Applied Separations

SCF Supercritical Fluids

World Leader in Separations and Extractions

Spe-ed™ SFE-Prime

Applied Separations is meeting the growing, world-wide commitment to a cleaner, greener environment. Environmentally friendly Supercritical Fluid (SCF) technology works with today's innovative, easy-to-use systems from Applied Separations. Your idea will be tomorrow's green process using no petroleum solvents and no toxic residue.

The ***Spe-ed SFE-Prime*** is the newest SFE in our series of instruments for supercritical fluid extraction. These systems meet the rigorous needs of day-to-day use in the research lab. It is simple to operate, fast and affordable, with features found in other, more expensive SFE systems.

The system features:

- temperatures to 150°C
- pressure up to 10,000 psi (680 BAR)
- pump flow rates up to 200mL/min*
- control of flow rate to vessel
- fully-adjustable, non-clogging micro-metering valve
- process vessels ranging in size from 5 to 150mL
- extract collected into SPE cartridges or standard glassware
- in-line trapping capabilities
- modifier addition capability
- liquid sample extraction capability
- multiple over-pressure safety devices

*N. B. theoretical maximum based on liquid

sfe prime
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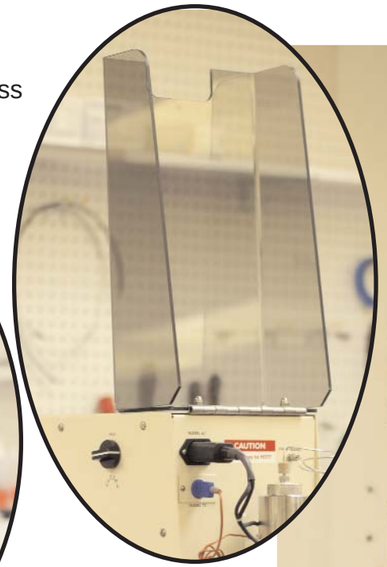
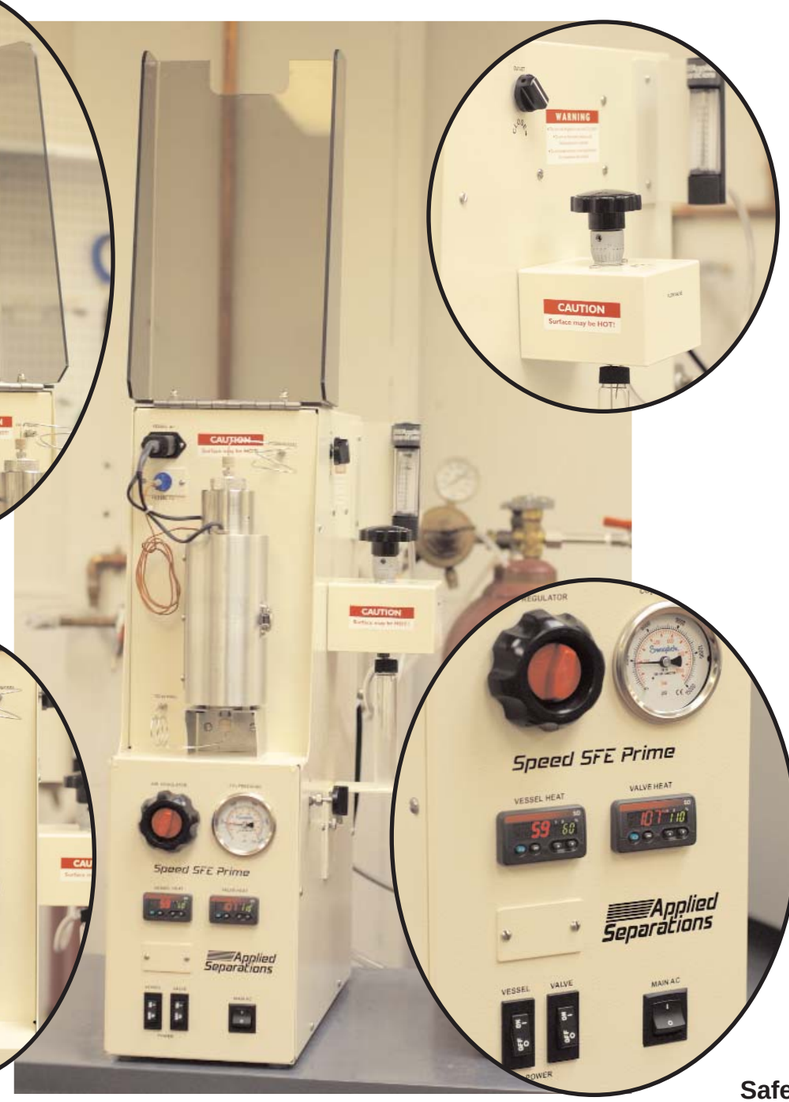
930 Hamilton Street • Allentown, PA 18101 • 610-770-0900 • 610-740-5520 (fax)
www.appliedseparations.com

The *Spe-ed SFE-Prime*

Vessel Compartment
- Flip-up cover for easy access
- Vessel Heater goes to 150 degrees





