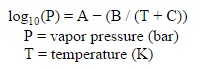
**FPST 3373 Lab week 8 Date: 10/27 Name: Xinyu Liu**



At 25oC, 1atm LFL (Vol%) A B C

Methanol 6.7 5.15853 1569.613 -34.846

Ethanol 3.3 4.92531 1432.526 -61.819

Heptane 1.05 4.02832 1268.636 -56.199

1. What is the lower flammable limit for a fuel that contains 15 % heptane (C7H16), 50 % methanol (CH3OH), and 35 % ethanol (C2H5OH) at 25 °C?



1. What is the chemical equation for a fuel that contains 15 % heptane (C7H16), 50 % methanol (CH3OH), and 35 % ethanol (C2H5OH) that is at the lower flammable limit at 25 °C?



1. What is the stoichiometric equation for a fuel that contains 15 % heptane (C7H16), 50 % methanol (CH3OH), and 35 % ethanol (C2H5OH) at 25 °C?



1. What is the equivalence ratio for a fuel that contains 15 % heptane (C7H16), 50 % methanol (CH3OH), and 35 % ethanol (C2H5OH) that is at the lower flammable limit at 25 °C?



1. What is the minimum piloted ignition temperature for heptane at 25 °C and 1 atm? Heat of vaporization =0.342 kJ/g.



1. The ignition temperature of a material is 350 °C. If the room is initially at 20 °C, when does the material reach the ignition temperature if exposed to a heat flux of 10 kW/m2? Assume thermally thin material, no heat losses, k=0.12 W/m-K, =510 kg/m3, cp=1.3 J/g-K, d=1 mm.



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