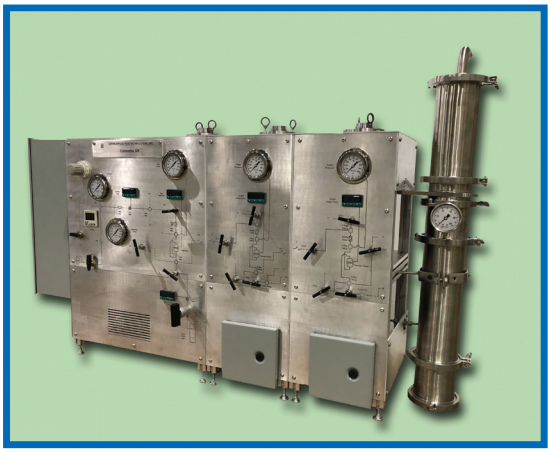
SUPERCRITICAL FLUID TECHNOLOGIES, INC.

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

SFT-SP3100 Supercritical Fluid Processor

Rapid CO_2 Extraction of Natural Products



▲ **SFT-SP3100**

- 3 x 1 Liter 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_2 Recycle
- Optional Co-Solvent Addition Module to Extract Polar Components
- ASME Code Designed Vessels and Components
- Meets Current GMP Standards

The Supercritical Fluid Processor **SFT-SP3100** has been designed to obtain high quality extracts from botanicals, herbs, spices, essential oils, and other natural product materials. The design offers three one (1) liter vessels for cascade mode of operation which allows the system to process biomass quickly with minimal maintenance and downtime. Built as a mid-range system, the **SFT-SP3100** provides flexibility for both subcritical and supercritical CO_2 extractions.

Within the compact footprint of the **SFT-SP3100** are three 1 Liter processing vessels, 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-SP3100** maximizes throughput. This extractor operates in cascade mode, which maximizes throughput efficiency by processing through two vessels concurrently, while the third is being prepared. The net result is 2.5 pounds (1135 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 the high diffusivity of a gas. 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.

Our modular approach offers simple and inexpensive supercritical CO_2 extraction of natural and organic materials by increasing production capacity with three vessels operating in cascade mode. 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.

Botanicals, herbs, spices, essential oils, and other natural product materials (both non-polar oil and slightly polar analytes) can be extracted by varying both the pressure and temperature within the supercritical region (Over 1071psi / 31.1C°).The CO_2 is 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

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 (able to perform supercritical and subcritical extractions).

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 cavitation to achieve the pressures and flow rates required for supercritical fluid extraction processes.

Sample Extraction Vessel: Accommodates three one (1) liter vessels

◀ Optional CO_2 Recycle

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 vessels, and collection assembly.

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

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

Dimensions: Compact Design (73” L x 43” W x 52” H)

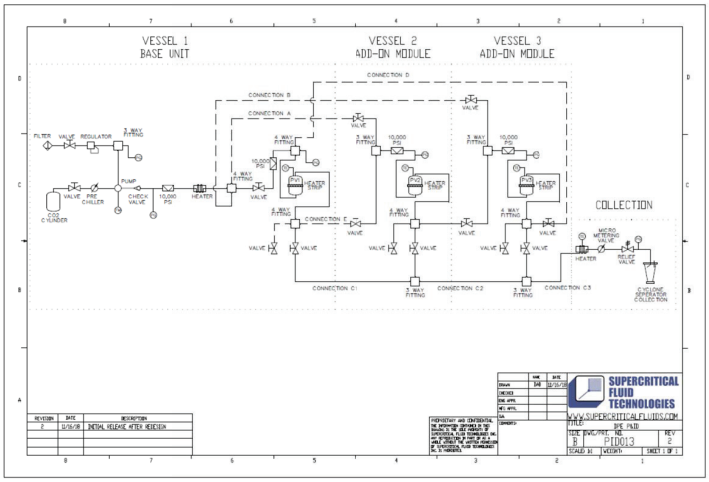
Power Requirements: SFT-SP3100 extractor will require 20 Amps of 230V single phase.

ASME Code: compliant design, vessels, and components

GMP: Meets current GMP standards

▲ **Blixer3**

▲ **Blixer23**



▲ **SFT-SP3100** Supercritical Fluid Processor

▲ **SFT-SP3100** Optional Sample Loader

P/N: SFT-SP3100