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PROCESS SYSTEMS

SEPARATIONS SAVVY

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Emulsification: No Match for the KARR® Column

Have you seen the last issue of Separations Savvy, “Fermentation in Your Process?”, which generated a lot of discussion among our biotech and pharmaceutical readers. We discussed the Whens and Whys of using Liquid-Liquid Extraction to recover low concentrations of high boiling organic chemicals generated in the fermentation step of biomass processing and heard from readers who wanted to see a specific example.

Carboxylic Acid from Aqueous Fermentation Broth

When extracting carboxylic acids from an aqueous fermentation broth generated in a cellulosic ethanol process, using ethyl acetate as the solvent of choice, initial attempts by the end user to develop the LLE process step in a rotating disc contactor (RDC) proved to be unsatisfactory. Poor product recovery (< 90%) and a high solvent to feed ratio required (≥ 1.7) were not acceptable.

The end user knew that the process had a high tendency towards emulsification. Armed with this information, Koch Modular tested the process in a 25 mm diameter **KARR® Column**. The KARR® Column demonstrated excellent operability, generating fine dispersion of the solvent phase at low agitation speed as expected for systems which tend to emulsify.

Results?

- The solvent to feed ratio was improved to 1.5.
- The acid recovery was increased to **98-99%** at slightly elevated temperature (40-45 °C).

Cycling with a Chemical Engineer.

K-Quips

Which of the following would not be separated from water using LLE?

A. Acetic Acid
B. Phenol
C. Ethanol

For the answer, please visit
kochmodular.com/our-work/separations-savvy

With many more stories to share and solve for our clients, we are always happy to hear from you! If you’ve got a difficult separations problem, please contact us at **contact@kochmodular.com** or call +1 201 267 8670.