

Oldroyd, J. G

On the formulation of rheological equations of state. (English) Zbl 1157.76305
Proc. R. Soc. Lond., Ser. A 200, 523-541 (1950).

Summary: The invariant forms of rheological equations of state for a homogeneous continuum, suitable for application to all conditions of motion and stress, are discussed. The right invariance properties can most readily be recognized if the frame of reference is a co-ordinate system convected with the material, but it is necessary to transform to a fixed frame of reference in order to solve the equations of state simultaneously with the equations of continuity and of motion. An illustration is given of the process of formulating equations of state suitable for universal application, based on non-invariant equations obtained from a simple experiment or structural theory. Anisotropic materials, and materials whose properties depend on previous rheological history, are included within the scope of the paper.

MSC:

[76A05](#) Non-Newtonian fluids

Cited in **3** Reviews
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