

## TECH OFFER

### Food Filtration Membranes and Systems



#### KEY INFORMATION

TECHNOLOGY CATEGORY:

Foods - Processes

Foods - Quality & Safety

Environment, Clean Air & Water - Filter Membrane & Absorption Material

TECHNOLOGY READINESS LEVEL (TRL): **TRL7**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175392**

#### OVERVIEW

Traditional membrane technologies used in the food industry (e.g., diatomaceous earth or plate-and-frame systems) often face limitations such as significant waste, limited reusability, inconsistent quality, and labor-intensive maintenance. This advanced food-grade membrane technology overcomes these challenges by utilising hollow fibre filtration systems engineered for high flux, strong chemical resistance and long operational life. As a next-generation food filtration membrane solution, it enables precise separation, clarification, and concentration of food and beverage products while eliminating the need for filter aids and significantly reducing water, energy, and waste usage. Fully compatible with clean-in-place (CIP) systems, the technology supports automated, hygienic, and sustainable production workflows. Designed as a versatile food filtration membrane option, its adaptability across various applications – including beer clarification, soy sauce concentration, dairy processing, and plant extract purification – makes it a scalable solution that aligns with industry demand for efficient, low-waste, and high-quality food processing.

## TECHNOLOGY FEATURES & SPECIFICATIONS

These advanced food-grade hollow fibre membranes are designed for efficient, high-performance filtration across various food and beverage applications. Featuring robust polyethersulfone (PES) or polyvinylidene fluoride (PVDF) materials, the membranes are resistant to harsh cleaning chemicals and support clean-in-place (CIP) processes, significantly reducing maintenance downtime.

Key specifications include:

- Pore sizes: Microfiltration (MF) 0.1–0.5 µm and Ultrafiltration (UF) 5–100 kDa
- High flux rates up to 80 LMH depending on feed characteristics
- Operating temperature range: 5°C to 80°C
- pH tolerance: 2–14 (short-term up to 13)
- Compatible with high-salinity and protein-rich feeds
- Pressure rating: up to 4 bar (60 psi)

## POTENTIAL APPLICATIONS

- Breweries seeking sustainable and efficient beer clarification systems
- Soy sauce and condiment manufacturers needing salt-tolerant concentration systems
- Juice and plant extract producers looking for clear, pure outputs
- Dairy processors requiring high-performance separation for proteins or lactose
- Food manufacturers aiming to meet stricter hygiene and sustainability standards
- Plant-based proteins production aiming for precise separation and concentration of proteins without the need for filter aids, thereby reducing waste and improving yield

## MARKET TRENDS & OPPORTUNITIES

- Zero waste
- Zero liquid discharge

## UNIQUE VALUE PROPOSITION

- Only multiple use polymeric membranes that can be CIP ed in process
- Reduces OPEX costs
- Improves plant efficiency
- Provide membrane and complete systems