



Mystic Smoke: The rheology of magic

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Mystic Smoke is a material used in performance magic that is a highly-extensible yield-stress fluid. In this image, rapid extension of a thin film of Mystic Smoke between one's fingers creates numerous thin fibrils due to the material's high extensional viscosity. The fibrils persist due to the yield stress of the fluid and are then able to detach to create a "smoke" effect as shown. These rheological properties combine to allow a performer to produce smoke from their hands and can elevate a simple trick into something seemingly magical. Materials with properties like those of Mystic Smoke are relevant in adhesives as well as extrusion processes that include direct-write 3D printing.