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Simulation of a triple effect evaporator of a solution of caustic soda, sodium chloride, and sodium sulfate using Aspen Plus

Raul Alejandro Vazquez Rojas , Francisco Javier Garfias Vásquez , Enrique Rodolfo Bazua Rueda

PII: S0098-1354(18)30071-1
DOI: 10.1016/j.compchemeng.2018.02.005
Reference: CACE 6019

To appear in: *Computers and Chemical Engineering*

Received date: 9 November 2017
Revised date: 2 February 2018
Accepted date: 9 February 2018

Please cite this article as: Raul Alejandro Vazquez Rojas , Francisco Javier Garfias Vásquez , Enrique Rodolfo Bazua Rueda , Simulation of a triple effect evaporator of a solution of caustic soda, sodium chloride, and sodium sulfate using Aspen Plus, *Computers and Chemical Engineering* (2018), doi: 10.1016/j.compchemeng.2018.02.005

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Highlights

- A triple-effect evaporator for concentrated NaOH was modeled in AspenPlus.
- Plant data was used to include triple salt Na_2SO_4·NaCl·NaOH precipitation in the simulation.
- Concentrations above 0.25%w of Na_2SO_4 precipitate triple salt at higher than 74°C.
- Temperature and pressure analysis were run to find operating points reducing triple salt formation.
- Triple salt can be avoided by removing sodium sulfate from the caustic solution to a mass fraction less than 0.002 at operating temperatures higher than 73 °C.

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