

# Spreading of Fluids on Solids Under Pressure: Effect of Slip

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## Abstract

Spreading of different types of fluid on substrates under an impressed force is an interesting problem. Here we study spreading of four fluids, having different hydrophilicity and viscosity on two substrates - glass and perspex, under an external force. The area of contact of fluid and solid is video-photographed and its increase with time is measured. The results for different external forces can be scaled onto a common curve. We try to explain the nature of this curve on the basis of existing theoretical treatment where either the no-slip condition is used or slip between fluid and substrate is introduced. We find that of the eight cases under study, in five cases quantitative agreement is obtained using a slip coefficient.

**Keywords:** Spreading, squeeze film, viscous flow, slip