Vessels
- 5 mL to 150 mL hand tightened
- Simplified shutoff valves
- Static and dynamic extractions

Micro-metering valve
- Straightforward adjustable design
- Non-clogging
- Simplified cleaning / rinsing
- Maintenance free
- Flow control +/- 1.8%
- Heated to compensate for Joule Thompson cooling

High Pressure CO_2 Pump
- Reliable air driven
- Pressure 680 BAR (10,000 psi)
- 200 mL/min* flow rate
- Pressure setting maintains a desired set point throughout the system

Safety
- Built in over pressure safeguards
- Pressure relief valve
- Rupture disc

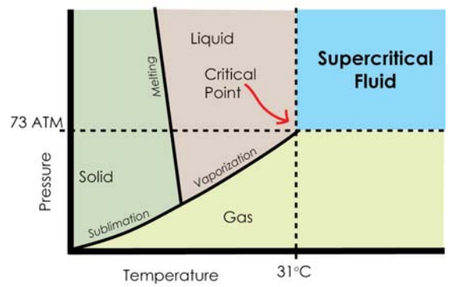
What is SFE?

Carbon dioxide is in its supercritical fluid state when both the temperature and pressure equal or exceed the critical point of 31°C and 73 atm (see diagram). In its supercritical state, CO_2 has both gas-like and liquid-like qualities, and it is this dual characteristic of supercritical fluids that provides the ideal conditions for extracting compounds with a high degree of recovery in a short period of time.

By controlling or regulating pressure and temperature, the density, or solvent strength, of supercritical fluids can be altered to simulate organic solvents ranging from chloroform to methylene chloride to hexane. This dissolving power can be applied to purify, extract, fractionate, infuse, and recrystallize a wide array of materials.

Because CO_2 is non-polar, a polar organic co-solvent (or modifier) can be added to the supercritical fluid for processing polar compounds. By controlling the level of pressure/temperature/modifier, supercritical CO_2 can dissolve a broad range of compounds, both polar and non-polar.

CO_2 Phase Diagram



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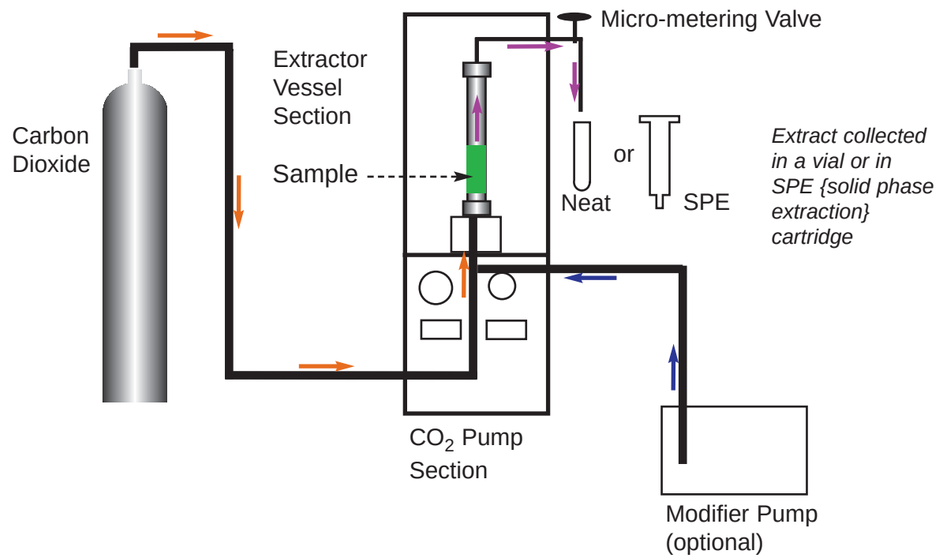
How does the *Spe-ed SFE-Prime* Work?



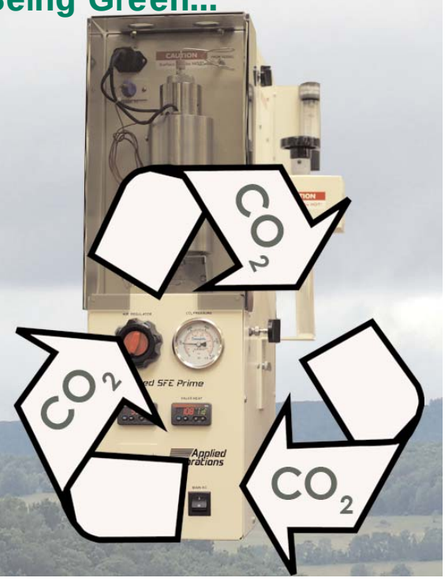
It Is Easy Being Green...

Easily replace your harsh solvents with supercritical fluids.
Carbon dioxide is one of the most commonly used supercritical fluids.

CO_2 is:

- Safe
- Inexpensive
- Readily available
- An ideal substitute for many hazardous and toxic solvents

CO_2 is not produced in the SCF process. Existing CO_2 is merely used. There is NO addition to any greenhouse effect.



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