



**ARTISAN**  
INDUSTRIES INC.

Since 1934

# Separation Technology & Solutions

## Industries & Applications

### Chemical

- High-Value Product Recovery
- Stripping of Volatiles
- Methanol Purification
- Dehydrating Explosive or Highly Flammable Organics

### Pharmaceutical

- Solvent Recovery
- Drying APIs
- Concentration of high value fine chemicals and products

### Food & Beverage

- Purification and Concentration
- Recover Heat Sensitive Additives

### Edible Oils & Oleochemical

- Recovering Glycerin
- Monoglycerids

**& Many More!**

## Pervaporation Technology

### Efficient and Reliable Membrane Systems

**DEHYDRATE SOLVENTS and BREAK AZEOTROPES**  
in a single step to as low as 0.01% water

**INCREASE RATES AND YIELDS** in  
esterification & water-limited reactions



### BENEFITS over Conventional Distillation:

- Higher product quality
- Increased yield of valuable material
- Less thermal degradation of heat-sensitive materials
- Separation of azeotrope-forming materials
- No emissions

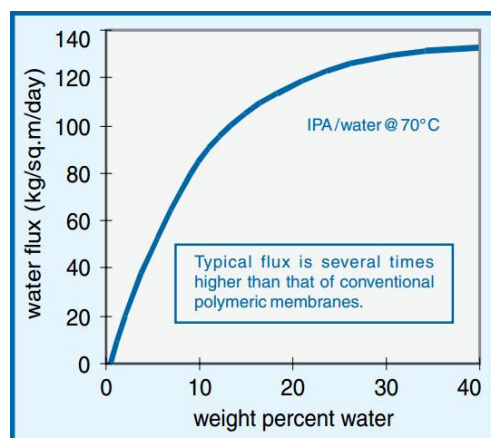
### Green Technology

Streamline complex, multi-step processes and decrease the number of unit operations to reduce energy consumption.

Make processes environmentally friendly through reduction of fugitive emissions, solvent recycling, and minimization of waste.



### Pervaporation Flux Capacity



781-893-6800

[www.artisanind.com](http://www.artisanind.com)



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## Unique Separation Capabilities

### Concentration, Folding & Drying

- Pharmaceutical APIs and Intermediates
- Fruit Juice & Concentrates
- Dairy & Beverages
- Phosphates
- Starch & Fiber

### Purification

- High Value Solvents
- Nutraceuticals
- Antioxidants
- Rice Oil

### Aroma Recovery & Extraction

- Tea and Coffee
- Plant Extracts
- Essential Oils

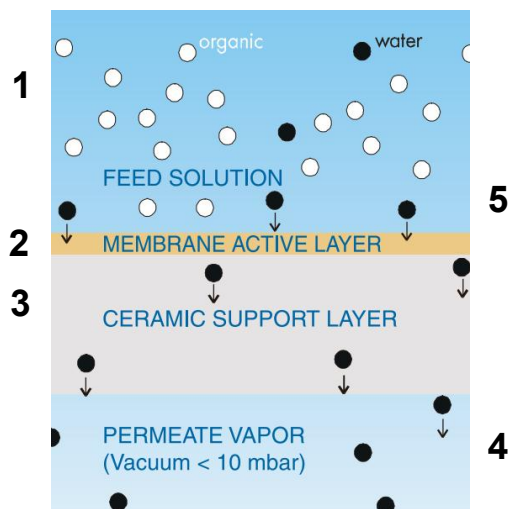
### Desolventization, Deodorization & Distillation

- Polymers
- Oleoresins
- Monoglycerides
- Adhesives
- Surfactants
- Marine Oil
- Lecithin Oil

**& Many More!**

## Operation

### PERVAPORATION= PERMEATION + EVAPORATION



1. Feed is circulated through the pervaporation membrane module.
2. The membrane allows for permeation of select components (typically water).
3. The permeate evaporates as it is transferred through the membrane and is exposed to vacuum.
4. Permeate vapor exits the unit and is continuously collected.
5. The retentate is circulated back before ultimately being drained from the system.

### Artisan pervaporation systems

are available in a variety of sizes to meet your specific processing needs.

Because each application is unique, we combine our extensive experience with data from our pilot facility to determine the optimal design to address your needs.

### Operating Capabilities

- Initial water concentration: 0.5 - 40%(w/w)
- Operating temperature: 40 - 400° F
- Batch size: 1 - 30,000 gallons
- Flow rates: 5 - 5,000 gal/day
- pH: 4 - 10
- Vacuum: < 10 mbar
- Membrane module areas range from 0.01 to 100 square meters

### Process Development Engineering & Support

Artisan provides best-in-industry, experienced chemical engineers who will work with you to develop a customized solution for your application and provide support throughout the process.

### Feasibility & Pilot Testing

We operate one of the most comprehensive pilot test facilities in the industry. Custom configured single or multi-staged systems are designed for your specific process. Whether you need to pilot a new process or improve an existing one, our experienced engineers will work with you to develop a cost effective solution to give you the competitive edge.

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44 Campanelli Pkwy  
Stoughton, MA 02072