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Author Jun-Cheng Li
Author's Email Address No Public.
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Abstract
This investigation is to establish an experimental facility of spray type evaporator, for measuring the shell side heat transfer coefficient. The optimal design rules among the spray parameters involved the heat transfer performance are discussed. The heat transfer performance of flood type evaporator is also measured and compared. The previous studies indicated that, the dry out phenomenon also occurs at the bottom surface when the surface heat flux increases. This phenomenon will reduce the spray heat transfer performance.
In the present study, each heater tube is sprayed by four nozzles to avoid and delay the dry-out phenomena. The results indicate that the shell side heat transfer coefficients of spray type are much better than those of the flooded type for the entire test range of surface heat fluxes. The critical heat flux of spray type is also higher than that of flooded type. Therefore, if the number of nozzle is increased and be properly arranged, the spray method is useful for shell-and-tube evaporator.
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