

TharProcess™

Sustainable + Trust

CO₂ Extraction & Purification

Scale Up to Thar.

Extraction

CO₂ extraction is a method that uses CO₂ at a specified pressure and temperature to extract oils within a plant without using toxic solvents.



Target Molecules

CO₂ Extraction conditions can be changed to target specific types of molecules in the plant that you would like to extract.



Supercritical Fluid

At pressures and temperatures above the critical point the CO₂ becomes a supercritical fluid.



High-Quality Oil

When the extraction is complete, the CO₂ is removed by temperature controlled expansion (to atmospheric conditions), leaving high-quality oil without any residual solvents.

Supercritical CO₂ extracts different molecules from the plant as it is pushed through the machine.

Unlike other solvents, once CO₂ becomes a gas, it leaves no residue and does not change the chemical composition of the oil, making the process highly effective.

CO₂ extraction is a scalable process. By scaling the pumps, heat exchangers, process piping, and the fraction collectors appropriately, whether the machine contains an 18L or 1650L extraction vessel, the solvent to feed ratio can be kept and achieve 90+% extraction efficiency in as little as two hours.



SuperFast™ 2x18L

Daily Extraction Capacity: up to 72 kg

SuperFast™ 2x120L

Daily Extraction Capacity: up to 560 kg

SuperFast™ 2x360L

Daily Extraction Capacity: up to 1,200 kg

SuperFast™ 2x720L

Daily Extraction Capacity: up to 2,200 kg

SuperFast™ 2x1650L

Daily Extraction Capacity: up to 4,000 kg

The capacity is dependent on operating conditions*

Purification

CO₂ purification uses CO₂ as the solvent and a chromatographic column to safely separate and purify target cannabinoids.



CO₂ Purification can be used to purify individual cannabinoids for subsequent blending with plant extracts to design specific cannabinoid formulations, and ensure that batch-to-batch reproducibility is achieved.

CO₂ Purification can be used to remediate THC from hemp extracts. The extraction process not only concentrates CBD from, but THC as well. The THC can be removed and the rest of the cannabinoids can be collected to maintain the original profile minus the THC.

CO₂ Purification can remediate pesticides from contaminated feedstocks. One of the most commonly used pesticides, myclobutanil, can be easily removed using supercritical CO₂ chromatography.

The CO₂ process-scale chromatography flashes CO₂ back to a gas and leaves the extracted fractions in a much smaller volume of ethanol (typically 2-4%) which can easily be removed to recover the cannabinoids.

Isolator™ SFC 10

Daily Purification Capacity: up to 5 kg

Isolator™ SFC 20

Daily Purification Capacity: up to 20 kg

Isolator™ SFC 30

Daily Purification Capacity: up to 40 kg

Isolator™ SFC 60

Daily Purification Capacity: up to 150 kg

The capacity is dependent on operating conditions*





Hemp Toll Processing

CBD Extraction to Purification



1 Grinding / Milling

The flower is finely grounded to Particle size: 40-60 mesh (Coffee ground size)



2 Extraction

The ground flower is loaded into the extraction machine as CO2 passes through at a set pressure and temperature



3 Winterization / Distillation

The acid group is removed through heating, leaving only the neutral form of the cannabinoids in the oil. For example CBDA to CBD. Thar uses proprietary CO2 dewaxing on large scale and traditional ethanol methods on smaller scale



4 Purification

Cannabinoids are isolated and undesirable material such as THC, Pesticides, and Fungicides are removed



5 Final Product

Purified cannabis extract

Scale Up to a Certified Processor

Our cGMP tolling services allow our customers to increase their competitiveness without the heavy expense associated with capital equipment while minimizing costly downtime related to equipment manufacturing, installation and training. Our facilities offer industrial size equipment using Supercritical CO2 extraction process to obtain the cleanest cannabinoids, including CBD. Hemp is often contaminated with heavy metals and other dangerous substances. These plants have the ability to accumulate toxic compounds from the soil, so in order to obtain pure CBD oil, special cleaning techniques are crucial; the supercritical CO2 extraction is the only method that guarantees the complete removal of heavy metals and toxins organically. The yield rate using Supercritical CO2 extraction is as high as 95% compared to the traditional extraction methodologies.