

## **MIX-CP : THE HYDROCARBON HEAT CAPACITY CALCULATOR**

MIX-CP is a software application that can be used to find specific heat at constant pressure ( $C_p$ ), specific heat at constant volume ( $C_v$ ) and heat capacity ratio ( $\gamma$ ) for hydrocarbon mixtures at given temperature and pressure conditions. MIX-CP comprises of macros written for MS excel using Visual Basic for Application (VBA) programming language. MIX-CP can be used to determine heat capacity at constant pressure at given temperature and pressure conditions for a hydrocarbon mixture comprising of up to 112 numbers of possible non-polar and mildly polar hydrocarbons using LEE-KESLER CORRELATION and mixing rule recommended by Knapp. Desired non-polar and mildly polar hydrocarbons not included in MIX-CP could be interchanged with existing hydrocarbons to include them in MIX-CP. The temperature fed in can be between 0.3 times and 4 times of pseudo-critical temperature calculated by MIX-CP ( $0.3 < \text{reduced temperature} < 4$ ). The pressure fed in can be between 0.01 times and 10 times pseudo-critical pressure calculated by MIX-CP ( $0.01 < \text{reduced pressure} < 10$ ). MIX-CP excludes heat capacity values near critical point (reduced pressure =1 and reduced temperature =1) as heat capacity values can not be calculated accurately near critical point. MIX-CP further calculates heat capacity at constant volume ( $C_v$ ) using the calculated values of heat capacity at constant pressure ( $C_p$ ) and reduced temperature ( $T_r$ ) and reduced pressure ( $P_r$ ) values in a standard correlation available in literature. The calculated values of  $C_p$ ,  $C_v$  and  $\gamma$  are not ideal gas values but correspond to real gas scenario.