# Natural Convection in Wavy-Wall Cavities Filled with Power-Law Fluid

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**Abstract :** This paper investigates the natural convection heat transfer performance in a complex-wavy-wall cavity filled with power-law fluid. In performing the simulations, the continuity, Cauchy momentum and energy equations are solved subject to the Boussinesq approximation using a finite volume method. The simulations focus specifically on the effects of the flow behavior index in the power-law model and the Rayleigh number on the flow streamlines, isothermal contours and mean Nusselt number within the cavity. The results show that pseudoplastic fluids have a better heat transfer performance than Newtonian or dilatant fluids. Moreover, it is shown that for Rayleigh numbers greater than Ra=103, the mean Nusselt number has a significantly increase as the flow behavior index is decreased.

**Keywords :** non-Newtonian fluid, power-law fluid, natural convection, heat transfer enhancement, cavity, wavy wall

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