

EXPERIMENTAL ANALYSIS OF DEHUMIDIFICATION HEAT TRANSFER CHARACTERISTICS ON COPPER SURFACES

by

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ABSTRACT

Dehumidification heat transfer is associated with low values of heat transfer coefficient because of the presence of non-condensable gas and the absence of saturated vapor in the ambient. Here we studied the heat transfer mechanisms during dehumidification on a vertical copper surface. Heat transfer coefficient at various humidity levels and ambient-surface temperature differences were obtained. A correlation was developed to relate the heat transfer coefficient, relative humidity, and ambient-surface temperature difference. Variations of about ~200% in heat transfer coefficient were observed between low and high humidity levels. It was also observed that the heat transfer coefficient is higher for filmwise condensation than dropwise condensation during dehumidification unlike for pure condensation.