

Thar Benchtop to Cart-Mounted Models

- SFE 100
- SFE 500
- SFE 1000
- SFE 2000
- SFE 5000
- SFE 2 X 5 LF



Pre-assembled and ready to install. A customer training course is on-site or at our training facilities in the US or UK.

TharSFC

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97% Solvent-free Extraction – The Natural Solution

Supercritical Fluid Extraction Systems



TharSFC

Gentle, Clean, Green Extraction – The Natural Solution

Thar's Supercritical Fluid Extraction (SFE) systems extract chemical compounds using supercritical fluid instead of an organic solvent. The result is an extract with little or no residual solvent, superior purity and yield, and lower operating costs compared to solvent-based systems. It's no wonder that industries from natural products, food and flavors, pharmaceuticals, to nutraceuticals, polymers, chemicals, and cleaning are turning to Thar's high quality suite of SFE solutions.

- Green Technology
 - Can Eliminate Solvent Use
 - Low Solvent in Extract
 - Recycling Capabilities
 - Repeatable Process
- Higher Purity Extracts
- Wide Application Range
- Thermolabile Materials
- Faster Separation
- Physiologically Compatible
- Single-run Fractionation
- Adjustable/Selective Fractionation

Supercritical Fluid Extraction

The Thar SFE systems extract chemical compounds using supercritical CO₂ instead of an organic solvent. The supercritical fluid state occurs when a fluid is above its critical temperature (T_c) and critical pressure (P_c), when it is between the typical gas and liquid state. Manipulating the temperature and pressure of the fluid can solubilize the material of interest and selectively extract it.

• Environmentally Friendly
CO₂ is the most widely used supercritical fluid. Unlike traditional solvent-based methods that use harmful or toxic solvents, CO₂ is physically compatible and environmentally friendly.

• Lower Operating Costs
Reduces post-processing steps, clean-up safety and assurance measurements.

• Little to No Residual Solvent
Delivers extracts with almost no residual solvent, keeping your product safe, pure, uncontaminated and natural.

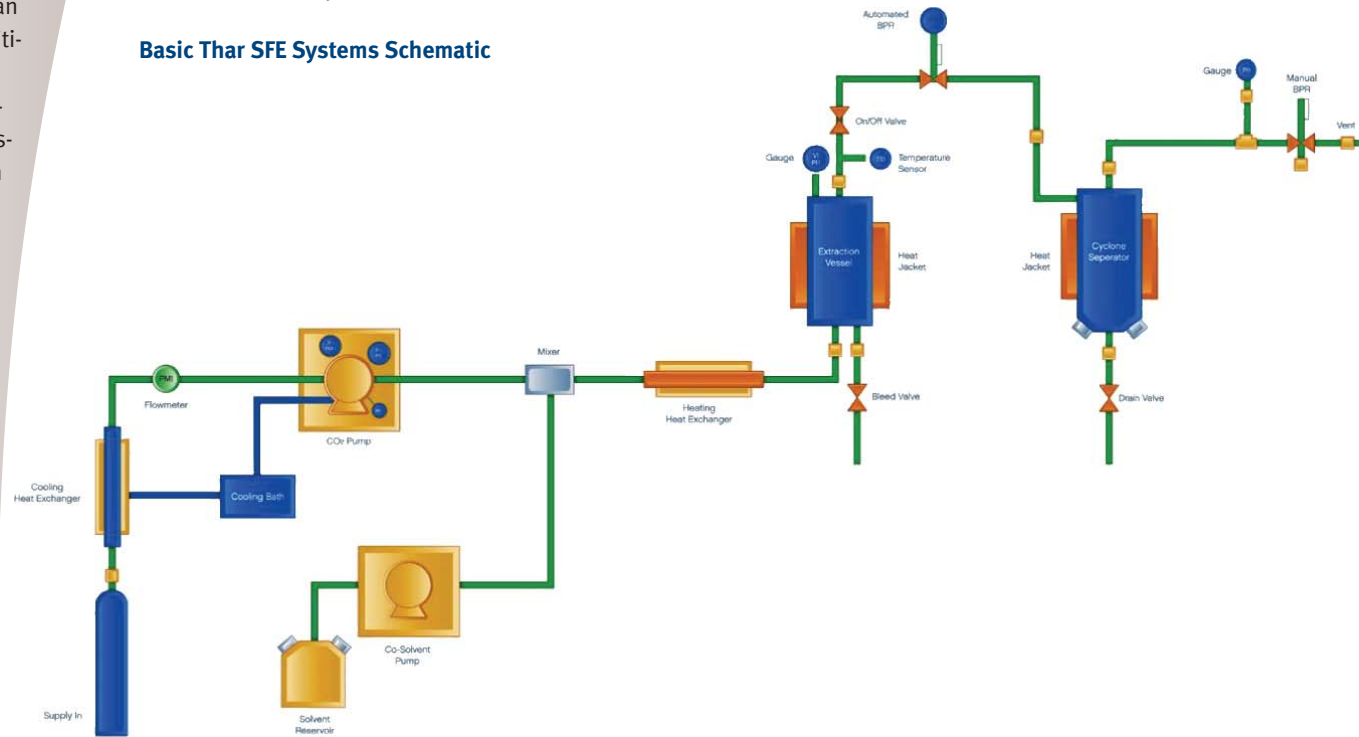
• Processes Thermolabile Compounds
CO₂ extracts compounds at low temperatures.

