

Inhibition BaSO₄ Scale in Shell and Tube Heat Exchanger Operated as Linear and Cross Flow Model Using Ethylene Dyaminetetraacetic Acid.

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- **Abstract:** This research was aimed to answer the barium scaling problem that intensively attack piping system of the heat exchanger. The difference of flowing system i.e., linear and cross flow model on shell and tube heat exchanger was investigated in the relationship to its scaling potential. Material that has been used in this research were BaCl₂ and Na₂SO₄ powder in analytical grade. Inhibitor was chosen ethylene dyaminetetraacetic acid (EDTA) in 5.00 and 10.00 ppm. A module shell and tube heat exchanger were prepared to conduct the experiment. Scale deposited found in larger for the experiment in cross flow model as much as 1.4964 gr.m⁻².h⁻¹, otherwise in the linear flow only in 1.3666 gr.m⁻².h⁻¹. The use of EDTA in 5.00 and 10.00 ppm successfully inhibit the scale from 1.3666 to be 1.2148 and 1.1142 gr.m⁻².h⁻¹ for linear flow and also from 1.4964 to be 1.2843 and 1.1771 gr.m⁻².h⁻¹ for cross flow. The use of EDTA resulted inhibition efficiency 11 and 18 % for linear flow, although 14 and 21% for cross flow, for the EDTA concentration 5.00 and 10.00 ppm respectively.
- **Keywords:** Intensively, Heat exchanger, Scaling potential, Module shell, EDTA, Cross flow.