At Caliper, our philosophy is to act as if we are already in a marketplace with strict regulatory oversight. We choose to follow the country’s strongest standards for protecting consumers: The U.S. Food and Drug Administration (FDA) regulations for food safety and safe food production, monitoring and labeling. In addition, we choose to follow the strictest state guidelines for hemp sourcing, monitoring and certification. We test our products at all stages of production, using only accredited third-party laboratories, and we require all our ingredient suppliers to do the same. The results of those standards, and the testing that backs them up, are reported in our COA.

This booklet will guide you through all the components of our COA, section by section. We’ll tell you what we report, how we measure it, and why we do it. We hope it helps you make a fully informed decision about choosing our Caliper CBD—or any other cannabis-based product.

A COA is only as reliable as the company that offers it.



Quality Measures

In this section, we'll give you some background on the measures we use to confirm that the quality of Caliper CBD is consistently high.

Lot Code and SKU (Stock Keeping Unit)

These unique combinations of letters and numbers help you (and us) trace your package of Caliper CBD to the batch it came from, as well as to the testing results conducted for that batch.

Manufacturing and Use By Dates

These dates help you ensure your Caliper CBD is at highest quality. The Manufacturing Date provides the exact date the batch was produced. The "Use By" date, precisely one year from its manufacturing date, is the last date recommended for using the product at its peak quality. It doesn't mean that it will be unsafe to use after that date, only that we can't guarantee it will meet our top quality standards.

Physical Characteristics

Our team of food scientists and sensory testing experts take many steps to ensure our Caliper CBD looks and performs consistently. First, we require our ingredient suppliers to meet quality standards, and we verify and monitor quality throughout the production process.

Our finished product, CBD powder, is then evaluated in quality and sensory testing panels. Sensory testing is conducted to confirm that its color is consistent, that there is no discernable aroma and its flavor has only a trace of bitterness. Bulk Density and Screen Testing confirm that the particle sizing is consistent and that the powder flows freely with no clumping—which allows us to portion a precise amount into every packet.

All these steps ensure that when you tear into a Caliper CBD packet, you can count on getting a precise amount of CBD, and that it will dissolve quickly and flavorlessly into any beverage or food.



Ingredient Listing

Our COA, as well as all the labels on our products, conform to the stringent labeling guidelines required by the FDA for food products—listing our ingredients in descending order by weight.

Unfortunately, few CBD brands follow these high standards, and many don't tell you what's actually inside their products. For example, a label might say a product contains "50 mg hemp oil," without telling you how much CBD is in that hemp oil. If you see a label that's vague or confusing, don't buy the product!

Here are all the ingredients we use to make our Caliper CBD dissolvable powder, and a little background information about each.



Didya Know
If you see a label that's vague or confusing, don't buy the product!



Sorbitol

What is it? Sorbitol is a naturally occurring sugar that's about half as sweet as your standard table sugar. It's found in many fruits and vegetables, and has a long history of safe use in sugar-free products like gums and candies.

Why do we use it? In Caliper CBD, we use sorbitol derived from non-GMO corn to help transform our CBD emulsion into a powder. That enables it to dissolve smoothly and quickly into hot or cold liquids, and makes it easy to add to your favorite baked goods, food and drinks. And, since sorbitol is slightly sweet, it also helps balance some of the CBD's natural bitterness.



Modified Food Starch

What is it? Modified food starches are plant-based ingredients, usually derived from wheat, potatoes, corn, or tapioca, that are widely used in the food industry. Don't worry, the word "modified" doesn't mean the food starches are genetically modified. It simply means they're processed to alter their physical properties and make them work better in recipes—for example, when a modified starch is used instead of eggs as an emulsifier in vegan mayonnaise, to make it smooth and creamy.

Why do we use it? When our food scientists formulate Caliper CBD, they use modified food starch derived from non-GMO corn. It binds with the oil that contains our CBD, transforming the CBD into a water-soluble dissolvable powder that's well absorbed by the body.



Cannabidiol (CBD)

What is it? Cannabidiol, or CBD, is a cannabinoid—one of more than 100 compounds unique to the cannabis family of plants. It's extracted from hemp, one strain of the *Cannabis sativa* plant species that's grown specifically for industrial use. While its effects on the body are still being studied, CBD's actions appear to be associated with general wellness, such as relaxation and relief from everyday aches or stresses.

