



SUPERCritical FLUID TECHNOLOGIES, INC.

Supercritical Fluid Extractions, Reactions and High Pressure Chemistry
www.supercriticalfluids.com

The CannabisSFE - Superior Return on Your Investment

Why is the CannabisSFE Unit better than the competition? **THROUGHPUT!**

The key to the efficient extraction of any Cannabis Raw Material (trim, bud, or flower) is the amount of raw material that can be processed in the most efficient time frame.

- CannabisSFE offers shorter process times
- CannabisSFE is easier to operate, less user training required, and fewer components
- CannabisSFE costs less to operate
- CannabisSFE can grow as your need grows. The basic processing package is user expandable from the single 1000ml Processing Platform up to 3x 1000ml Processing Platform.
- CannabisSFE has Lease Financing available to limit initial capital outlay
- CannabisSFE Processing Unit comes with our full warranty, training, and installation



CannabisSFE = THROUGHPUT

How does the CannabisSFE achieve higher throughput? By delivering a much higher flow rates of liquid SCF CO₂ than competitive supercritical fluid extraction systems on the market. We pump liquid CO₂ brought to the supercritical fluid state by pre-heater assemblies. Effectively, Flow Rate of SCF CO₂ directly correlates to extraction efficiency and raw material throughput.

The CannabisSFE SCF CO₂ Pump delivers a liquid flow rate to 200 mL/min (~176 g/min). Flow rate is critical to productivity. With flow rates of 200ml/minute, you can achieve 98%+ extraction of a 1000ml (~450gram) batch of cannabis raw material in 30 minutes.

With the CannabisSFE 3x 1000ml unit operating in full Cascade Mode of operation and high concentration (flower/bud) Cannabis raw material feedstock, the productivity of the CannabisSFE would be 120 grams/hr. of usable extract.

With a traditional trim raw material, at ~10% yield is typical, the CannabisSFE 3x 1000ml would yield about 70 grams/hr. extract.

The CannabisSFE productivity is MUCH better than competitive products on the market today.

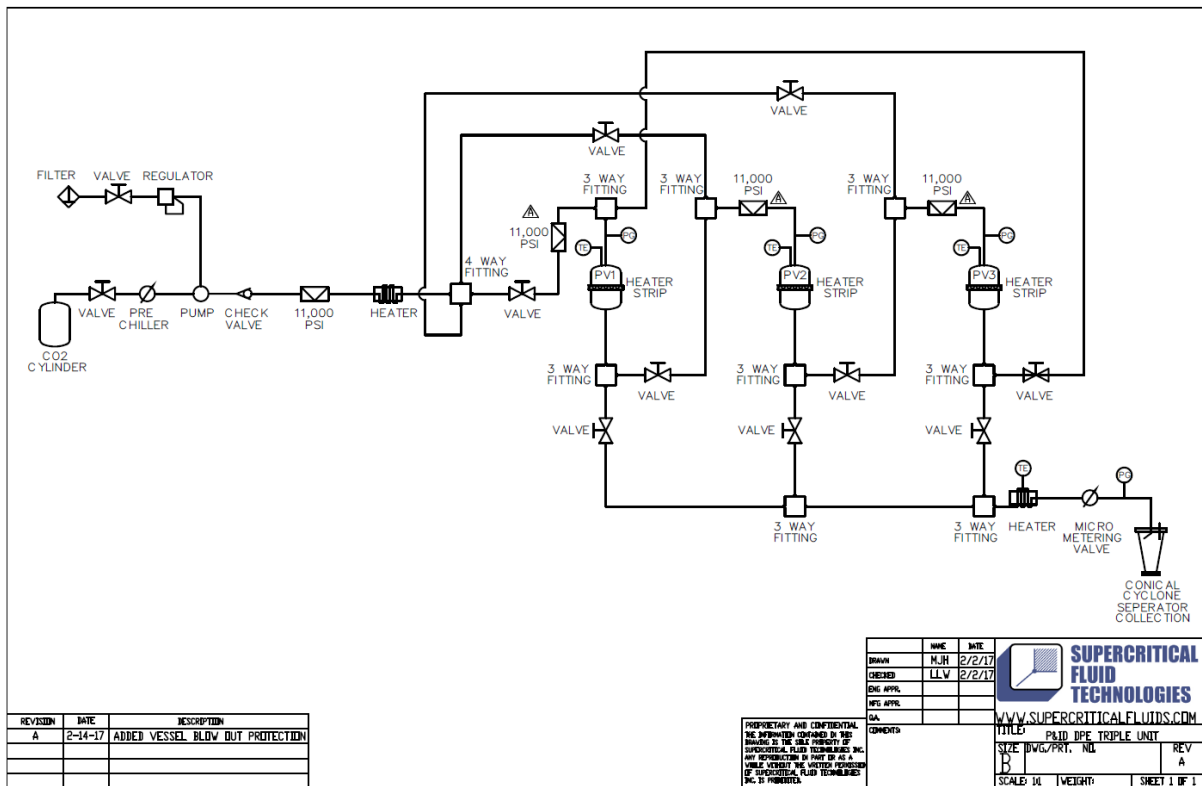
Processing Flower and Bud in the CannabisSFE 3x 1000ml can yield ~120grams/hour or 960 grams/day of extracted product. Current Wholesale Values of this Raw Oil (4/2017) with no post processing is \$9,600.00 per processing day. Wholesale Value of a Winterized Oil, with limited post processing, would be \$10,800.00 per processing day. Wholesale Values on finished products with significant post processing would be \$18,000.00 per day

For traditional Trim yield is ~70grams/hour or 560grams/processing day. Current Wholesale Values of this Raw Oil with no post processing is \$5,600.00 per processing day. Wholesale Value on a Winterized Oil with limited post processing would be \$6,300.00 per processing day. Wholesale Values on finished products with significant post processing would be \$10,500.00.

