



SFT-250 SFE System



SFE for Research and Process Development

- Capacity up to 5 Liters
- Operating Pressure up to 10,000 psi (68.9 MPa)
- Feedback Control: PID-Fuzzy Logic Controllers
- Fluid Preheater
- Easy to Upgrade System for New Applications
- Maintenance Free Operation
- Various Extract Collection Options
- Optional Co-Solvent Addition Modules

◀ Standard Bench-Top SFT-250 SFE

The SFT-250 SFE Processing System is designed to perform extractions in a supercritical fluid media. This system was engineered to meet the day-to-day rigors of the research laboratory and may be used for small scale pilot processing. The SFT-250 is simple to operate, easy to modify for evolving application needs, and features many of the performance characteristics of fully automated pilot scale systems. The SFT-250 offers the maximum flexibility and safety features of any laboratory supercritical fluid extraction instrument available in the market today.

At the heart of the SFT-250 is a stainless steel vessel capable of containing supercritical fluids at pressures up to 10,000 psi (68.9 MPa). The SFT-250 accommodates pressure vessels of up to 5 liters in size. The large vessel enables the user to extract very low levels of key components from materials or process larger amounts of bulk material than would be possible with conventional, analytical scale SF equipment. Additionally, the SFT-250 may be configured with multiple vessels which

may be operated simultaneously, either in series or in parallel. Vessels are easily interchangeable and may be installed readily by the user.

The SFT-250 incorporates a high performance, air driven pump which can rapidly produce the high pressures required for supercritical fluid work. Under typical operating conditions, flow rates range from 1 to 330 ml/min (250 grams/min) of liquid CO₂. Conveniently located front panels allow easy access to the pressure vessel, valves, fittings, and electronics. Manually actuated valves provide long term, maintenance free performance.

Safety is of primary importance in all SFT-250 systems. Electronic alarms alert the end user to potential over-temperature and over-pressure conditions. As an additional safety precaution, rupture disc assemblies provide mechanical protection against over-pressurization of the system.

A robust, variable restrictor valve (back pressure regulator) provides precise control over flow rates. This level of control is essential when it is necessary to achieve highly reproducible results from run to run. While carbon dioxide is the most commonly used solvent, the SFT-250 allows the user flexibility to work with a variety of supercritical fluids.

The extract collection options include solid phase extraction (SPE) cartridges, solvent filled vessels, EPA vials, and fractional cyclonic separators. Extract is collected outside the main cabinet, to provide ready access for the user and simplify interfacing the SFT-250 to other instrumentation such as an FTIR or Mass Spectrometer. Additional collection options are available. The standard setup is for collection into EPA vials.

The SFT-250 is controlled by PID controllers. These manage pumping rates, pressures, temperature zones, and safety interlocks. Optional co-solvent additions modules may be added to the SFT-250.

SFT-250 SFE System Specifications

Standard Configuration

Maximum Operating Pressure: 10,000 psi (68.9 MPa).

Pressure Display: LED +/- 1 psi (6.9 kPa).

Temperature Range: Ambient to 200°C.

Temperature Precision: +/- 0.5°C.

Temperature Displays: LEDs display internal and external vessel temperatures; restrictor and preheater temperatures.

Flow Rates: Up to 250 grams/min (330 ml/min) liquid CO₂ under standard operating conditions.

Restrictor Valve: User selectable, variable temperature control to 250°C, resistant to blockage.

Extraction Vessel: Accommodates vessels ranging in size from 100 ml to 5 L. Vessels come with 5 micron frits and are interchangeable.

Collection Vessel: Externally mounted. Many options are available.

Preheater: Improves temperature consistency of the fluid by heating the fluid before it reaches the main pressure vessel.

Heating Power: All vessels are heated with band heaters (4,000 watts max).

Over-Pressure Safeguards: Rupture disc assembly and PID safety interlock.

Instrument Control: All temperature zones (vessel, restrictor, and preheater), pressures, and pressure ramps are controlled by PID-Fuzzy Logic Controllers.

Dimensions: Width: 61 cm, Depth: 61 cm, Height: 96 cm.

Weight (excluding vessel): 64 kg (140 lbs).

Configuration Options

Interchangeable Sample Vessels: 100, 300, 500, 1000, 2000, 4000, and 5000 ml (with 5 micron frits). Windows available.

Co-solvent Addition Module: Manual doping or direct, in-line metered addition.

Sample Baskets: S/S mesh, with lids.

Sample Bags: Nylon mesh, various sizes.

Flow Meter: 0 - 9.5 SLPM of expanded gas.

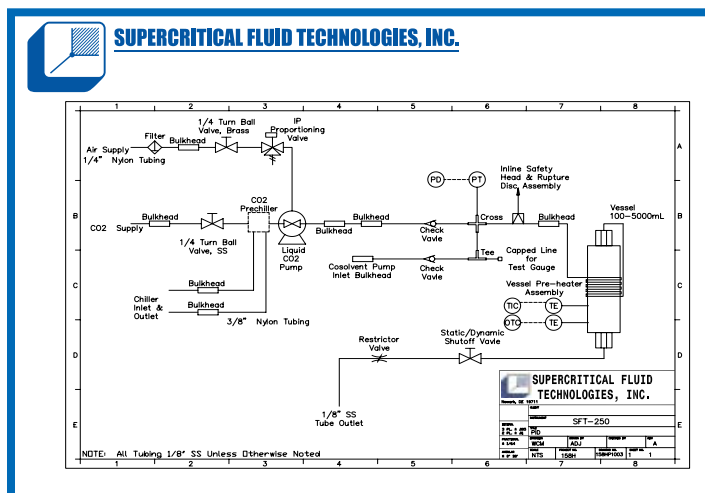
Remote Control Software: Controls the SFT-250 from a PC and performs data logging.

System Requirements

Power Requirements: 220 VAC, 50/60 Hz.

Gas Supply: Liquid CO₂ cylinder with dip tube.

House Air: Dry air, regulated to 110 psi (760 kPa).



Standard SFT-250 SFE Flow Diagram ▲



SFT-250 SFE System with 2 liter Vessel ▲