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[54] **METHOD OF DYEING HYDROPHOBIC TEXTILE FIBERS WITH COLORANT MATERIALS IN SUPERCRITICAL FLUID CARBON DIOXIDE**

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Related U.S. Application Data

[63] Continuation-in-part of application No. 09/089,639, Jun. 3, 1998, abandoned.

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[51] Int. Cl.⁷ **D06P 1/00**; **D06P 5/00**

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[52] U.S. Cl. **8/475**; **8/922**

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[58] Field of Search **8/475**, **922**

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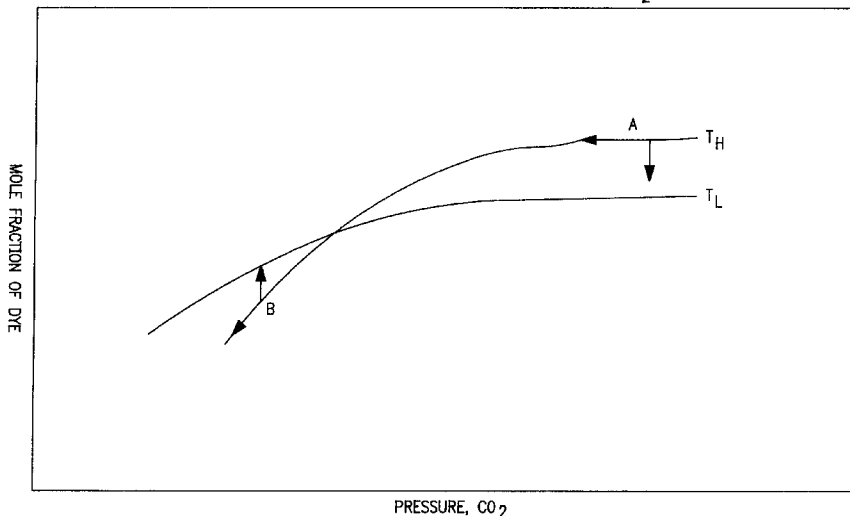
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[57] ABSTRACT

Processes for dyeing a hydrophobic textile fiber with a colorant material using a SCF—CO₂ dyebath are described. One process employs cooling, without venting or removing CO₂ from the system, to a target CO₂ temperature at or below the glass transition temperature of the hydrophobic fiber, followed by the venting of the dyeing system to atmospheric pressure. The other process employs venting, without cooling, to a target CO₂ density where dye is no longer soluble in the SCF—CO₂, followed by cooling to a target temperature and then venting to atmospheric pressure. Optionally, the temperature of the dyeing process is established by heating the process according to a selected temperature profile.

49 Claims, 7 Drawing Sheets

SOLUBILITY BEHAVIOR OF DYES IN SUPERCRITICAL CO₂



PRESSURE, CO₂