CannabisSFE – Supercritical CO2 Extraction Unit

Optimized for Processing of Medicinal Cannabis and Natural Herbal Products

- One Liter, Expandable CO2 Extraction System
- Base Package Vessel Capacity of 1 Liter
- Wide Pressure & Temperature Range (10,000 psi / 120°C)
- Efficient Pneumatic Liquid CO2 Pump / Waterless Pre-Chiller
- Upgrade to Cascade Mode – Can Yield up to 120grams/hour (Raw Material Dependent)
- Optional: CO2 Recycle, Raw Material Bags, Loading Fixture
- ASME Code Compliant Vessels and Components

The CannabisSFE has been designed to obtain high quality extracts from all parts of the cannabis plant. The system utilizes the environmentally friendly technique known as supercritical CO2 extraction. By incorporating a flexible processing platform, it may be configured to use one, two or three 1000ml processing vessels. This modular approach affords a simple and inexpensive entry into supercritical CO2 extraction of cannabis with the opportunity to increase production capacity with a second and third vessel when greater capacity is required. With three 1000ml vessels, the unit can operate in a full cascade mode and can yield up to 120grams/hour (Raw Material Dependent). Depending on Raw Material Mix, the CannabisSFE Basic Package Yields up to 45grams of product/hour and the 2 Vessel Unit up to 60 grams/hour.

The demand for pharmaceutical grade cannabis oil has increased and this trend will continue as the therapeutic value of these extracts is recognized. Research has demonstrated the value of cannabis extracts to treat a variety of ailments such as muscle spasms, glaucoma, nausea, mood and behavioral disorders, sleep disorders, and chronic pain.

A key advantages of CO2 extraction is the ability to fine-tune the solvating power to target specific compounds. This is done by varying the pressure of the CO2, temperature, solvent-to-feed ratio, and flow rate. There is more to medical marijuana than just the two principal cannabinoids (THC and CBD) that are found in the plant. In fact, multiple biologically active compounds have been identified. However, exactly how many of these compounds and in what combinations contributes to its overall medicinal efficacy (the entourage effect) is not well understood.

While a whole plant synthesis is not technically or economically feasible, a whole plant extraction (both non-polar oil and slightly polar terpenes) can be obtained by varying both the pressure and temperature from the extremes from sub-critical conditions to supercritical (Over 1071psi / 31.1°C) conditions. Unlike other commercially available systems, this whole plant extraction is exactly what the CannabisSFE has been designed to do. There is no need to perform a distillation step since, upon dropping pressure, the scCO2 becomes a gas. The extracted material is pure and in its natural state. The CO2 may be safely vented or optionally recycled for even greater efficiency. Since the solvency power of the fluid is pressure dependent, it is possible to fractionate to obtain multiple compositions from a single raw material. This makes some separations possible that are difficult or impossible to do with traditional liquid solvent and distillation processing.
SFT-Natural Products Extractor – Supercritical CO₂ Extraction

Optimized for Processing of Botanicals, Herbs, Spices, Essential Oils, and Natural Products

- One Liter, Expandable CO₂ Extraction System
- Base Package Vessel Capacity of 1 Liter
- Wide Pressure & Temperature Range (10,000 psi / 120°C)
- Efficient Pneumatic Liquid CO₂ Pump / Waterless Pre-Chiller
- Upgrade to Cascade Mode – Can Yield up to 120 grams/hour (Raw Material Dependent)
- Optional: CO₂ Recycle, Raw Material Bags, Loading Fixture
- ASME Code Compliant Vessels and Components

The SFT-Natural Products Extractor has been designed to obtain high quality extracts from botanicals, herbs, spices, essential oils, and other natural product materials. The system utilizes the environmentally friendly technique known as supercritical CO₂ extraction. By incorporating a flexible processing platform, it can be configured to use one, two or three 1000ml processing vessels.

Using Supercritical CO₂ to perform extractions on natural and organic materials has significant benefits over the use of traditional liquid solvents. CO₂ enters the supercritical region at an elevated temperature and pressure, where it is no longer a liquid or gas. It becomes a supercritical fluid. Under these conditions, the fluid possesses many characteristics of a liquid solvent with the added benefit of high diffusivity. By varying pressure within the supercritical region, the solvating power of the fluid is changed. This enables selective extraction of desired components. There is no need to perform a distillation step since in returning to atmospheric pressure the CO₂ becomes a gas. This means no residual solvents are in either the extract or remaining biomass. Additionally, given that the solvency power of the fluid is pressure dependent, it is possible to fractionate to obtain multiple components from a single raw material. This makes it practical for some separations that are difficult or impossible to do with traditional liquid solvent and distillation processing.

Our modular approach affords a simple and inexpensive entry into supercritical CO₂ extraction of natural and/or organic materials with the opportunity to increase production capacity with a second and third vessel when greater capacity is required. With three 1000ml vessels, the unit can operate in a full cascade mode and can yield up to 120 grams/hour (Raw Material Dependent). The SFT-Natural Products Extractor Basic Package Yields up to 45 grams of product/hour and the 2 Vessel Unit up to 60 grams/hour.

The demand for high purity extracts from botanicals, herbs, spices, essential oils, and other natural product materials has increased. This trend will continue as the therapeutic and health benefits of these extracts is recognized. Research has demonstrated the value of natural product extracts to treat a variety of ailments such as muscle spasms, glaucoma, nausea, mood and behavioral disorders, sleep disorders, and chronic pain.