

MicroFab Technote 99-05 Performance of Four Fluids

To illustrate the variation in performance as a function of fluid properties, four fluids were tested in the same piezoelectric demand-mode device (71 micron orifice diameter). The fluids, and their properties, are given in the table below. Figure 1 compares the drive voltage required to obtain a 3 m/s velocity for each fluid, along with the resulting drop volume. Figures 2 and 3 compare the performance of the fluid over frequency, up to the resonant frequency of the device (~20kHz).

fluid	viscosity cp	tension dy/cm	density gr/cc
100% Isopropanol	2.0	22	0.80
100% Butyl Carbitol	5.3	30	0.91
80% Butyl Carbitol, 20% Ethylene Glycol	8.0	29	0.96
100% Ethylene Glycol	18.0	47	1.11

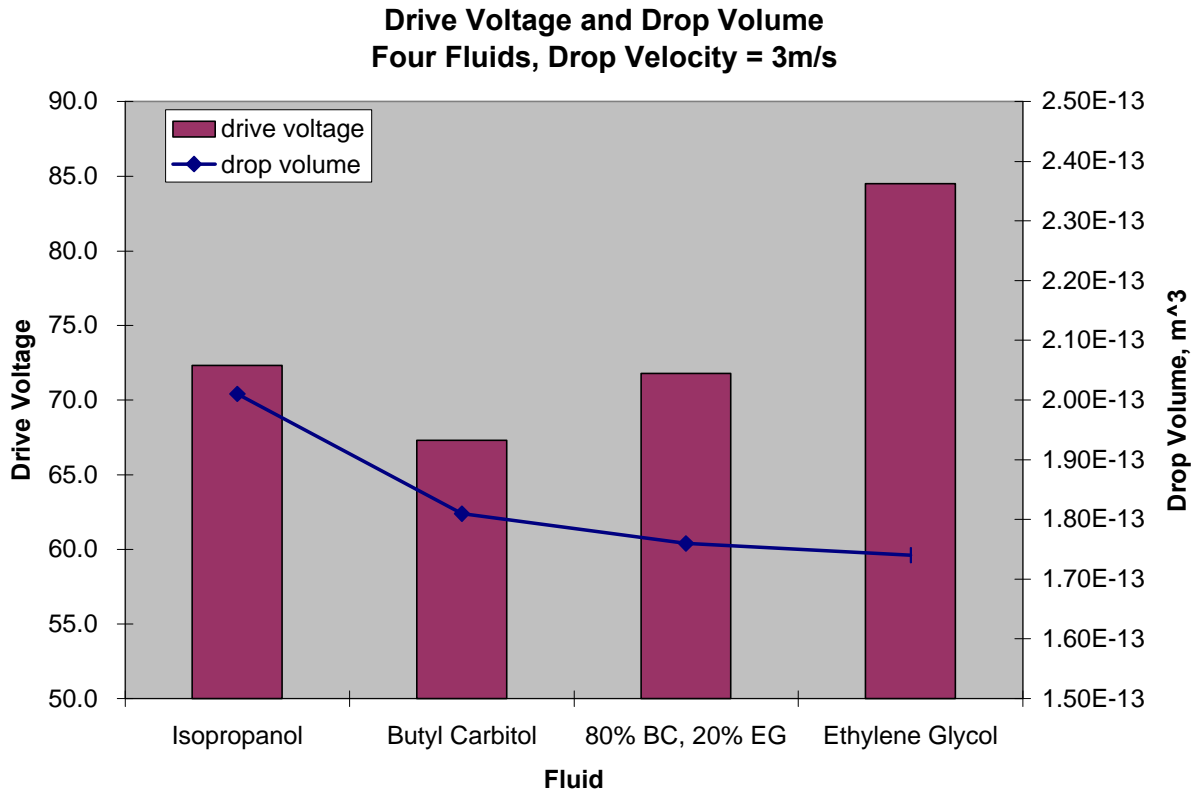


Figure 1

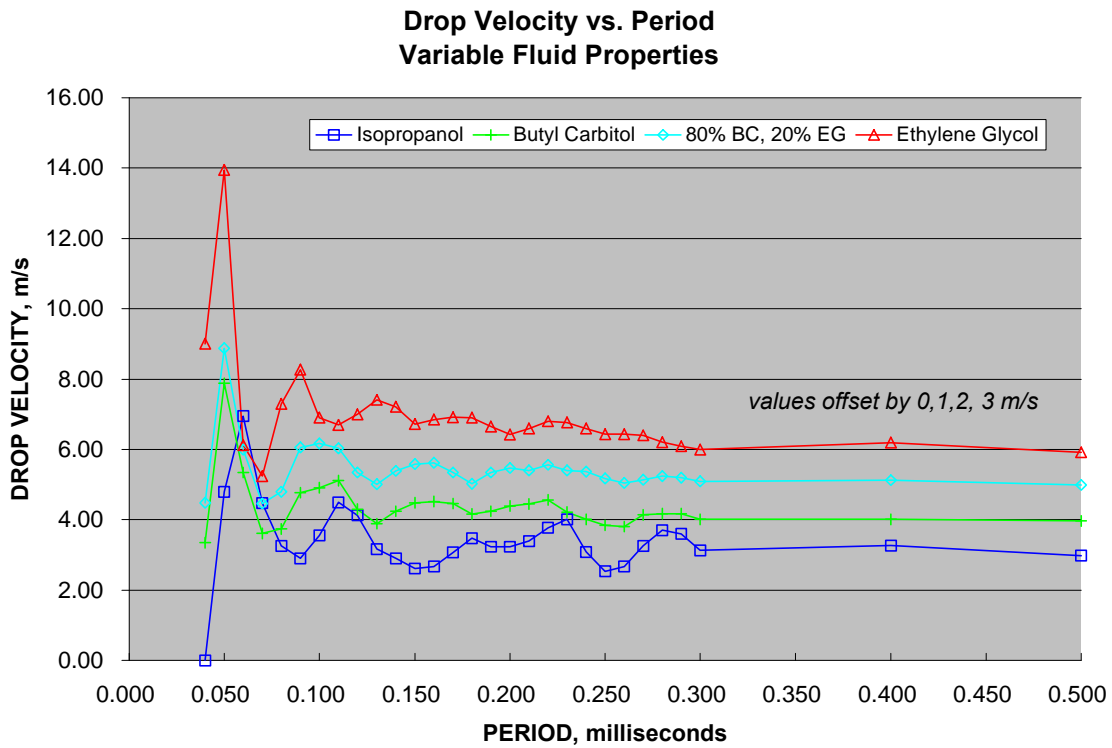


Figure 2

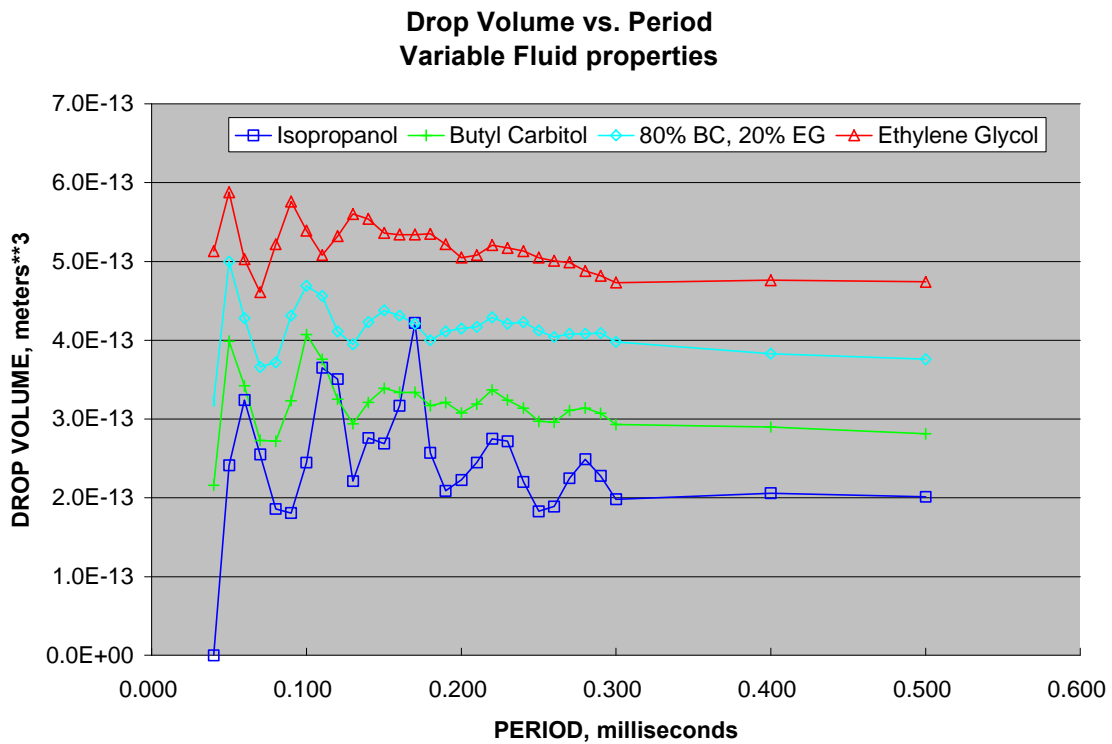


Figure 3