SYSTEM –

Water and Morpholine

Activity Coefficient Model –

Margules

Type of Equation	Parameters	$\ln \gamma_1 =$ $\ln \gamma_2 =$		Notation of Parameters in Data Sheet
Margules [6]	A_{12}	$\left[A_{12} + 2(A_{21} - A_{12}) x_1 \right] x_2^2$	(28a)	A 12
	A_{21}	$\left[A_{21} + 2(A_{12} - A_{21}) x_2 \right] x_1^2$	(28b)	A 21

2. Antoine Vapor Pressure Equation

The Antoine vapor pressure equation is used in the following form:

$$\log[p_i^0] = A - \frac{B}{t + C} \tag{70}$$

with $[p_i^0]$ vapor pressure of pure component i in mm Hg
  t temperature in degrees Celsius ($^\circ$ C)

The Antoine constants A, B, and C are given with respective temperature regions (in $^\circ$ C).

Note- Here it is log (Base 10).

Value of Constants

```
(1) WATER
                                                              H2O
(2) MORPHOLINE
                                                              C4H9NO

+++++ ANTOINE CONSTANTS           REGION +++++
(1)    8.07131 1730.630     233.426     1- 100 C     METHOD 1   CONSISTENCY
(2)    7.16030 1447.700     210.000    44- 170 C     METHOD 2       +
                                                                    -
PRESSURE=  563.00 MM HG    (   .751 BAR   )
```

CONSTANTS:	A12	A21	α_{12}	γ_1^∞	γ_2^∞	OBJECTIVE FUNCTION	
MARGULES	.1776	-.0219		1.19	.98	.0705	G
WILSON	1675.0732	-1508.1875		1.15	1.02	.0847	G
NRTL	-683.5809	999.7511	.2724	1.18	1.00	.0785	G
UNIQUAC	670.2484	-728.3500		1.07	.86	.0870	G

Please take data corresponding to Margules

T-X-Y Data

EXPERIMENTAL DATA		
T DEG C	X1	Y1
113.67	.0811	.1758
109.10	.1834	.3427
107.35	.2242	.4458
105.23	.2883	.5115
102.78	.3736	.5928
101.61	.4287	.6370
100.19	.5135	.6949
97.41	.6899	.8211
96.67	.7173	.8398
95.27	.8084	.9042
93.86	.8792	.9457
93.75	.8983	.9554
92.92	.9385	.9747
92.69	.9521	.9803
92.42	.9816	.9923

Take the molar volume from NIST Database. If not available there, please contact the TA's (Sandra and Krishna).

All data taken from Dechema Chemistry Data Series.