

STEADY STATE FLOW OF AVERY ISLAND SALT†

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ABSTRACT

A new low stress, low strain rate relation has been determined for Avery Island rocksalt deformed experimentally in the steady state flow regime. Relative to the power law creep expression used previously ($\dot{\epsilon} \propto \sigma^{4.5}$), this nonlinear relation ($\dot{\epsilon} \propto \sigma^{3.4}$) predicts strain rates higher and equivalent viscosities lower by two orders of magnitude. Combined with the average paleostress estimate from 20 different rocksalt structures, 0.9 MPa, strain rate predicted at 75°C is 10^{-12}s^{-1} and viscosity is $3 \times 10^{17} \text{ Pa}\cdot\text{s}$. Stresses of this magnitude are most probably caused by tectonic forces or differential loading; they can be generated by buoyancy forces alone only after 10^3 amplification.

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