

Experimental Analysis on Metastable Flow of R-410A Through Capillary Tubes

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This work presents the results of an experimental study on the occurrence of the delay of vaporization in the flow of refrigerant blends in adiabatic capillary tubes. Experiments were carried out for R-410A using the capillary tubes laboratorial unit of the Mechanical Engineering Department of University of São Paulo. Sensors were properly positioned along the capillary tubes, concentrated in the region where the delay of vaporization is expected to happen, to allow an accurate determination of the flashing point inception for several operating conditions and geometries. Preliminary measurements for characterization of some geometric parameters like capillary tube diameter and roughness were performed. A total of 44 experimental points, collected from 27 runs, allowed the characterization of the effect of geometric and operational parameters on the underpressure of vaporization and metastable region length.