

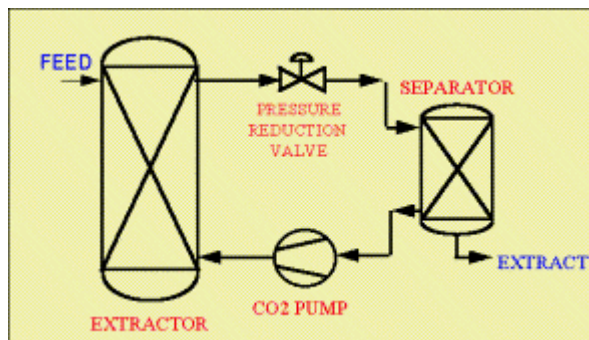
What is SCFE ?

Applications of SCFE ?

Advantages of SCFE

CO₂ as solvent

WHAT IS SCFE ?



SCFE is a two-step process which uses a dense gas as a solvent e.g., carbon dioxide (CO₂) for extraction, above its critical temperature (31°C) and critical pressure (74 bar). The feed, generally ground solid, is charged into the extractor. Supercritical CO₂ is fed to the extractor through a high pressure pump (100 - 500 bar). The extract laden CO₂ is sent to a separator (60 - 120

bar) via a pressure reduction valve. At reduced temperature and pressure conditions, the extract precipitates out in the separator. The extract free CO₂ stream, leaving the separator is then recycled to the extractor.

In the case of liquid feed, the extractor is modified into a column through which feed and the supercritical CO₂ is fed either co-currently or concurrently.

APPLICATIONS OF SCFE ?

SCFE is a highly versatile technology with a varied range of applications :

- Extraction of Natural Products such as Oil and Oleoresins, Flavours, Fragrances, Colour, Preservatives, Pesticides and Herbal Medicines
- De-cholesterolisation of Food
- De-Caffeination of Tea/Coffee
- De-Nicotisation and Removal of Tar from Tobacco
- Cleaning of Precision and Electronic Equipment
- Production of Uniform and Ultrafine Particles
- Chemical Synthesis
- Polymer Processing

ADVANTAGES OF SCFE ?

Current global trends show a growing preference for products from natural sources. Also there is an increasing concern for safe, eco-friendly and pollution free manufacturing processes. SCFE technology provides a ready and total solution to these challenges. Its superiority over the conventional technologies of extraction,

especially for natural products in the food and pharmaceutical industry, is well recognised today, as it provides :

- Extracts with delicacy and freshness close to natural.
- High potency of active components.
- Longer shelf life of extract.
- No residual solvent.
- High flexibility of processing conditions.
- Precise control of the selectivity of the supercritical solvent.
- Easy optimisation of the quality and yield of the desired product.
- Simultaneous fractionation of extracts.

CO₂ AS SOLVENT

For the extraction of natural products, CO₂ is the preferred solvent since it offers the following advantages :

- Mild process conditions (has near ambient critical temperature).
- Generally Regarded as Safe (GRAS) for food products.
- Inexpensive.
- Easily available.
- Non-toxic, Non-flammable and Inert to most materials.