

# scCO<sub>2</sub> Extractor

## ecologic extraction of legacy additives from recyclates

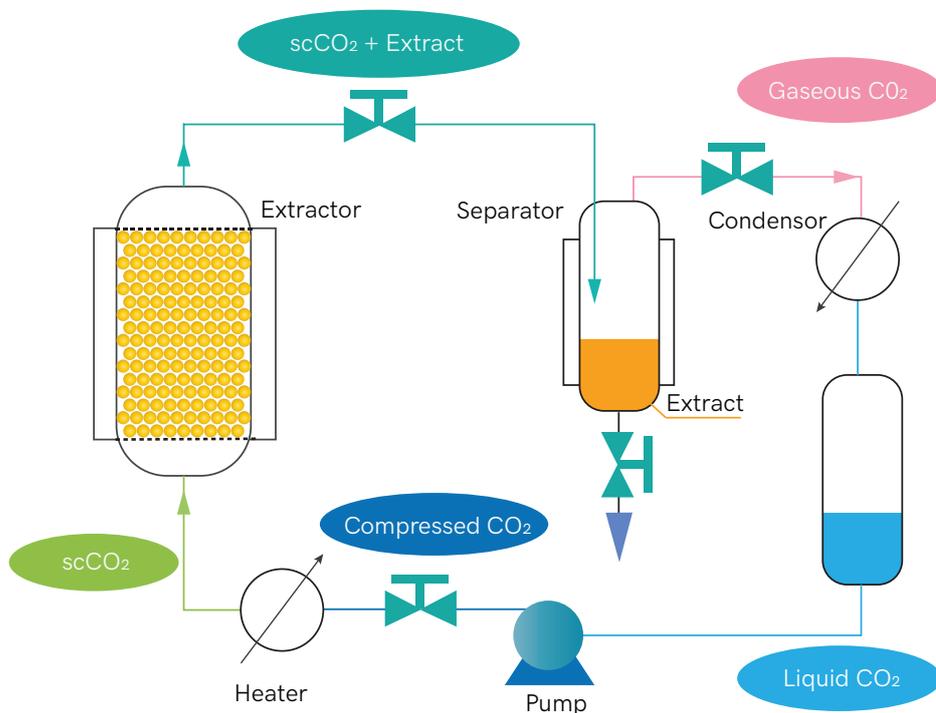
Supercritical CO<sub>2</sub> (scCO<sub>2</sub>) is a phase of CO<sub>2</sub> with very interesting physical properties. The CO<sub>2</sub> is not strictly in the liquid or gas phase but somewhere in between: the supercritical phase. In this phase the CO<sub>2</sub> exhibits both the properties of a gas (high diffusivity and low viscosity) and the properties of a liquid (high density), making scCO<sub>2</sub> a very interesting extraction medium.

To obtain scCO<sub>2</sub> high pressures and temperatures are required (at 73.8 bar and 32.1°C, the scCO<sub>2</sub> phase is entered).

Centexbel has acquired a device to perform extractions up to 150°C and 700 bar. In addition, a co-solvent pump allows to add other - more conventional - solvents, to influence the solubility properties of scCO<sub>2</sub>.

This device allows Centexbel to perform research on the extraction of **legacy additives from recycled plastics** within the framework of the European H2020 projects **CREAToR** and **REMADYL**.

In addition to the research into the extraction of undesirable chemicals from recyclates, the interest in the use of scCO<sub>2</sub> as a **green solvent for textile dyeing** has grown in recent years.



The equipment has been acquired in the framework of the EFRO GTI project



EFRO  
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More info

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Technical data  
on page 2

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## technical data

The SFE is a versatile "multi-solvent" extraction equipment with precise control of process parameters for analytical purposes:

- Extraction with supercritical CO<sub>2</sub> at pressures up to 700 bar and temperatures up to 150°C allowing very high-pressure extraction over a very wide range of operating parameters and more opportunities to use supercritical CO<sub>2</sub> as non-flammable, non-toxic and environment-friendly solvent.
- High pressure and subcritical water extraction up to 400 bar and 250°C.

Components	Description
CO <sub>2</sub> pump	Variable flow rate from 0 to 100 g/min Variable pressure from 0 to 700 bar
Extraction vessel	200 ml
Oven	Used to heat the extraction vessel
Separator	For extract separation / collection of extracts and CO <sub>2</sub> recycling
Pressure Control	Back pressure regulator to control the pressure
Control board	Display and record process value

