SFT-150 SFE System

SFE for Research and Process Development

- Capacity up to 2 Liters
- Operating Pressure up to 10,000 psi (68.9 MPa)
- Fluid Preheater
- Upgrade System for New Applications
- Maintenance Free Operation
- Various Extract Collection Options
- Optional Co-Solvent Addition Modules

◀ *Standard Bench-Top SFT-150 SFE*

The SFT-150 Supercritical Fluid Extraction System has been developed to investigate the feasibility of applying supercritical fluid techniques to various analyses and processing situations. The SFT-150 makes this possible without incurring the larger capital investment required for our more automated and integrated systems. Whether it's repetitive laboratory extractions or process development and optimization, the SFT-150 provides an excellent introduction to the power and versatility of SFE technology.

The SFT-150 System is a fully capable instrument designed to perform extractions in a supercritical fluid media. It offers the flexibility and safety features often found only in higher priced extraction systems. The modular design of the SFT-150 makes it easy and cost effective to alter the unit's basic configuration, adapting it to meet new or evolving application needs. It is possible to upgrade the capability of the SFT-150 to match much of the functionality of the SFT-250 SFE Processing System.

At the heart of the SFT-150 System is a stainless steel vessel capable of containing supercritical fluids at pressures up to 10,000 psi (68.9 MPa). The SFT-150 is unique in its ability to accommodate pressure vessels up to 2 liters in capacity. A larger processing 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.

The SFT-150 incorporates a high performance, air driven pump which can rapidly produce the high pressures required for supercritical fluid work. Flow rates range from 1 to 330 ml/min (250 grams/min) of liquid CO_2 under typical operating conditions. Interlocks provide safety precautions, preventing over-temperature or over-pressure conditions. As an additional safety precaution, rupture disc assemblies provide mechanical protection against accidental over-pressurization of the system. Side and front panels allow easy access to the pressure vessel, valves, fittings, and electronics. Manually operated valves provide long term, maintenance free performance.

A robust, variable restrictor valve (back pressure regulator) provides precise control over flow rates, which is essential in obtaining highly reproducible results from run to run. While carbon dioxide is the most commonly used solvent, with modification the SFT-150 allows the user the 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 cyclone separators. Extract is collected outside the main enclosure. This provides direct access for the user and simplifies the interfacing of the SFT-150 to other instrumentation. Additional collection options are available. The standard setup is for collection into EPA vials.

The SFT-150 SFE System's pressurization is controlled by an air regulator which regulates the amount of air supplied to the pump, allowing "dial in" pressure control. A PID temperature controller allows for the control of the fluid temperature in the units vessel. Optional co-solvent addition modules may be added to the SFT-150.

SFT-150 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 Display: LED. Displays internal vessel temperature.

Flow Rates: Up to 250 grams/min (330 ml/min) liquid CO_2 under standard operating conditions.

Restrictor Valve: Heated up to 200˚C; resistant to blockage (factory set to 80°C).

Extraction Vessel: Accommodates vessels ranging in size from 100 ml to 2 L. Vessels come with 5 micron frits and are user 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 (2,000 watts max).

Over-Pressure Safeguards: Rupture disc assembly.

Instrument Control: Vessel and preheater temperature controlled by PID-Fuzzy Logic Controllers. Pressure controlled by manual regulator.

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

Weight (excluding vessel): 60 kg (130 lbs).

Configuration Options

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

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

Sample Baskets: S/S mesh, with lids.

Sample Bags: Nylon mesh, various sizes.

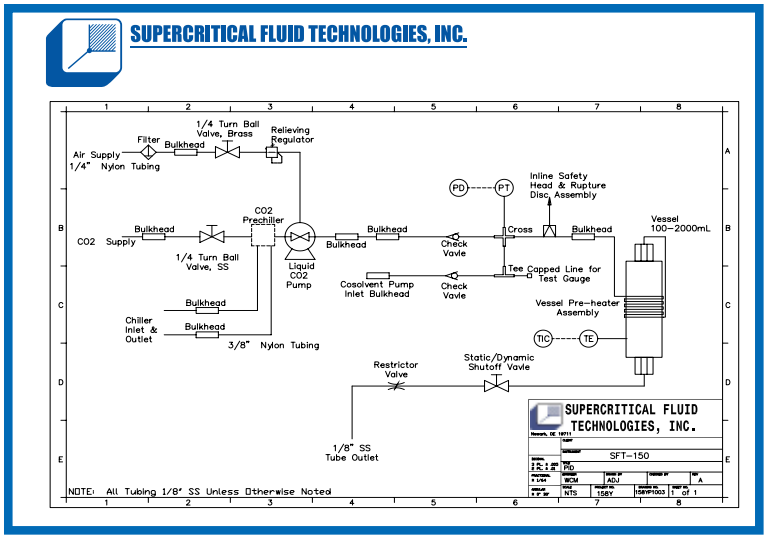
Flow Meter: 0 - 9.5 SLPM of expanded gas.

System Requirements

Power Requirements: 220 VAC, 50/60 Hz.

Liquid Gas Supply: Liquid CO_2 cylinder with dip tube.

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



Standard SFT-150 SFE Flow Diagram ▲

Optional Sample Basket
▼

1 Liter Vessel ▲