Why do we use it? Well, because CBD is the heart and soul of our Caliper dissolvable powder! And, it's why we're exceedingly careful about where our CBD comes from. All of our CBD is extracted from U.S.-grown, non-GMO hemp, planted and harvested by farmers who follow strict state regulations—and from CBD extractors who operate under the FDA's guidelines for safe food production.



MCT (Medium-Chain Triglyceride) Oil

What is it? Medium-chain triglycerides are the scientific term for a type of fat found mainly in coconuts, palm fruit, and dairy products. Compared with the more common long-chain triglycerides found in most foods, MCTs are processed slightly differently in the body and are more readily absorbed and converted into energy.

Why do we use it? We use a little coconut-based MCT oil as a carrier oil, which helps to keep our CBD emulsion stable and improves the bioavailability of our powder (ability to be absorbed by the body). All traces of allergens are removed from the final product.

While it's cheaper to use MCT oil made from palm kernel oil, as some companies do, we don't want to be a part of the harm palm oil processing has done to rainforests and wildlife in the areas where it's grown and harvested. We prefer to use coconut-based MCT oil as a much more sustainable choice.



Natural Flavors

Even though Caliper CBD is essentially flavorless, a small amount of natural flavoring is needed to help mask CBD's very bitter taste. At Caliper, we counterbalance some of that bitterness with natural flavors derived from botanical extracts. The amount we use is tiny, so you won't notice any perceptible flavor. Our goal is to create a form of CBD you won't notice as you add it to anything you're eating or drinking.

Product Claims

This section of our COA provides the certifying information that our products have met key quality and compliance standards.



Certified Kosher

What does it mean? This certification verifies that the ingredients, production processes and machinery, and food-service processes comply with the standards of kashrut (Jewish dietary law), which specify the types of food that a Jewish person may eat and the ways in which it may be prepared.

Why it's important: The certification provides an assurance to observant Jews that they can consume the product with confidence, since it conforms fully to kashrut standards. Others may seek out kosher products as an added assurance that a product has met additional requirements and inspections.

How we confirm it: Our facilities are regularly inspected and certified annually by Brooklyn, New York-based Organized Kashrut Laboratories, one of the nation's leading Kosher certification companies. You'll find their "circled K" symbol on all our products.



Non-GMO

What does it mean? GMOs, or genetically modified organisms, are created by artificially changing the genetic makeup of an organism, rather than using traditional breeding methods. Our Non-GMO statement indicates that all ingredients that go into our products, as well as the products themselves, are free of GMOs.

Why it's important: Currently, the Food & Drug Administration (FDA) doesn't require safety assessment of GMO crops before they go to market (though it invites companies to do so voluntarily). That means there's no nationally mandated guarantee for consumers that the GMO products they consume are safe. We'd rather not include GMOs in our products, especially knowing that most of the corn, sugar beets, soybeans and other major U.S. crops come from genetically modified varieties.

How we confirm it: All our trusted ingredient providers are required to give us quality assurance statements that they are free of GMOs.



Gluten-Free

What does it mean? Gluten is a type of protein in wheat, rye, barley, and crossbreeds of those grains, and it's found in many breads, cereals, pastas, and other grain-based foods. A "gluten-free" statement on a product confirms that it meets the FDA's standards for a "gluten-free" label, containing less than 20 ppm (parts per million) of gluten. (That's the lowest level that can be consistently detected in foods using valid analytical methods.)

Why it's important: For the estimated 3 million Americans living with celiac disease, gluten can trigger an autoimmune reaction in the small intestine and cause severe health problems. Another 18 million Americans may have non-celiac gluten sensitivity, which can also cause significant symptoms when they ingest even small amounts of gluten. Many others simply choose to avoid gluten for other health or personal reasons.

How we confirm it: We require all our ingredients suppliers to meet FDA's stringent "gluten-free" standards.



Vegan

What does it mean? A food product is considered vegan if it does not contain animal products or animal-derived ingredients.

Why is it important: For people who are avoiding any animal-based products for any reasons (such as health, environmental or ethical concerns), a vegan statement confirms that they can consume the product with confidence.

How we confirm it: All our trusted ingredient providers are required to give us quality assurance statements that their products are vegan.

