

HP DME

Aerosol Propellant

Physical Properties of HP DME and n-Butane Mixtures

Technical Information

For the full range of HP DME/B compositions, this bulletin presents the saturated vapor pressures and liquid densities from 70°F to 130°F (21.1°C to 54.4°C) and flammability data for the vapor mixture in air.

The saturated vapor pressure data for HP DME/B are shown in Figure 1 and Table 1. The graph is based on recent experimental data for mixtures containing 28.1 and 61.7 weight percent HP DME and literature data for the pure components (Refs. 1 and 2).

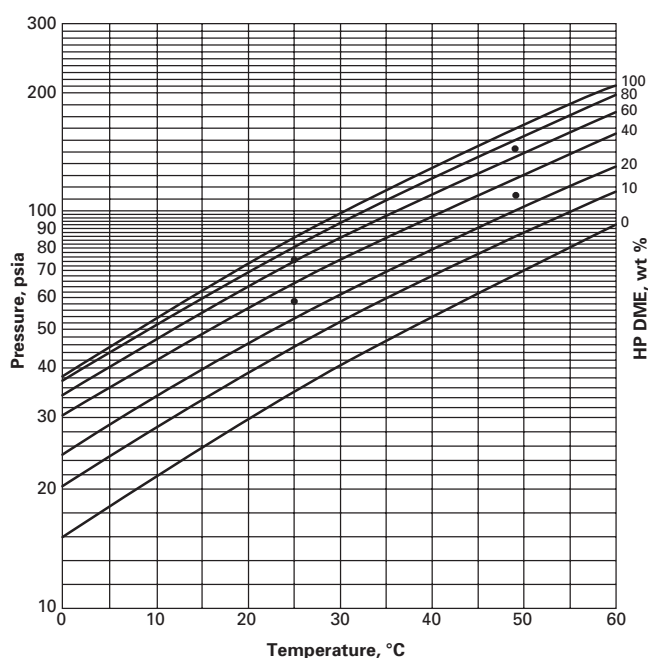
Figure 2 and Table 2 show the liquid densities that were calculated from pure component data (Refs. 1 and 2).

The flammability of HP DME/B vapor mixtures in air is shown in Figure 3 and Table 3. These data are based on literature values for the pure components (Refs. 3 and 4) and experimental values for a 50/50 mole percent (44.3/55.7 wt %) HP DME/B mixture.

References

1. ASHRAE, *Handbook of Fundamentals*, 1972.
2. DuPont Fluorochemicals Laboratory data.
3. Bulletin 503, Bureau of Mines, "Limits of Flammability of Gases and Vapors".
4. *Handbook of Aerosol Technology*, P.A. Sanders, Van Nostrand Reinhold Company, 1979.

Figure 1. Saturated Vapor Pressures of HP DME/B Mixtures



Note: Data based on pure component data plus shown experimental points (■)

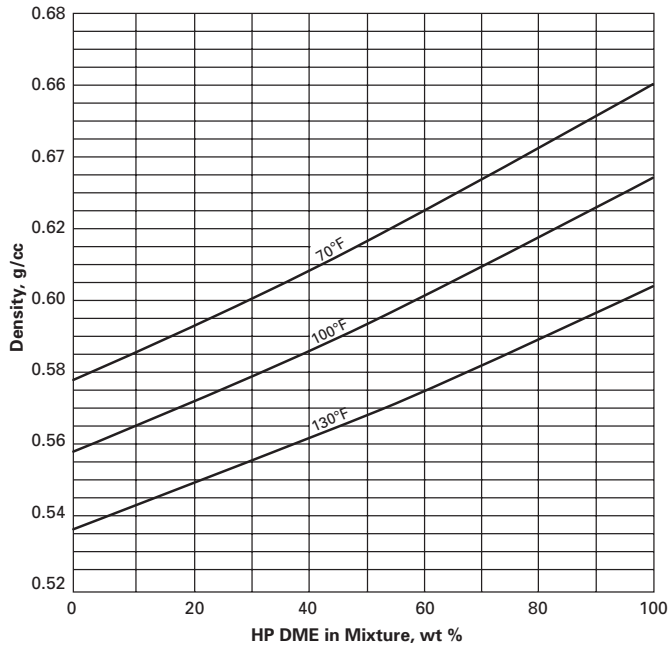
Table 1. Saturated Vapor Pressures of HP DME/B Mixtures—Experimental Data

HP DME in Propellant Mixture, wt %	Pressure, psia	
	77°F (25°C)	130°F (54.4°C)
0 ^a	35.26	80.83
28.12	59.7	127.1
61.73	75.1	160.7
100 ^b	85.2	185.0

^aRef. 1

^bRef. 2

Figure 2. Liquid Densities of HP DME/B Mixtures



Note: Data calculated from pure component densities.

Table 2. Calculated Liquid Densities of HP DME/B Mixtures

HP DME, wt %	Densities, g/cc at		
	70°F	100°F	130°F
0 ^a	0.5775	0.5580	0.5370
20	0.5923	0.5717	0.5492
40	0.6079	0.5861	0.5619
60	0.6243	0.6012	0.5753
80	0.6417	0.6172	0.5893
100 ^b	0.660	0.634	0.604

^aRef. 1

^bRef. 2

Figure 3. Flammability Limits of HP DME/B Mixtures

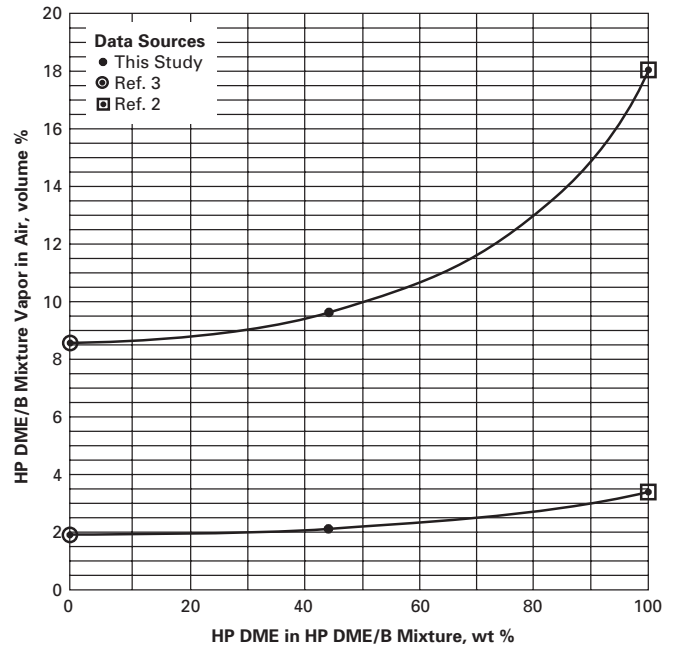


Table 3. Flammability Limits of HP DME/B Vapor Mixtures in Air

Concentration of HP DME A in HP DME/B Mixture		Flammability Limits in Air, vol %	
Weight, %	Mole, %	Lower	Upper
0.0 ^a	0.0	1.9	8.5
44.3	50.0	2.1 ± 0.2	9.5 ± 0.2
100.0 ^{b,c}	100.0	3.4, 3.4	18.0, 15.8

^aRef. 3

^bRef. 4

^cRef. 2

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Replaces: E-64709-1

C-10806 (3/16)