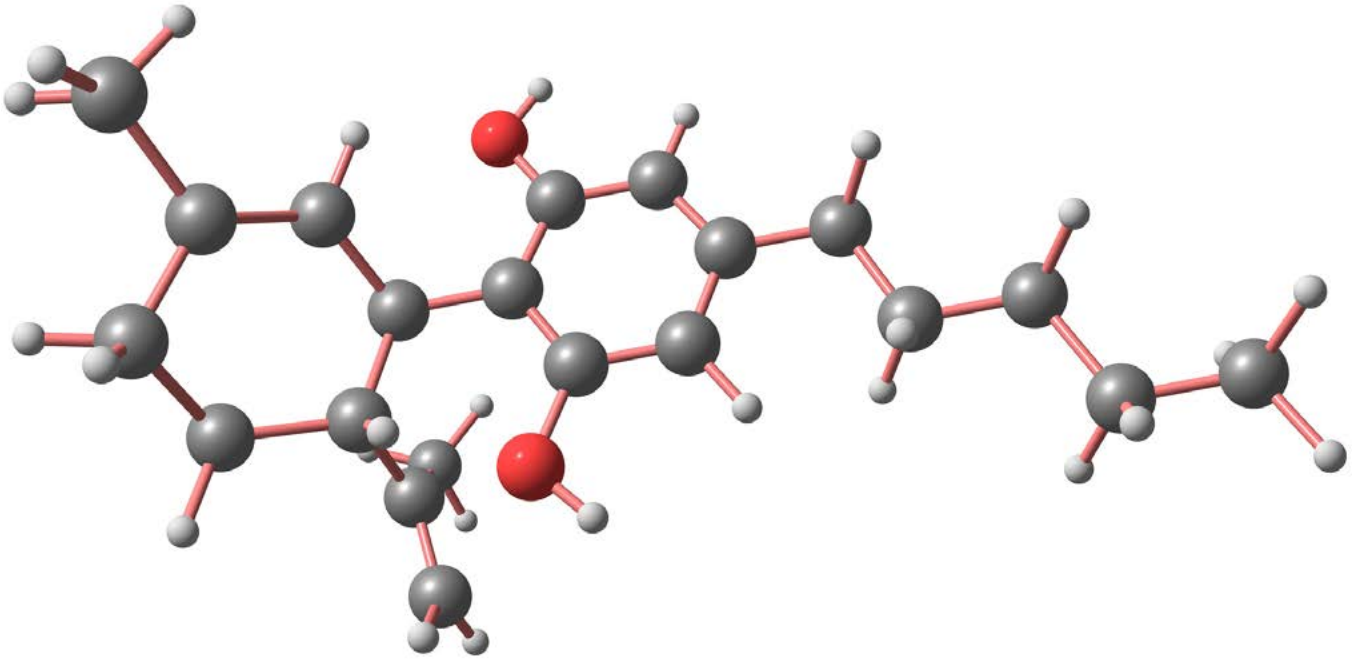
A Guide to

Cannabis Extraction Equipment

We created this comprehensive guide to cannabis extraction equipment for large-volume industrial extractors looking for helpful information to improve their operations and efficiency. It contains practical insights and easy-to-follow advice on cannabis extraction, equipment, and factors to consider when investing in high-quality components designed to maximize product quality and profits.

We've organized this guide to cannabis extraction equipment into six sections covering the following topics:

Continue reading to explore each of these sections in our cannabis extraction equipment guide.



Section 1: Cannabis Extraction Process

Cannabis extraction is an industrial process that converts target molecules in cannabis raw material into a usable form for consumable products, such as tinctures, capsules, hash, and oils. Commercial cannabis extraction requires sophisticated equipment designed to perform specialized functions, such as a cannabis chiller for precise temperature control.

While the extraction process varies depending on the method and whether it uses a chemical solvent, such as butane, propane, or CO2, the following is a general overview of the basic steps of cannabis extraction:

- Cannabis plant materials combine with a chemical or substance to strip cannabinoids from the plant matter
- The plant matter separates from the cannabinoid-infused solvent
- The solvent evaporates or is otherwise removed through a mechanism, leaving highly concentrated terpenes and cannabinoids, such as tetrahydrocannabinol (THC) and cannabinol (CBD)

In the next section, we'll outline a few of the most common solvent-based and solventless cannabis extraction methods and some of the equipment required for each one.