Allergen Statement

What does it mean? In accordance with the Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA), we disclose on our labels if any of our products contain, or are manufactured with, any of the 8 major allergens: milk, eggs, fish, shellfish, tree nuts (e.g., almonds, walnuts, pecans), peanuts, wheat, and soybeans. Caliper CBD is formulated using coconut-based MCT oil, and the FDA considers coconut a tree nut. However, as we require our supplier to remove all traces of allergens from our MCT oil, we do not include it in our product labeling.

Why it's important: For people with allergies, even a tiny amount of an allergen can cause serious or even life-threatening reactions.

How we measure it: We do not allow any allergens in our manufacturing facility, and require our suppliers to provide only allergen-free materials.

Storage Conditions and Shelf Life

Caliper CBD is formulated to be highly stable under normal storage conditions for at least one year from its manufacturing date. That means there's no need to freeze or refrigerate Caliper to preserve its freshness. However, Caliper should always be stored in its sealed packets, which help protect it from being exposed to moisture, odors, and light, which can cause its quality to deteriorate.



Potency Measures

Cannabinoid Results

This important listing shows which cannabinoids are present in Caliper CBD, and their potency. It confirms that when you choose Caliper CBD, you are getting only CBD—nothing more, nothing less. Our testing is conducted by [Botanacor Laboratories](#), a leading cannabinoid testing company; we also reconfirm potency in our own, accredited testing laboratory.

What We Measure:



CBD: This is the percentage of CBD, by weight (%w/w), that makes up Caliper CBD dissolvable powder. (The other ingredients used to formulate Caliper make up the remaining volume.)



Δ-9 THC: This value reports the percentage of THC detectable in the product. While legally allowable to be as high as 0.3%, we require Caliper to contain no detectable THC (“THC-free”)—so you can consume it with confidence.



Total Cannabinoids: This value measures the percentage of all detectable cannabinoids in the product. Since Caliper is made only with CBD and no other cannabinoids, this value is equal to the CBD percentage.

Why it Matters: Unfortunately, there are no federal regulations governing how accurately companies test and report their CBD levels. That means that for many CBD products, you can't trust that you're even getting what's on the label. A 2017 analysis found that nearly 70 percent of all CBD products sold online contained more or less CBD than claimed—and some 21 percent contained detectable THC. Another found that just 2 out of 24 CBD products tested contained the amount of CBD they claimed on their labels!

For any CBD product you buy (including ours!), always make sure that its cannabinoid content is tested by an accredited third-party laboratory, with results available on a COA.

Safety Measures

CBD comes from the hemp plant—a product of the earth, grown with modern agricultural practices. As with any plant, some of the substances hemp comes in contact with as it's grown, harvested, and processed can end up in the CBD that's extracted from it. That includes residues from pesticides, heavy metals from soil or fertilizers, or traces of solvents that may have been used in the extraction process.

While that might sound a little scary, it's all part of the complex landscape of working with hemp, and indeed, all cannabis products. Reputable CBD companies know to look for these issues, and to test their products at all stages of production to verify that their finished products are safe from these contaminants. These test results should always be reported in a COA.

Reputable CBD companies know how to look for safety issues, and to test their products at all stages of production.



Residual Solvents

What are they? Solvents are chemicals used in the manufacturing processes that extract cannabinoids, terpenes, and other compounds from hemp material. They include compounds like propane, butane, isopropanol, hexene, and acetone.

Why do they matter? Many solvent compounds can be harmful to the body in significant amounts. For example, benzene is a carcinogen, and butane has been associated with heart damage.

How do they get into CBD? Solvents usually evaporate completely after the compounds are removed from the plant material, but there's always a chance that some might remain ("residual" solvents) in your CBD. While it's only a small amount, the exposures could add up if you're taking CBD regularly.

How do we ensure that our products avoid residual solvent contaminants? To ensure that the CBD we work with is safe, we require that our CBD suppliers test for a full suite of known residual solvents, using accredited third-party labs. The test results must conform to the limits set by one of the nation's most rigorous standards: Colorado's Statute 1 CCR 212-2.



Microbiological Results

What are they? Organisms such as molds, yeasts, and bacteria, which are ubiquitous throughout our environment.

Why do they matter? While most microbiological organisms are harmless (and indeed, critical to a healthy environment and to human health), harmful contaminants such as *E. coli* 0157:H7 and *Salmonella*, and other *Enterobacteriaceae* bacteria, as well as *Listeria monocytogenes* have been associated with dangerous foodborne illnesses.

