

Accepted Manuscript

Title: Experimental investigations of R134a and R123 falling film evaporation on enhanced horizontal tube

Author: Chuang-Yao Zhao, Pu-Hang Jin, Wen-Tao Ji, Ya-Ling He, Wen-Quan Tao

PII: S0140-7007(16)30426-1

DOI: <http://dx.doi.org/doi: 10.1016/j.ijrefrig.2016.12.013>

Reference: IJR 3505

To appear in: *International Journal of Refrigeration*

Received date: 18-4-2016

Revised date: 20-12-2016

Accepted date: 21-12-2016

Please cite this article as: Chuang-Yao Zhao, Pu-Hang Jin, Wen-Tao Ji, Ya-Ling He, Wen-Quan Tao, Experimental investigations of R134a and R123 falling film evaporation on enhanced horizontal tube, *International Journal of Refrigeration* (2016), <http://dx.doi.org/doi: 10.1016/j.ijrefrig.2016.12.013>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Experimental investigations of R134a and R123 falling film evaporation on enhanced horizontal tube

Chuang-Yao Zhao, Pu-Hang Jin, Wen-Tao Ji, Ya-Ling He, Wen-Quan Tao*

Key Laboratory of Thermo-Fluid Science and Engineering, MOE, School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an 710049, P. R. China

* Correspondent author, Tel/Fax: +86-29-82669106, Email: wqtao@mail.xjtu.edu.cn

Highlights:

- Falling film evaporation of R134a and R123 outside different horizontal enhanced tubes is experimentally studied.
- It is found that R134a provides around 2-3 times of heat transfer coefficients of those of R123 at the larger film flow rate region.
- It is indicated that both heat flux and tube surface structure have different effects on the heat transfer performance of two refrigerants.
- Comparisons between the data of smooth tube in the present paper and previous heat transfer correlations are conducted.

Abstract

Falling film evaporation is an efficient heat transfer mode in refrigeration and air conditioning industries. In this paper, the falling film evaporation performances of R134a and R123 outside four enhanced tubes and a smooth tube are tested. The results reveal that: with the decrease of film flow rate the falling film heat transfer coefficients of both R134a and R123 on the five tubes exhibit two general stages (a plateau stage and a sharp drop stage); for R134a the plateau is quite uniform while for R123 a mild decrease occurs with the decrease in film flow rate. The four enhanced

Download English Version:

<https://daneshyari.com/en/article/5017157>

Download Persian Version:

<https://daneshyari.com/article/5017157>

[Daneshyari.com](https://daneshyari.com)