Experimental Study for the CHF Characteristics of the Vertical Tube Using R-134a

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Abstract

An extensive experimental study of the critical heat flux(CHF) in the vertical smooth tube and vertical rifled tubes of several different types has been under an investigation. The main objective of this study is to investigate the CHF characteristics of the R-134a for vertical tubes covering a wide range of inlet and critical quality and the CHF enhancement mechanism in a rifled tube. These CHF data are required to develop the rifled tube with enhanced CHF by comparing their CHF data with each other. The correlations for water-to-R-134a fluid modeling are developed and CHF enhancement mechanism in a rifled tube is addressed. The test pressures are 11, 13, 16.5, 23.9, and 29.7 bar and the mass fluxes are 285 – 1300 kg/m^2. The heating length of test section is maximum 3000 mm. Some of CHF test results for smooth tube are presented in this paper. The rest tests including 7 different rifled tubes will be scheduled to be finished by end of this year.