Going beyond the issue of causing illness, monitoring microbial contaminants is an important measure of how carefully your CBD product is made. Microbial test results are your assurance that rigorous food safety and manufacturing standards are being used. If a company doesn't conduct microbial testing and/or doesn't share the results publicly, you shouldn't buy their products.

How do they get into CBD? Like any living organism, hemp can pick up molds and bacteria while it's growing, being harvested, and stored. And, when hemp is processed to make CBD, other organisms can be introduced if proper handling and manufacturing procedures aren't followed. For example, if employees don't practice careful hygiene such as hand washing, *enterobacteriaceae* can be transmitted. Air quality in production facilities must be carefully monitored to prevent transmission of airborne pathogens such as molds or yeasts.

How do we ensure that our products avoid microbiological contaminants? All our products are manufactured in a GMP-certified facility; that means we follow and document the food industry's leading procedures for producing safe food products. Our team of experienced food safety professionals employs rigorous, comprehensive microbial testing protocols that include yeasts, molds, *Enterobacteriaceae* including *E coli* 0157:H7 & *Salmonella*, *Listeria monocytogenes* and aerobic bacteria. Our microbiological testing is provided by Eurofins Microbiology Laboratories, a world leader in food, environment and pharmaceutical products testing.

All our products are manufactured in a GMP-certified facility. That means we follow and document the food industry's leading procedures for producing safe food products.



Heavy Metals

What are they? Heavy Metals are metallic elements widely found in the environment. They naturally occur in our soils, but can also come from pollution generated by manufacturing, vehicle emissions, mining, agriculture, and other industrial sources.

Why do they matter? While we actually need small amounts of some heavy metals like zinc and chromium, others can be toxic, and cause significant harm if they build up in the body. Lead, mercury, arsenic and cadmium are some of the most common causes of heavy metal toxicity.

How do they get into CBD? Heavy metal contamination can occur if hemp is grown in soils that contain heavy metals or has been treated with certain fertilizers. The hemp plant is very susceptible to this kind of contamination, because it's what plant scientists call a bioaccumulator—it absorbs heavy metals from soils and water through its root system. In fact, hemp is sometimes used to clean up toxic waste sites.

How do we ensure that our products avoid heavy metal contaminants? At Caliper we believe that because hemp is a bioremediator, we must be extra conservative when it comes to setting heavy metal standards. We require our suppliers to meet the strictest state regulations for heavy metal content: Colorado's and California's codes of regulations. Our guidelines are even tighter, cutting acceptable levels in half. For example, Colorado's regulation for lead levels allows <1000 parts per billion (ppb). We require our suppliers to meet a goal of <500 ppb.



Pesticides

What are they? Pesticides are substances used to manage common problems in growing plants. They include herbicides to fight weeds, insecticides for managing insects, or fungicides to prevent molds or mildew. Most cannabis producers incorporate some kind of pesticide to manage their crops, including some approved for organic use.

Why do they matter? If not used carefully, pesticides can cause harm to the environment and are linked to a wide range of human health problems, including increased cancer risk and endocrine system

Pesticides cont'd

disruption. The U.S. Environmental Protection Agency (EPA) regulates pesticides with strict rules for their agricultural use.

How do they get into CBD? Currently, the EPA allows the use of 10 different pesticides for hemp production, with guidelines to prevent environmental damage and human health risks. But pesticide residues can linger on hemp if they're not carefully applied—say, oversprayed, or applied too close to harvesting—or if pesticides “drift” over from a neighboring field.

How do we ensure that our products avoid pesticide contaminants?

All our hemp is responsibly grown in the U.S. We require all our suppliers to provide third-party testing verification that they've met the “gold standard” for stringent pesticide regulation: California's Code of Regulations for pesticide limits—and we also test our finished product, Caliper CBD, to make sure it meets those requirements.

Parting Words

As much work as we've put into producing our COAs and in making their results available and understandable, we hope that someday they won't be necessary. We hope that federal regulation will come soon to the CBD marketplace, and that every CBD product manufacturer will follow the same rules that protect consumers. When that day comes, you'll be able to purchase CBD products with the same confidence you feel when you purchase a package of potato chips—or a bottle of ibuprofen—today.

At Caliper, we pledge to always maintain the highest standards in testing and monitoring, and to make that information available to you in a COA you can trust. We're committed to helping you make an informed decision about the CBD products you buy, and to making sure Caliper CBD is always the best way to consume CBD.