



## SFT-250 超临界萃取/反应系统



- 萃取釜体积最大至 5000 mL
- 操作压力高达 10,000 psi (68.9 mPa)
- PID 控制反馈系统
- 对萃取物不同的收集方式
- 可配搅拌装置
- 可选夹带剂添加方式
- 配有流体预热器和流量计
- 系统可根据新的应用要求进行升级
- 免维修操作

### ◀ 标准台式 SFT-250

SFT-250 是完成超临界流体里萃取和反应的理想设备。这个系统用来进行精确的每日的实验室研究，同时也适用于小型中试规模。这个系统对执行自动中试规模的系统来讲，操作简单，便于修改。在现在的市场上，这套系统为实验室超临界萃取/反应提供最大的多功能性和安全性。

SFT-250 系统的核心是不锈钢的容器，承受超临界流体的压力最高为 10000psi。压力容器最大到 4L。大些的处理容器能满足用户从原料中萃取低含量的关键成分，或者从比常规大量的原料中处理大量成分。另外，SFT-250 可以配置大的同时运转

的容器，无论是连续的还是相类似的。容器可以很容易的被用户更换和安装。

SFT-250 配置了一个高压气泵。它可以快速产生压缩空气以用于超临界流体工作。流速从 1ml/min 到 330ml/min。便利起见，位于前面的控制盘允许压力容器，阀门，装置，电器进入。手动阀提供一个长的周期，维护正常的运行。

在所有 SFT-250 里面安全保障是最重要的。电器警报警告用户潜在的超高温和超高压的情况。如有额外的安全隐患，程序提供机械保护防止系统突发的超高压。

回压调节器提供精确的流量控制，这对于萃取结果的重现性是非常重要的。虽然 CO<sub>2</sub> 是最常用的溶剂，SFT-250 在适当调整后可以使用不同的超临界流体进行萃取。

萃取收集方式包括固相萃取容器，装溶剂的容器，EPA 瓶子和蒸馏的旋风分离器。萃取物主要在系统外被收集。这为用户和单一的 SFT-150 使用者使用其他的仪器提供了直接的途径。其他收集方式可选。标准装置是为收集进 EPA 瓶子准备的。

SFT-250 配置了 PID 控制器。主要控制泵的流速，压力，温度区域，混合，安全互锁。

# SFT-250 超临界萃取/反应系统技术配置

## 标准配置

最大运行压力：10,000psi

压力显示：LED 显示，±1 psi

温度范围：常温至 200°C

温度精确值：±0.5°C

温度显示：显示容器内外温度，节气门和预热器温度。

流量：最大至 250 克/分钟。标准操作情况下液体 CO<sub>2</sub>。

节气阀：用户选择，各种温度控制到 250°C，抵抗直至锁死。

萃取/反应尺寸：最大到5L。用户可以更换容器尺寸。

收集容器：额外配置。可供选择的有很多。

加热动力：所有的萃取容器用带式加热器加热（最大 4000W）。

过高压安全装置：爆破片和 PID 安全互锁。

控制方式：所有的温度区域（容器，节气门，和预热器），压力和压力斜坡都是用 PID—Fuzzy Logic 控制。

尺寸：长 61cm，宽 61 cm，高 96 cm

重量（不包括容器）：64Kg (130Lb)