• Safe
CO₂ is nontoxic, nonflammable, physiologically compatible.

Thar SFE Systems in Every Corner of the World

From benchtop to cart-mounted SFE scale models

Basic Thar SFE Systems Schematic



By manipulating the pressure and temperature, CO₂ can selectively extract the desired material. The sample is placed in an extraction vessel and pressurized with CO₂ to dissolve the sample. Transferred to a fraction collector, the contents are depressurized and the CO₂ loses its solvating power causing the desired material to precipitate. The condensed CO₂ can be recycled.



Finger-Tight Vessel 100mL

The Thar Difference

High Pressure CO₂ Pump

Known for quality, Thar's dual piston CO₂ pumps are used by academic to corporate research scientists in over 40 countries. This pulseless flow pump requires no air, operates quietly, and can be used in the pressure-control or flow-control mode. The pump's pressure safety measures are built into the mechanical and electrical system.

High Pressure Vessel

The finger-tight high pressure vessel is designed for simple opening and closing and even distribution of the fluid during introduction. A threaded cap with spring-loaded seal enhances safety and enables automated loading and unloading. Thar's unique stainless steel is 60% stronger than 304/16 for added safety, ASME and CE stamped.

Automated Back Pressure Regulator (BPR)

Our state-of-the-art BPR features a pressure sensor for closed loop feedback control of the back pressure, and built-in heating to prevent freezing.

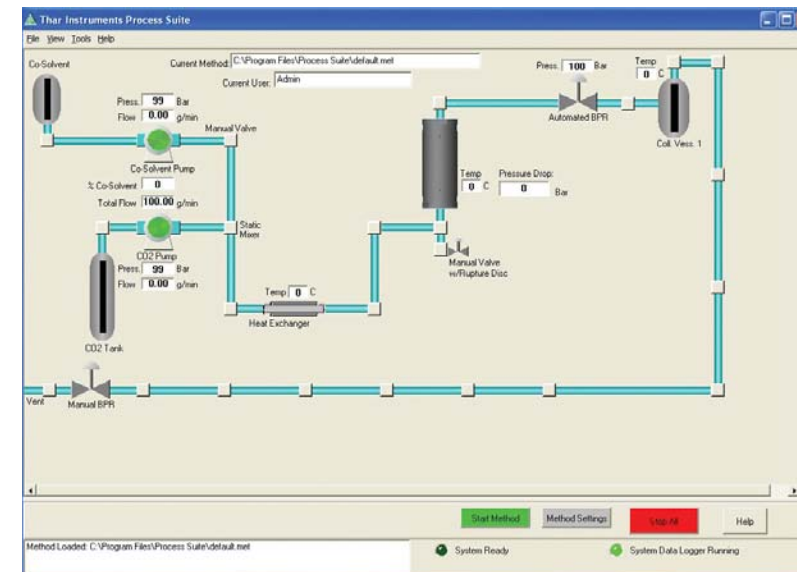
High Pressure Collection

Thar's cyclonic style collection separator can collect particles or liquids from gases or liquids. Collection starts with fluid being introduced at high velocity into the cyclone separator where centrifugal forces press heavier particles against the inner wall of the separator, while the lighter particles exit through the tapered bottom of the cyclone separator. The self-sealing, finger-tight cap is easy to open and close.

Easy-to-Use Software

Thar Software Engineers have been developing custom SFE software for more than 16 years.

Thar SFE systems include a PC with custom software for instrument control and data management. Regardless of your first language, the comprehensive yet simple icon-based interface is easy to use. The user controls the pressure, temperature, flow rates, as well as data logging, data mining, and the ability to write scripts tailored to your application.



Software: Process Suite for SFE

Ideal Tool for a Range of Applications

- **Food industry**
 - Flavors, spice extracts, herbs, decaffeination
 - Fragrances
 - Natural antioxidants such as from herbs and spices to free of chemical additives from food
 - Natural food colors
 - Contaminants such as pesticides and herbicides
- **Nutraceuticals**
 - Dietary supplements such as St. Johns Wort, Saw Palmetto, Kava-Kava, Ginger, Garlic, and Ginseng
- **Pharmaceuticals**
 - Active compounds of all kinds including steroids and polymer/monomer separation
- **Cleaning**
 - Photo-resist cleaning
 - Precision parts cleaning
- **Polymers**
- **Chemicals**
- **Aerogels**