Flow of a Casson fluid between two rotating cylinders

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Flow characteristics of the time-independent non-Newtonian fluid obeying Casson's stress–strain relation have been investigated in the annular space between two coaxial rotating cylinders. The problem is considered when the inner cylinder is at rest and the outer cylinder rotating with a constant velocity. For the steady flow condition, the velocity distribution, pressure coefficient, stresses and shear rates have been obtained for various values of aspect ratio. Also the extent of core formation and critical values of Casson number have been determined. The analysis is useful for viscometric studies of blood in rheogoniometers and also for getting insight into blood flow anomalies.

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