

LL-M extraction

«From Sample to Process»

Laboratory Membrane Solutions

Liquid-Liquid Membrane extraction

The MMS LL-M extraction process is an *innovative* solution for **solvent free extraction**.

Applications include impurity removal from food and beverage products (e.g., flavor removal, de-acidification).



Principle of LL-M extraction

A hydrophobic membrane barrier separates the feed-phase (Product + Impurity) from the extractant phase, keeping product-phase *solvent free*.

The feed-phase is circulated on the shell-side of the membrane contactor. The extractant is pumped counter flow through the lumen side.

The feed-phase is pressurized to prevent passage of the extractant phase through the hydrophobic membrane.

Separation occurs when the impurity present in the product (e.g., flavor) has greater solubility in the extractant phase (lumen-side) and will be drawn across the membrane leaving in place the purified raffinate ready for collection.



General Information

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LL-M extraction

Tools enabling Innovation

Flavour extraction

MMS LL-M contactor configuration

1. Feed-phase (Product + flavour):

Circulation in batch mode by a membrane piston pump.

2. Extractant-phase:

Extractant pumped through the membrane contactor by a peristaltic pump in counter flow (single pass)

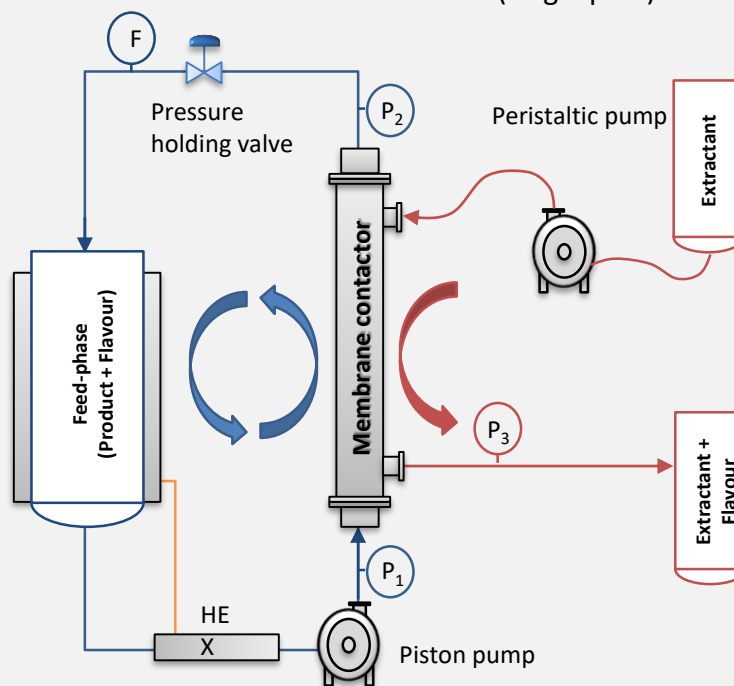


Figure 2. Liquid-Liquid membrane contactor for flavour removal (e.g., pea-flavour)

LL-M process development service:

Having run over 250 separation processes in our in-house laboratories, the MMS process development team can help advise on:

- The selection of suitable extraction solution based on solubility of impurity (e.g., flavour) selected for removal
- Optimisation of extractant concentration and temperature for enhanced solubility of impurity in the extractant
- Hydraulic optimisation for enhanced mixing and mass transfer

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