Section 2: Types of cannabis extraction methods

Most commercial processing facilities use a solvent-based extraction method because it produces large volumes of concentrates more efficiently than solventless methods. However, both techniques are continually evolving in an ever-changing marketplace.

Solvent-based extraction methods

Solvent-based extraction methods use chemicals to dissolve cannabinoid-containing trichomes from the hemp plant materials to produce concentrates, such as CO2 oil, wax/budder, shatter/taffy, live resin/sauce, and distillate.

Some of the most common solvents used in solvent-based cannabis extraction are:

- Butane hash oil (BHO)
- Propane hash oil (PHO)
- Ethanol
- Isopropyl alcohol
- CO2
- Hydrocarbon

In addition to these solvent-based extraction methods, some smaller cannabis processing facilities use solventless extraction, as described next.

Solventless extraction methods

Sometimes referred to as mechanical extraction, solventless cannabis extractions do not use chemical solvents to separate trichomes. This method produces concentrates, such as dry sift, bubble hash, rosin, and kief/live kief without assistance from a chemical solvent.

In the next section, discover the connection between the cannabis extraction method and the type of extraction equipment needed for your facility.

Section 3: Solvent-based cannabis extraction equipment

Below, we've highlighted the components designed for solvent-based extraction. If you're looking for equipment for solventless methods, proceed to Section 4.

When using a solvent-based industrial extraction method, such as BHO, PHO, CO2, or ethanol, you'll need the following essential equipment for each step of the extraction process:

- Chilling: Cannabis chiller
- Extraction: Cannabis extractor
- Filtration: Particulate filter
- Evaporation: Rotary evaporator
- Decarboxylation: Decarb vessel
- Distillation: Distilling system

Read on to learn more about the solvent-based cannabis extraction equipment designed for large-volume commercial use.

Chilling: Cannabis chiller

Because temperature control is critical in virtually every step of the cannabis extraction process, a high-quality cannabis chiller is a key piece of extraction equipment for large volume facilities using solvent-based methods. A cannabis chiller uses industrial-grade process cooling to remove heat from the cannabinoid extraction process, providing the necessary temperature control to prevent denaturing and other product damage.

Extraction: Cannabis extractor

A cannabis extraction system uses a process called centrifugation to separate cannabis extracts from the biomass effectively and efficiently. It works by soaking and agitating the biomass to extract the cannabinoid compounds. When setting up or upgrading your processing facility, look for a commercial-grade cannabis extractor designed to produce mass quantities of concentrates.

Section 3: Solvent-based cannabis extraction equipment *(continued)*

Filtration: Particulate filter

After the cannabinoids separate from the biomass, or plant matter, it leaves behind a cannabinoid-infused solvent. To remove the solvent and isolate the cannabinoids, use a commercial-grade particulate filter designed to catch suspended particulates and adsorbents from the solvent solution.

Evaporation: Rotary evaporator

A rotary evaporator is the next step to remove the cannabinoids and from the solvent after filtration. This cannabis extraction equipment is specially designed to evaporate the solvent so that the cannabis compound, or extract, is the only element left behind.

Decarboxylation: Decarb vessel

Next, a steel or glass decarboxylation vessel carefully heats the raw, acidic cannabinoid molecules to convert them into more potent and more easily consumed compounds. Your cannabis chiller helps maintain the tight temperature control required to activate these compounds during this decarboxylation step of the extraction process.

Distillation: Distilling system

A distilling system is another essential piece of cannabis extraction equipment for high-volume, solvent-based processing facilities. This component helps separate the purified THC, CBD, and other desirable compounds from the

decarbed crude oil, resulting in distillate, a base ingredient for many cannabis products, such as edibles and vape cartridges. With distillation operating at extremely high temperatures, your cannabis chiller helps tightly control the process.

Section 4: Solventless cannabis extraction equipment

The cannabis extraction equipment for solventless facilities is different than the equipment for solvent-based operations, and the specific components depend on the particular solventless extraction method you choose.

