

# HP DME

## Aerosol Propellant

### Physical Properties of HP DME and Isobutane Mixtures

## Technical Information

For the full range of HP DME/I 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 mixtures in air.

The saturated vapor pressure data for HP DME/I 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).

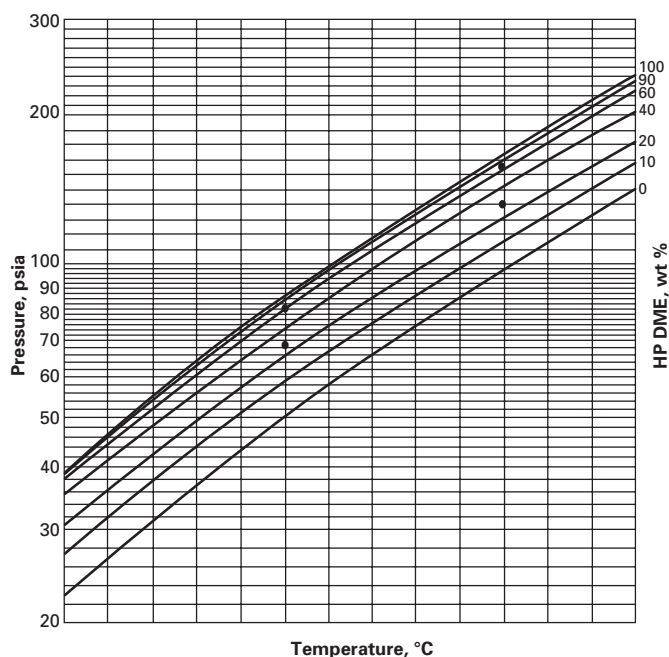
Figure 2 and Table 2 show the liquid densities, which were calculated from pure component data (Refs. 1 and 2).

The flammability of HP DME/I 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/I 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/I Mixtures



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

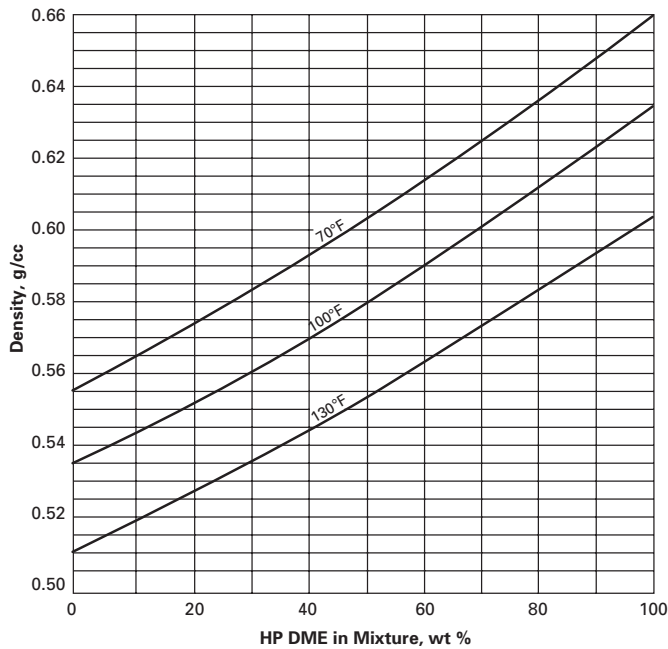
**Table 1.** Saturated Vapor Pressures of HP DME/I Mixtures—Experimental Data

HP DME in Propellant Mixture, wt %	Pressure at Shown Temperature, psia	
	77°F (25°C)	130°F (54.4°C)
28.12	70.5	148.5
61.73	81.6	172.9
0 <sup>a</sup>	50.53	109.72
100 <sup>b</sup>	86.0	184.0

<sup>a</sup>Ref. 1

<sup>b</sup>Ref. 2

**Figure 2.** Liquid Densities of HP DME/I Mixtures



Note: Data calculated from pure component densities.

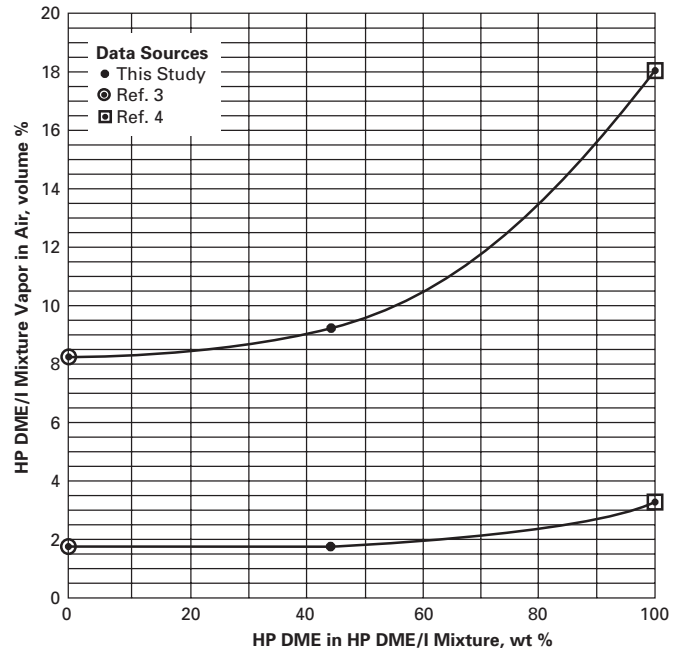
**Table 2.** Calculated Liquid Densities of HP DME/I Mixtures

HP DME, wt %	Densities, g/cc at		
	70°F	100°F	130°F
0 <sup>a</sup>	0.5559	0.5347	0.5117
20	0.5740	0.5517	0.5278
40	0.5933	0.5704	0.5450
60	0.6140	0.5901	0.5634
80	0.6362	0.6113	0.5830
100 <sup>b</sup>	0.660	0.634	0.604

<sup>a</sup>Ref. 1

<sup>b</sup>Ref. 2

**Figure 3.** Flammability Limits of HP DME/I Mixtures



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

Concentration of HP DME A in HP DME/I Mixture		Flammability Limits in Air, vol %	
Weight, %	Mole, %	Lower	Upper
0.0 <sup>a</sup>	0.0	1.8	8.4
44.3	50.0	1.7 ± 0.3	9.3 ± 0.3
100.0 <sup>b,c</sup>	100.0	3.4, 3.4	18.0, 15.8

<sup>a</sup>Ref. 3

<sup>b</sup>Ref. 4

<sup>c</sup>Ref. 2

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