

The behavior of lewis number in finned tube cooling coils under highly moist inlet air conditions

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20449708&lokasi=lokal>

Abstrak

The objective of this research was to study the effects of highly moist inlet air conditions such as temperature, relative humidity, and frontal air velocity on the value of the Lewis number (Le) in the cooling and dehumidifying process of air. A finned tube cooling coil was tested under ranges of temperature, relative humidity and frontal velocity. It was found that the Lewis number (Le) varied within the range of 0.92-1.62 and that the increase in inlet air relative humidity tends to decrease the Lewis number (Le). Based on the experimental, a correlation for predicting the Lewis number (Le) was also established in this article. The correlation has the mean absolute error (MAE) of 3.04% and covers 98.07% of the data where a discrepancy within $\pm 10\%$.