

Effect of Nozzle Features on PMDI Sprays

D. Nguyen, D. Duke and D. Honnery

Laboratory for Turbulence Research in Aerospace and Combustion,
Mechanical and Aerospace Engineering, Monash University, VIC 3800, AUSTRALIA
dungt.nguyen@monash.edu

ABSTRACT

This paper reports on the study of the effect of nozzle hole number and mixture formulation on the spray from a device designed to simulate the pressurised metered dose inhaler. Two techniques used are backlit high-speed imaging and droplet sizing laser diffraction. The nozzles investigated are single-hole and twin-hole nozzles. Two non-drug mixtures investigated are HFA134a (as propellant) mixed with 5% and 15% of ethanol (as co-solvent) by weight (w/w). It was found for investigated conditions that while hole number plays some role on the spray structure with the droplet sizes being slightly larger for twin-hole nozzle, more ethanol mixed manifests the spray as being denser with larger droplets for both nozzles.