

FOULING AND CLEANING OF CERAMIC MEMBRANES DURING THE DEWATERING OF GUM ARABIC WASTE STREAMS

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ABSTRACT

Gum Arabic is commonly used in the food industry. During processing of the gum a large amount of water is used, and ca. 10 % of the gum present in the feed stream is subsequently lost in the wastewater stream. This process has large costs both financially and environmentally. This paper reports the use of synthetic membrane technologies in separating Gum Arabic from the wastewater stream. Results are presented demonstrating that up to 95 % of the gum can be removed from a model wastewater stream using tubular ceramic membranes.

The filtration of such a chemically and rheologically complex food product inevitably leads to fouling; historically this has limited the use of membranes in applications such as this. Hydrodynamic factors such as cross flow velocity and transmembrane pressure, which can be used to reduce fouling, are investigated. In addition an effective cleaning protocol is described.