ROI numbers do not consider Raw Materials Cost (Varies significantly by region) and Utilities Cost. We assume that Raw Oil, Winterized Oil, and completely processed Cannabis Oil is \$10, \$15, and \$25/gram respectfully. Calculated ROI's are for Illustration Purposes only. Calculations are based upon sample performance data operated under normal conditions and following proper procedures for operation and maintenance as well as publicly available benchmark data. Actual performance may vary due to natural variations in raw material feedstock, raw material feedstock preparation, optimized processing parameters, and post processing methods.

CannabisSFE = Cascade Mode = Throughput

Cascade Mode is a method of operation for the CannabisSFE 3x 1000ml processing platform that maximizes throughput. This mode of operation was developed from our team's collective learnings over the last 25 years in the supercritical fluid extraction field processing natural and botanical products. Cascade mode is employed in both our CannabisSFE and NPX larger Scale Product platforms. In the CannabisSFE Series as you process a raw material sample that is in the first 1000ml sample vessel, the outflow from that first vessel is redirected into the second 1000ml sample vessel. During 30minutes of processing the first vessel goes to 98%+ Extracted and the second 1000ml vessel is on the order of 30-40% Extracted. You then redirect flow through the second 1000ml sample vessel completely and on into the 3rd 1000ml sample vessel. The processing in the first 1000ml vessel is now complete, this vessel is depressurized and a fresh lot of Cannabis raw material can be added to vessel one while processing continues in vessels two and three. This swap out of processed raw materials then occurs at 30-minute mark in 1000ml vessel two and process is directed through vessel three and one. This cycle repeats continuously and will yield the grams of product per hour mentioned above.



CannabisSFE 3 x 1000ml Processing Platform

Feedstock Preparation/Grinding

The preparation of the feedstock is just as important to obtaining high quality extracts as the processing parameters one uses to extract the Cannabis Plant raw material. The key here is that you desire to expose as much of the biomass surface area to the SCF CO₂ extraction solvent. We have found that a typical Cannabis plant material is optimally extracted at a particle size of ~200micron. We provide an optional selection of biomass grinding machines and sample loading fixtures for your CannabisSFE Unit to make this very important step smooth and easy.



**CannabisSFE Loading Fixture:
Ease in loading Raw Materials,
P/N CMD-PLF-1L**



**CannabisSFE Sample Bag Filter Bags
150micron (100 Mesh)
Polyester material P/N A2470**



Cannabis Feedstocks That Have Been Ground to ~200micron Size Ready for Processing in the CannabisSFE Unit



CannabisSFE Raw Extract Ready for Additional Processing



CannabisSFE Product post processed into 4 jellies (CannabisSFE CO₂ extracted and dewatered). Material dispensed into jars. The color variance is due to the differences in the chemical makeup (strain or cultivar) of the raw Cannabis Plant feedstock. You will obtain an assortment of colors of processed materials. Very similar to the different varieties of trees that have various shades of fall foliage.

These materials are ready for dispensing into your businesses chosen delivery method. Vape Cartridges, Topical Creams, or Edibles. Ask us how!

Dr. Kenneth J. James is the Director of Technology and founder for Newark, Delaware based Supercritical Fluid Technologies, Inc. For the last 25 years he has been responsible for applications of supercritical fluid technology, research and development, engineering of the company's product line, and developing innovative solutions applying Supercritical Fluids.

Dr. James received his PhD from the University of Delaware Department of Chemistry and Biochemistry, August 31, 1998 with a concentration in Organic Chemistry and Analytical Spectroscopy. Dissertation title: "Substituent Effects of the Thermal Decomposition of Nitroaromatic Explosives"; Advisor: Professor Thomas B. Brill. He developed new spectroscopic methods to investigate the decomposition mechanisms of energetic materials using "T-Jump/FT-IR", Pyrolysis/FT-IR, Mass Spectroscopy and Raman Spectroscopy. He was involved in the design and manufacture of high pressure spectroscopy cells for these applications. The T-Jump/FT-IR Cell has been commercialized by CDS Instruments of Oxford, PA, as the "Brill Cell" for Pyrolysis/FT-IR Applications.

During his time at the University he was exposed to Supercritical Fluid Extraction and reaction chemistry beginning a 25-year interest in the technology and its applications

To contact Dr. James, please send an email to techsupport@supercriticalfluids.com or visit www.supercriticalfluids.com.