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(57) Abstract :

The use of specific hydrofluoroethers (HFEs) as the low-temperature heat-transfer medium in secondary loop refrigeration systems is described in detail, as is an apparatus for performing the described procedure. With a low, fairly linear Temperature Difference Factor across the temperature range of -15 degrees Celsius to -65 degrees Celsius, these materials are suited for use as a low-temperature heat transfer medium. Nonflammable, nontoxic, and ecologically benign, the HFEs of the present invention has a high heat transfer capacity and a low viscosity across the working temperatures that are needed. A further advantage of these materials is that they do not undergo phase shifts across the range of working temperatures necessary, eliminating the need for pressurized systems due to their high boiling and low freezing points.

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