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DIC process for treatment of organic materials

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Abstract

A new process for material texturing, instantaneous controlled pressure drop (DIC), consists in heating wet materials in an autoclave, followed by a fast expansion ($\Delta P/\Delta t > 2 \cdot 10^5$ Pa/s) into a pressure lower than the atmospheric one (5 kPa). The vapour, which evolves due to the rapid pressure drop, mechanically strains the material. This stress creates porous structures, breaks the cells and destroys micro-organisms. The temperature of the material before the expansion is usually higher than 100°C and the pressure in the autoclave corresponds to the saturated steam pressure. Manifold applications of this process are presented on the example of the extraction of essential oil from dried ylang-ylang flowers. The essential oil is separated from the condensate. The treated flowers are also analysed. The results are compared with the classical steam distillation.

Keywords: Ylang-ylang, extraction, essential oil, steam distillation, Instantaneous Controlled Pressure Drop

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