SYSTEM –

Phenol & 3,5Dimethylphenol

Type of Equation –

Wilson

	Type of Equation	Parameters	$\ln \gamma_1 =$ $\ln \gamma_2 =$	Notation of Parameters in Data Sheet
	Wilson [8]	$\lambda_{12} - \lambda_{11}$ [1])	$-\ln(x_1 + \Lambda_{12}x_2) + x_2\left(\frac{\Lambda_{12}}{x_1 + \Lambda_{12}x_2} - \frac{\Lambda_{21}}{\Lambda_{21}x_1 + x_2}\right)$ (30a)	A 12
		$\lambda_{21} - \lambda_{22}$	$-\ln(x_2 + \Lambda_{21}x_1) - x_1\left(\frac{\Lambda_{12}}{x_1 + \Lambda_{12}x_2} - \frac{\Lambda_{21}}{\Lambda_{21}x_1 + x_2}\right)$ (30b)	A 21

1) $\Lambda_{12} = \frac{V_2^L}{V_1^L} \exp -\frac{\lambda_{12} - \lambda_{11}}{RT}$ $\Lambda_{21} = \frac{V_1^L}{V_2^L} \exp -\frac{\lambda_{21} - \lambda_{22}}{RT}$

V_i^L molar volume of pure liquid component i. For values of V_i^L see Appendix A.

λ_{ij} interaction energy between components i and j $\lambda_{ij} = \lambda_{ji}$

Parameters are given in cal/mol with the gas.

2. Antoine Vapor Pressure Equation

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

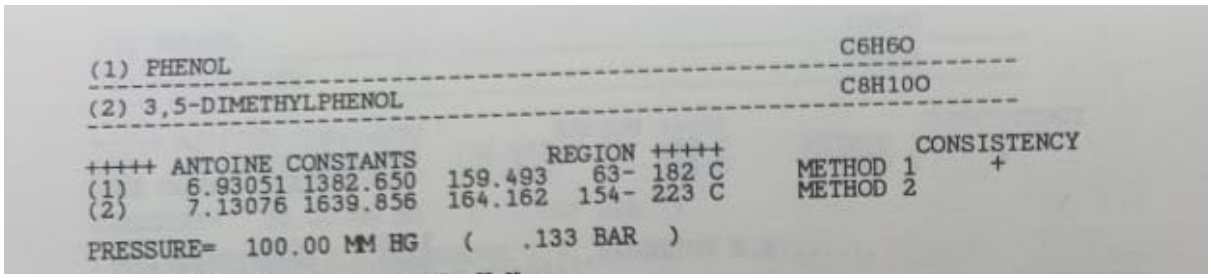
$$\log[p_i^0] = A - \frac{B}{t + C} \quad (70)$$

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

The Antoine constants A, B, and C are given with respective temperature regions (in ° C).

Note- Here it is log (Base 10).

Value of Constants



(1) PHENOL C6H6O

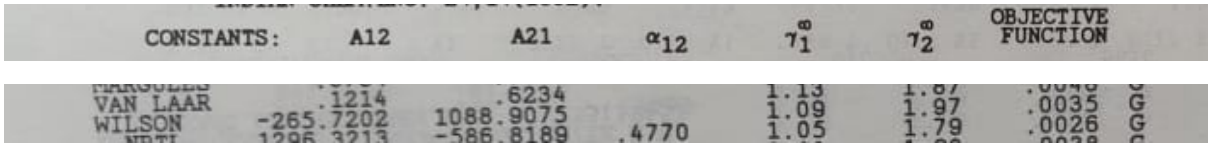
(2) 3,5-DIMETHYLPHENOL C8H10O

+++++ ANTOINE CONSTANTS REGION +++++ CONSISTENCY

(1) 6.93051 1382.650 159.493 63- 182 C METHOD 1 +

(2) 7.13076 1639.856 164.162 154- 223 C METHOD 2

PRESSURE= 100.00 MM HG (.133 BAR)

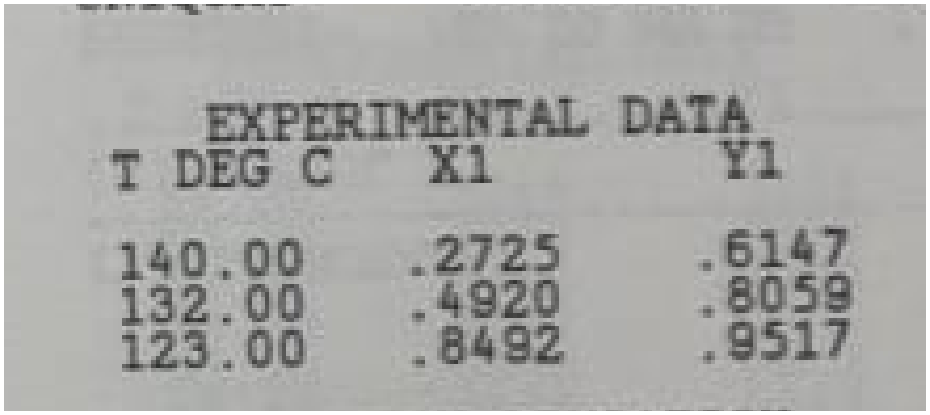


CONSTANTS:	A12	A21	α_{12}	γ_1^∞	γ_2^∞	OBJECTIVE FUNCTION
VAN LAAR	.1214	.6234		1.13	1.87	.0048
WILSON	-265.7202	1088.9075		1.09	1.97	.0035
	1296.3213	-586.8189	.4770	1.05	1.79	.0026

Please take data corresponding to Wilson

There is no alpha12 for Wilson.

T-X-Y Data



EXPERIMENTAL DATA

T DEG C	X1	Y1
140.00	.2725	.6147
132.00	.4920	.8059
123.00	.8492	.9517

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

All data taken from Dechema Chemistry data series