SUPERCRITICAL FLUID TECHNOLOGIES, INC.

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

SFT-SP1100 Supercritical Fluid Processor

Rapid Liquid CO_2 Extraction of Natural Products

▲ **SFT-SP1100**

- One Liter Expandable CO_2 Extraction System
- Powerful Liquid CO_2 Pumping System
- CO_2 Flow Rates to 200 mls/min (176 grams/min)
- Extractions up to 10,000 psi (689 Bar, 69 MPa)
- Able to Perform Supercritical and Subcritical Extractions
- Optional Co-Solvent Addition Module to Extract Polar Compounds
- ASME Code Designed Vessels and Components
- Meets Current GMP Standards

The **Supercritical Fluid Processor SFT-SP1100** has been designed to obtain high quality extracts from botanicals, herbs, spices, essential oils, and other natural product materials. The **SFT-SP1100** provides a simple, yet powerful extraction system at an economical price. The system is ideally suited for companies entering the extraction segment.

Within the compact footprint of the **SFT-SP1100** is a one 1-liter processing vessel, and a powerful liquid CO_2 pumping system. This system delivers flow rates up to 200mls/min (176 grams/min) of liquid CO_2. Configured to operate in rapid extraction mode, the **SFT-SP1100** maximizes throughput efficiency. The vessel is charged with biomass and is extracted in about 30 minutes. In the next 30 minutes the vessel is emptied and refilled, and the second extraction is started. The net result is 1.5 pounds (681 grams) of biomass extracted per hour.

Using Supercritical CO_2 to perform extractions on natural and organic materials has significant benefits over the use of traditional liquid solvents. CO_2 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. 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.

The **SFT-SP1100** patented design is simple, easy to use, and reliable. The system can be run 24/7 with consistent results and minimal downtime. Our extractors are developed with over 27 years of experience in building supercritical fluid CO_2 extractors to serve the pharmaceutical industry, government agencies, and university researchers. We understand the need for quality, safety, and performance.

Our modular approach affords a simple and inexpensive entry into supercritical CO_2 extraction of natural and 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.

Botanicals, herbs, spices, essential oils, and other natural product materials (both non-polar oil and slightly polar analytes) can be obtained by varying both the pressure and temperature to supercritical conditions (Over 1071psi / 31.1C°).The CO_2 may be safely vented or optionally recycled for even greater efficiency. As the solvency power of the fluid is pressure dependent, it is possible to fractionate to obtain multiple compositions from a single raw material.

Natural Products Extractor to Obtain:

- Biologically active compounds from plants, including cannabis and hemp*
- Flavors from fruits, vegetables, spices & herbs
- Fragrances from flowers and other plant materials
- Essential oils from a wide variety of plant materials

*Cannabis and Hemp Specific Packages Available.

CONTACT US!

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Expanded System Specifications

Pump: Efficient CO_2 pumping with pneumatic liquid CO_2 pump and pre-chiller

Liquid CO_2 Flow Rates: Up to 200mls/min (176 grams/min) liquid CO_2 at 10,000psi with pneumatic air driven pump

Maximum Operating Pressure: 10,000 psi (689 Bar, 69 MPa)

Pressure Display: Pressure gauges for the processing vessel/Air Supply, and Collection Vessel

Temperature Range: Ambient to 120˚C

Temperature Precision: +/- 0.5˚C

Temperature Displays: PID Logic Controllers/Panel mounted. Displays internal vessel temperature, Preheater Temperature, and Back Pressure Regulator Temperature

Restrictor Valve: Extractor pressure/outflow controlled by Back Pressure Regulator, heated up to 120˚C; resistant to blockage (factory set to 80°C)

Integrated Chiller Assembly: The integrated chiller cools the liquid CO_2 from the delivery tank. The chilled CO_2 is then delivered directly to the supercritical fluid pump. Proper cooling of the CO_2 before it arrives at the pump ensures that the CO_2 is pumped in an efficient manner that eliminates pump cavitation to achieve the pressures and flow rates required for a highly efficient supercritical fluid extraction processes

Sample Extraction Vessel: Accommodates one 1 Liter Processing vessel. Expand at anytime

Collection Vessel: Externally mounted for ease in extract removal

Preheater and Extractor Temperature Control: High-efficiency electric CO_2 heat exchanger to raise temperature to up to 120 °C +/- 1.0 °C. The extractor actively heated with band heater to accelerate vessel warming at startup

Over-Pressure Safeguards: Rupture disc assemblies on pump, processing vessel, and collection assembly

Instrument Control: Vessel and preheater temperature controlled by PID Logic Controllers. Displays Preheater, Processing Vessel and Back Pressure Regulator Temperature

Collection Assembly: Easy access of collection assembly for removal of extracts

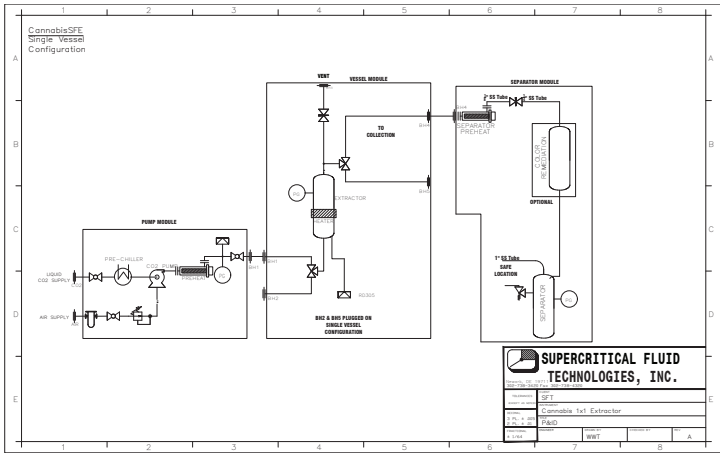
CO_2 Ventilation: CO_2 vented to an outside vent or connected to the Optional Recycle System

Dimensions: Compact Design (48” L x 20” W x 36” H)

Power Requirements: 20 Amps of 230V single phase

Blixer3

Blixer23



Supercritical Fluid Processor SFT-SP1100 Flow Diagram

SFT-SP1100 Sample Loader