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Role of Gas Composition in Viscous Drop Splashing CACEY S. STEVENS, SIDNEY R. NAGEL, James Franck Institute, University of Chicago — Splashing occurs when a liquid drop impacts on a smooth, dry surface at high velocity. It has been discovered that the pressure of the surrounding air is important in causing a splash.¹ Moreover, viscous splashing occurs at a much later time than the splashing of an inviscid liquid.² Here we investigate the relationship between the threshold pressure, P_T , and the impact velocity, V_0 , for viscous splashes. P_T demonstrates only a weak dependence on impact velocity above 2.0 m/s. Also, the composition of the gas in which splashing occurs is varied to gain insight on the role of gas molecular weight on P_T in the viscous regime.

¹L. Xu, S. Nagel, and W. Zhang. Phys. Rev. Lett. 94, 184505 (2005).

²L. Xu, Phys. Rev. E 75, 056316 (2007).

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