THERMODYNAMIC ASSESSMENT OF LOW GLOBAL WARMING POTENTIAL REFRIGERANT ALTERNATIVES

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Global warming and ozone depletion are leading effects attaching the consideration of environmental organizations. Conversion to alternative hydrofluorocarbons (HFC) refrigerants without chlorine atoms progressed over the last two decades. However recently because of the significant global warming impact of HFCs the hydrofluoroolefins (HFOs) were proposed as new generation alternative refrigerants. This article discussed fluorinated propene based isomers, summarizes refrigerant numbering scheme, flammability, fundamental parameters and thermodynamic properties of isomers containing five-, four- and three-fluorine atoms respectively, summarizes in T-s state diagrams the thermodynamic property estimates. In the present study evaluated the refrigerant performance in an idealized vapor compression refrigeration cycle for air-conditioning example and high tem-perature heat pumping. Presented HFC and HFO blends as non-flammable refrigerants with relatively low global warming potential values.