Some of the most common solventless cannabis extraction equipment includes:

- Dry-sift tumbler
- Bubble hash extraction machine
- Reverse osmosis (RO) system
- Rosin press

Continue to learn more about these types of solventless cannabis extraction equipment for your non-solvent operation.

Dry sift extraction: Dry-sift tumbler

Also known as pollen tumblers, kief-sift tumblers, or dry-sift machines, dry-sift tumblers process your dry trim and convert it into pure solventless concentrates. They softly "tumble" the dry trim or flower using a micron screened tumbler, releasing resin glands or crystals to be collected, also known as kief.

Ice-water extraction: Bubble hash extraction machine

Another essential piece of cannabis extraction equipment for the solventless ice-water extraction method is a reverse osmosis system. This component ensures your operation has access to a reliable source of clean potable water so that your product is safe and free of contamination.

Ice-water extraction: Freeze dryer

The final stage of the ice-water extraction method is drying. A commercial-grade freeze dryer is preferred over air drying to maximize the preservation of terpenes, plant compounds that can enhance your cannabis product's flavor, aroma, and potency, and quality.

Rosin extraction: Rosin press

A rosin press is a piece of cannabis extraction equipment required for facilities using the rosin extraction method, or solventless hash oil (SHO). This component works by using heat and pressure to extract cannabinoids by pressing them between two heated plates.

Section 5: How to choose cannabis extraction equipment

Choosing the right cannabis extraction equipment for your operation is essential for ensuring safety, efficiency, and a high-quality product.

The following are some of the factors to consider when making your equipment decision:

- **Desired volume** – High-volume processing facilities require robust, industrial-grade solutions to maximize efficiency and costs. To ensure your equipment can keep up with your operational goals, look for components specially designed for heavy-duty commercial use. For instance, cannabis chillers with year-round performance, tight temperature control, and exceptionally high uptime rates will keep your extraction processes going strong.
- **Cannabis extraction equipment supplier** – Before investing in cannabis extraction equipment, thoroughly vet the supplier to ensure they're experienced and knowledgeable in the cannabis industry and have a solid track record of success. You may also want to ask about their after-the-sale support policy to ensure they'll stand behind their product well after installation. Learn more about what to look for in a supplier in Section 6.
- **Cannabis extraction method** – Another determining factor for which cannabis extraction equipment you'll need will depend

on your method. Which is best for your desired end-product? If you're using solvent-based extraction, see Section 3 of our guide to learn about the specialized equipment you'll need for every stage of the extraction process. If you're part of a solventless facility, Section 4 includes a summary of some standard equipment to consider, depending on your volume, budget, and method.

- **Custom needs** – Some types of extraction equipment, including cannabis chillers, can be uniquely customized to suit your operation's specific needs. Redundancy options, extra-low temperature designs, high-efficiency options, and custom controls are just a few of the ways you can tailor your cannabis chiller so that it works for your operation.

Section 6: Cannabis extraction equipment FAQ

To conclude our guide to cannabis extraction equipment, we've compiled the following frequently asked questions to shed even more light on what you need to know about the components before you invest.

What is the best cannabis extraction method for high-volume facilities?

High-volume commercial processing facilities use solvent-based extraction methods because they are more efficient for producing mass quantities. Solventless extraction methods often take longer to achieve the same output as solvent-based methods.