## 可选配置

定制萃取和反应容器：增加容器，活动的窗户和可选择的容器的尺寸。

共溶剂添加模块：人工添加剂或直接的、同轴仪表的添加。

预热器：到达主要压力容器前，在大容器里提高流体温度的连贯性。推荐所有萃取设备使用。

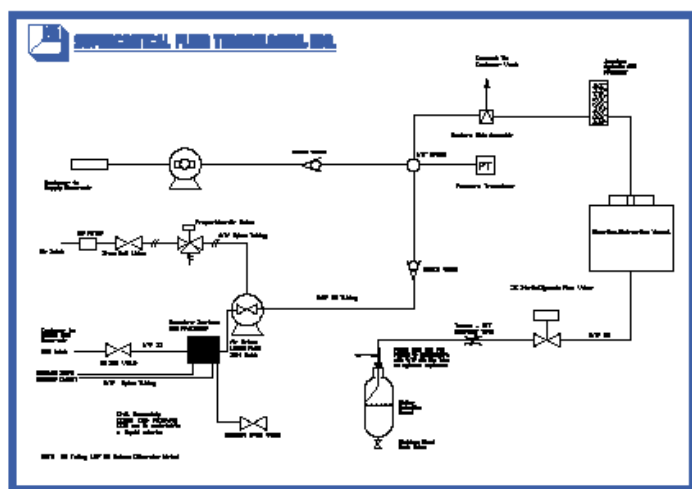
远程控制软件：控制 SFT-250 在电脑和执行数据

## 系统要求

动力要求：220V，单相，20amps

气体提供：带汲取管的液体 CO<sub>2</sub> 钢瓶

室内空气：干燥的空气，调整为 110psi。



标准配置 SFT-250 流程图 ▲



配有高压搅拌的 SFT-250 ▶



## SFT-250 SFE/SFR System



- Capacity standard 5 Liters
- Pressures up to 10,000 psi (68.9 mPa)
- Feedback Control: PID-Fuzzy Logic Controllers
- Various Extract Collection Options
- Mixing Options Available
- Optional Co-Solvent Addition Module
- Fluid Preheater
- Easy to Upgrade System for New Applications
- Maintenance Free Operation

### ◀ Standard Bench-Top SFT-250

The SFT-250 SFE/SFR Processing System is designed to perform extractions and run reactions 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/reaction 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 4 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 CO<sub>2</sub>. 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, mixing, and safety interlocks.

# SFT-250 SFE/SFR System Specifications

## Standard Configuration

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

**Pressure Display:** LED  $\pm 1$  psi (6.9 kPa).

**Temperature Range:** Ambient to 200°C.

**Temperature Precision:**  $\pm 0.5^\circ\text{C}$ .

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

**Flow Rates:** Up to 250 grams/min. (330 ml/min.) liquid CO<sub>2</sub> under standard operating conditions.

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

**Extraction/Reaction Vessel Size:** Up to 5 liter (bench scale). Vessels are user interchangeable.

**Collection Vessel:** Externally mounted. Many options are available.

**Heating Power:** All extraction/reaction vessels are heated with band heaters (4000 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 Lb).

## Configuration Options

**Custom Extraction and Reaction Vessels:** Multiple vessels, stirring, windows and a selection of vessel sizes available.

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

**Preheater:** Improves temperature consistency of the fluid in large vessels by heating the fluid before it reaches the main pressure vessel. Recommended for all extraction systems.

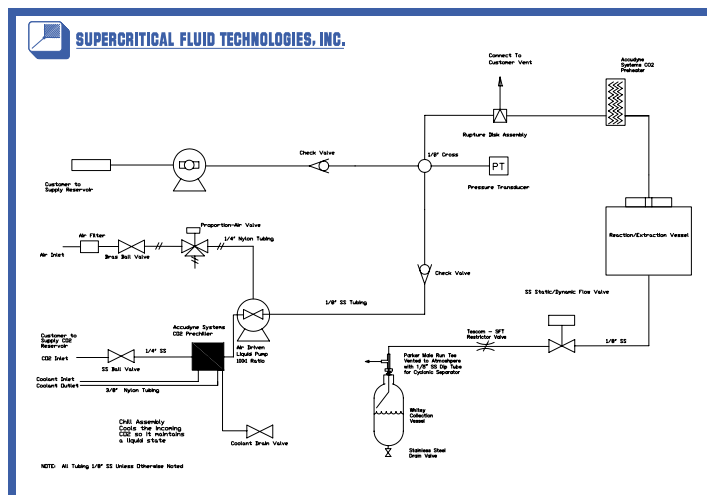
**Remote Control Software:** Controls the SFT-250 from a PC and performs data logging.

## System Requirements

**Power Requirements (U.S.):** 220 VAC., single phase, 20 amps. (International power available).

**Gas Supply:** Liquid CO<sub>2</sub> cylinder with dip tube.

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



Standard SFT-250 Flow Diagram ▲

SFT-250 SFR with high pressure mixing capabilities ►

