

# Laboratory Investigation of Stress-Sensitivity of Non-Darcy Gas Flow Parameters

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## Abstract

Based on results of 159 series of high pressure/high temperature/high velocity gas flooding experiments on five different rock samples under field reservoir conditions, non-Darcy flow parameters have been investigated. It is reconfirmed, and extended to new conditions, that permeability increases, while non-Darcy flow coefficient decreases with effective stresses; both are independent of shear stresses. General formulas have been developed to quantify the stress-sensitivity in terms of nominal non-Darcy parameters. General equations have been proposed to predict the change of permeability and non-Darcy flow coefficient with given effective stresses and nominal non-Darcy flow parameters.