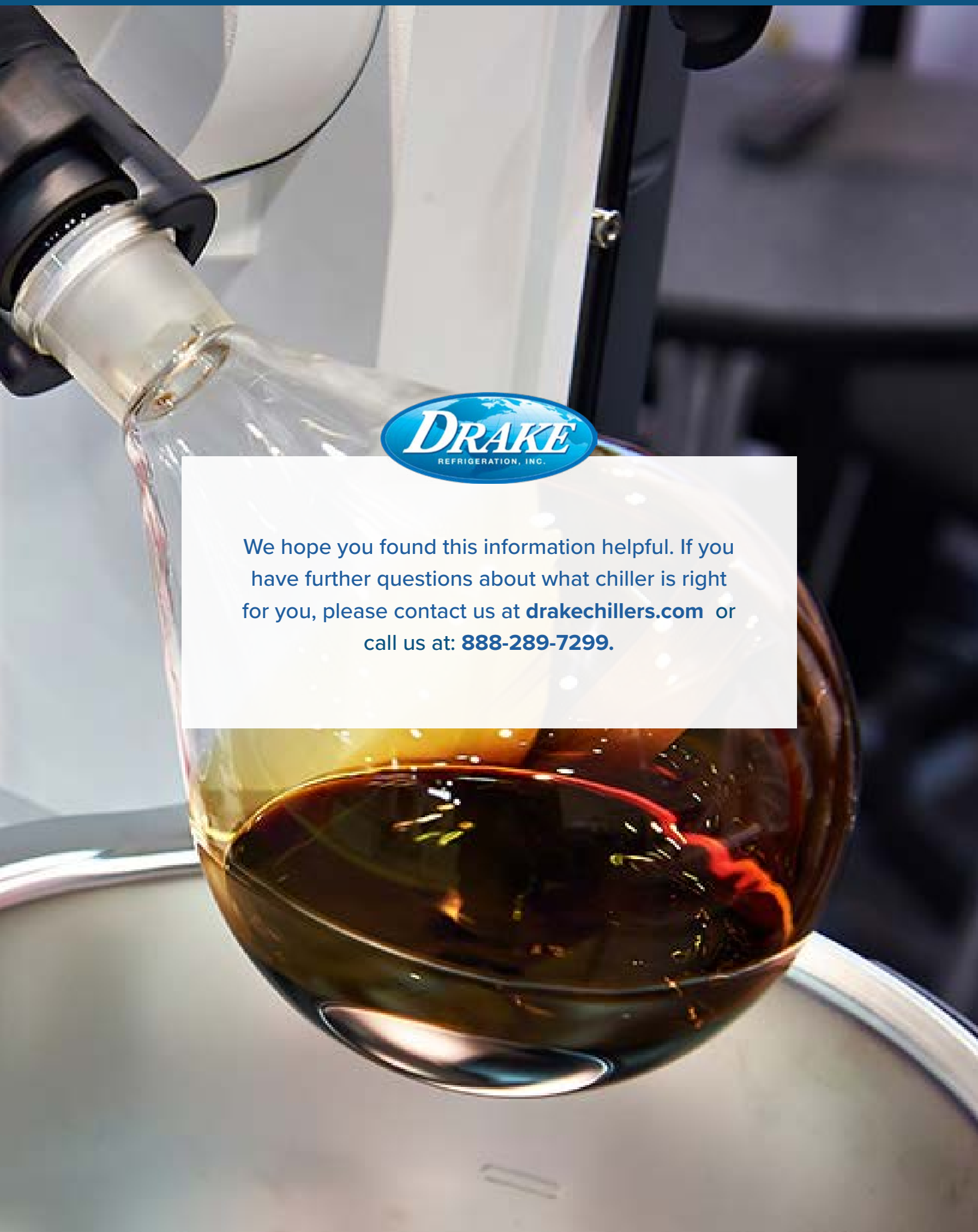
What cannabis extraction equipment do I need solvent-based methods?

Solvent-based extraction equipment includes a cannabis chiller for process cooling, a cannabis extractor for extraction, a particulate filter for filtration, a rotary evaporator for evaporation, a decarb vessel for decarboxylation, and a distilling system for distillation. You can learn more about each of these components in Section 3 of our guide.

What should I look for in a cannabis extraction equipment supplier?

First, ensure that your cannabis extraction equipment suppliers have specialized expertise in the cannabis industry. Decades of experience is a marker of a long track record of success, another factor that can give you peace of mind. Also, look for a cannabis extraction equipment supplier with high uptime rates and a willingness to customize and engineer solutions to fit your operation's specific needs. Finally, look for exceptional after-the-sale support to ensure they will be there for you no matter what happens.

We specialize in robust engineered cannabis chillers designed with tight temperature control of +/-1° and long-lasting performance in mind. With the ability to maintain extra-low fluid temperatures from -20°F to -40°F and a 99.4% uptime rate, we can help take your extraction operations to the next level. With nearly 50 years of experience and exceptional customer support, we'll be there for you long after the sale. Email us at drakesales@drakechillers.com or call (888) 289-7299 to learn more.



We hope you found this information helpful. If you have further questions about what chiller is right for you, please contact us at **drakechillers.com** or call us at: **888-289-7299.**