CLARIFICATION OF SOY SAUCE

ADVANCED MEMBRANE FILTRATION TECHNOLOGY

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PCI Membranes
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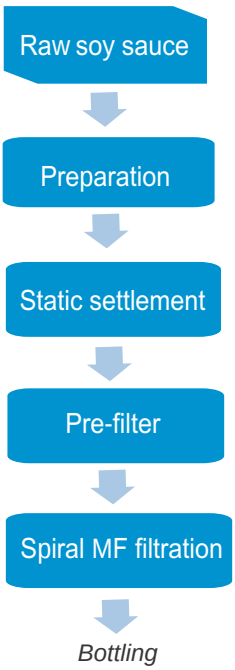
The clarification is a crucial step of soy sauce production. The aim is to make the soy sauce clear while keeping its vitamins, minerals, proteins and antioxydants and ensuring proper shelf-life. PCI Membranes offers spiral membrane solutions that protects the nutriments while limiting the addition of preservatives. In addition, the quality and tracability of our products allow us to ensure the repeatability of the performance.

Soy sauce clarification

As a traditional fermented food in eastern Asia, soy sauce has become a widely used seasoning across the world. Soy sauce is made from soybean and wheat through a complex fermentation processes involving enzymatic catalysis by various microorganisms. With the time saccharides, amino acid nitrogen, organic acids and other constituents that compose the soy sauce will give it a unique flavor.

After brewing for several months, raw soy sauce contains large amounts of fermented mash, which is usually filter-pressed to remove the extra suspended solids, then a final refinement is required to stabilize the flavor and color. The ultrafiltration will refine the filter-pressed soy sauce by stopping the microbial and enzymatic reaction. This final step before bottling will clarify the sauce while maintening the organoleptic properties and nutritional elements of the soy sauce. It will also enable the microorganisms removal which will stop the fermentation process and stabilize the soy sauce to ensure long shelf life.

Traditional methods for the production of soy sauce imply several batch operations that are labour- and time-consuming. Moreover those methods can't remove microorganisms and bacterias, which limits the product expiration time. Using spiral membrane brings several advantages: getting high clarification, keeping good flavor and nutriments retention of soluble protein as well as the small degree of browning, it is cost effective and requires low maintenance.



The soy sauce clarification process in details:

The production of soy sauce is divided into 4 major steps: Raw soy sauce, preparation, static settlement, a pre-filtration and a mircrofiltration step using spiral-wound membrane elements, as well as a number of sub-steps.

- During the static settlement, the fermentation of the soy sauce will develop large amounts of fermented mash and suspended solids that will need to be pre-filtered.
- Then the microfiltration step using spiral membrane with a cut off (molecular weight) of 500 000 MWCO, will remove macro molecular protein, organic matter and colloids while improving the clarity of the sauce. The membranes used for this step will also remove bacteria and microorganisms which will ensure long shelf life. We recommend using our FG-SpiraCore MF500 spiral wound membrane elements.

How the spiral wound module works:

Spiral modules consist of several spiral-wound elementary assemblies. Elemental assemblies include a feed spacer, a membrane; a permeate spacer and a second membrane. The sealing between the different compartments is ensured by gluing. The membranes used are only organic membranes that are flexible enough to be rolled up.

The feed solution is supplied to the side of the module at the feed spacers. The purified water is collected in the permeate spacers and, following a spiral, springs through the central collection tube. The feed solution passes through the module through the feed spacers and springs on the other side of the module. A spiral module consists of one or more elements.

The advantages of using PCI Microfiltration Spiral Wound Membranes Elements

For microfiltration, PCI Membranes' FG-SpiraCore MF500 Spiral-Wound Membranes elements are made of PVDF material with a nominal separation of 500 000 molecular weight cut off. The major advantage of using this material is a good chemical resistance: a wide range (2-11) of pH, and chlorine resistant.

Within the FG-SpiraCore EXC-So-MF line of spiral membranes are several spacer thicknesses available. Do not hesitate to check on our PCI-SpiraCore MF500 Spiral-Wound Membrane Data Sheet, or ask your PCI Membranes contact.

ADVANTAGES TO WORKING WITH US

- Made in a state of the art facility with highly trained production personnel and materials of the highest quality
- Over 50 years of cross flow filtration experience
- Ability to quickly adjust to your changing needs
- Technical support from initial conversations to implementation and beyond
- Products designed to maximize your productivity, product quality and bottom line
- Our expertise and product quality ensure the repeatability of the performance.
- A service team trained to handle any problem, anywhere in the world

CROSSFLOW MEMBRANE TECHNOLOGY

Reduces pollutants & contaminants whilst maintaining the organoleptic charestics of soy sauces.

Provides a cost effective method to treat soy sauces with minimal operator support.

Designed to meet specific site demands including flucuations in volumes & composition

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