



XtractorTM 500/50

Pilot scale supercritical extraction equipment

Supercritical fluid (SCF) extraction produces solvent free extracts in an environmentally friendly way. SCF extraction is particularly well-suited for the food, nutraceutical and cosmetic industries. It is suitable for all sorts of scale-up and research work because of its wide range of operating conditions. All parts are made of stainless steel. Compact design.

The Xtractor™ 500/50 is designed for production plant test laboratories, research institutes and universities for testing solubilities of organic compounds and extraction parameters in supercritical conditions. It offers a large operating range for both pressure and temperature. The unit utilizes benign carbon dioxide, as a solvent, which is one of a few solvents that unrestrictedly can be used for food processing. The unit is built in a compact skid mounted on wheels and is easily connected to the electrical, air and carbon dioxide supplies. The size and weight of the unit (approx. 2600 x 800 x 2000 mm and 1000 kg) make installation easy and flexible.

Process

The extraction process is based on the dissolution of organic compounds with supercritical carbon dioxide (SCCO₂).

“Loaded” carbon dioxide is replaced with “fresh” carbon dioxide in the extractor thus allowing a complete extraction. After dissolving the desired product the carbon dioxide passes through a pressure release valve. The pressure of the “loaded” carbon dioxide is reduced before it is fed to the separator. The liquid extract is separated in either a one- or a two-step separating process. The second step is optional and enables separation of the extract in two fractions with different solubility. Remaining liquid carbon dioxide is evaporated in the separator. The concentrated, solvent free, extract is collected from the bottom of the separator.

The gaseous carbon dioxide from the separator is then liquefied and drops into the work tank, ready to be reused.

Process Items

Extractors

The unit is equipped with two parallel extractors, one 2 L and one 10 L vessel. The vessels are opened from the top with easy to handle, threaded lids. Both vessels are supplied with baskets for easy loading/unloading of feed material.

CO₂ Unit

The CO₂-loop consists of the main process items as per the process flow scheme to the right. It features a proprietary high-pressure membrane pump powered by a hydraulic unit.

The three main process parameters, temperature, flow and pressure can easily be adjusted independently due to the special pump design. This enables fine-tuning of the solvating performance of carbon dioxide.

Instrumentation

The process is fully automated which makes operation very easy. The interface between the operator and the built-in control system consists of buttons for the main functions and a touch screen for more detailed interaction with the control system.

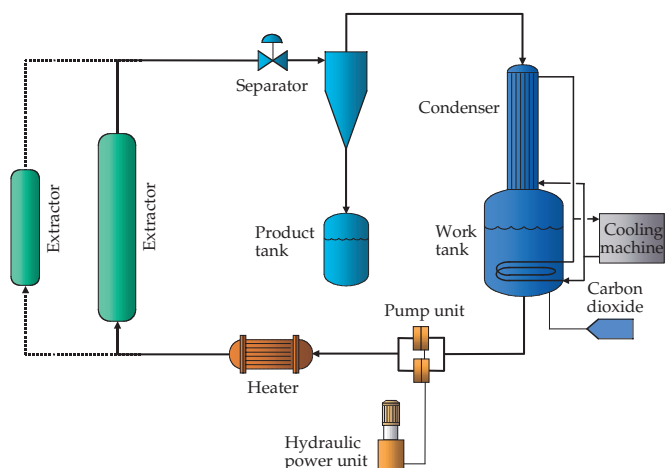
Installation

All parts are assembled in a compact frame, complete with all piping, instrumentation and electrical wiring. The frame is covered with plate elements and all controls and gauges are located on the front panel.

Process Parameters

These values are valid for the standard unit. Other parameters are available on request.

Extractor volume	2 and 10 L
Max CO ₂ flow	50 L/h
Max pressure	500 bar
Max temperature	100 °C
Separation	~ 55 bar
Optional 1st separation	max 200 bar



CHEMATUR ENGINEERING AB

Box 430, SE-691 27 KARLSKOOGA, Sweden, Telephone +46 586 641 00, Telefax +46 586 791 700, info@chematur.se www.chematur.se