SYSTEM –

Water and N-N Dimethylacetamide

Activity Coefficient Model –

NRTL

Type of Equation	Parameters	$\ln \gamma_1$ = $\ln \gamma_2$ =		Notation of Parameters in Data Sheet
NRTL [9] (continued)	$g_{12} - g_{22}$ [2] $g_{21} - g_{11}$ α_{12}	$x_2^2 \left[\tau_{21} \left(\frac{G_{21}}{x_1 + x_2 G_{21}} \right)^2 + \left(\frac{\tau_{12} G_{12}}{(x_2 + x_1 G_{12})^2} \right) \right]$ $x_1^2 \left[\tau_{12} \left(\frac{G_{12}}{x_2 + x_1 G_{12}} \right)^2 + \left(\frac{\tau_{21} G_{21}}{(x_1 + x_2 G_{21})^2} \right) \right]$	(31a) (31b)	A 12 A 21 ALPHA 12

2) $\tau_{12} = \frac{g_{12} - g_{22}}{RT}$ $\tau_{21} = \frac{g_{21} - g_{11}}{RT}$

$G_{12} = \exp(-\alpha_{12} \tau_{12})$ $G_{21} = \exp(-\alpha_{21} \tau_{21})$

g_{ij} parameter for interaction between components i and j; $g_{ij} = g_{ji}$

α_{ij} nonrandomness parameter; $\alpha_{ij} = \alpha_{ji}$

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:

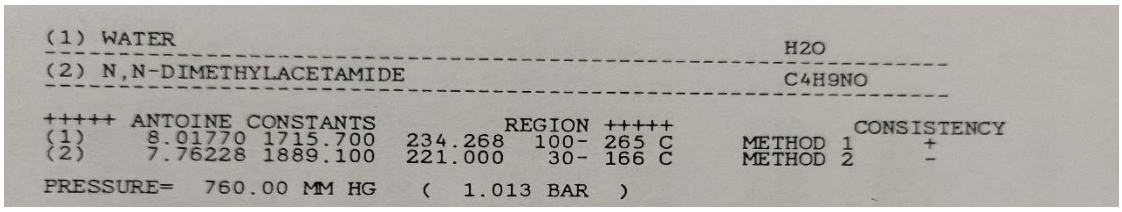
$$\log[p_i^0] = A - \frac{B}{t + C} \qquad (70)$$

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

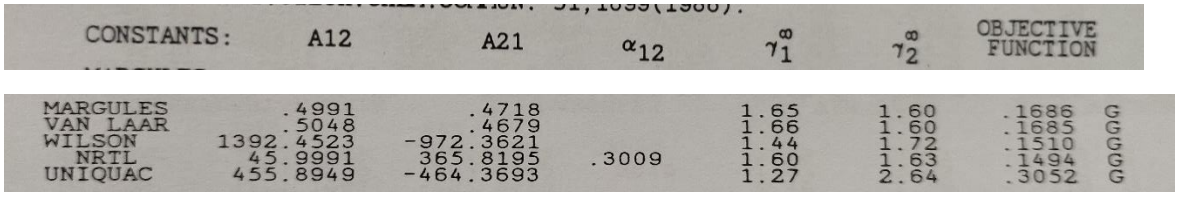


(1) WATER		H2O
(2) N,N-DIMETHYLACETAMIDE		C4H9NO

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

(1)	8.01770	1715.700	234.268	100- 265 C	METHOD 1	+
(2)	7.76228	1889.100	221.000	30- 166 C	METHOD 2	-

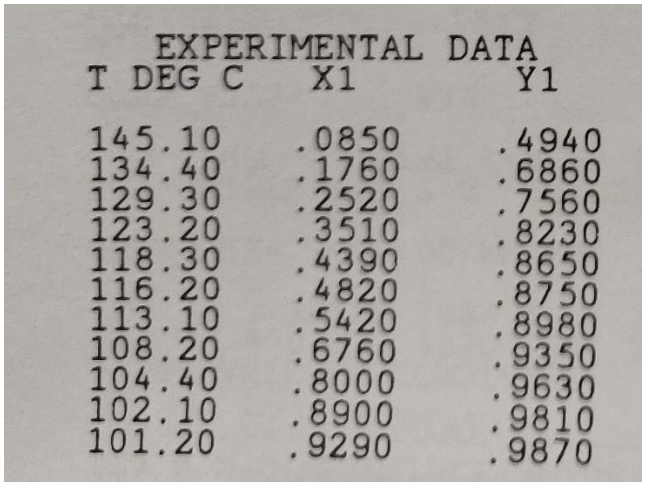
PRESSURE= 760.00 MM HG (1.013 BAR)



CONSTANTS:	A12	A21	α_{12}	γ_1^∞	γ_2^∞	OBJECTIVE FUNCTION	
MARGULES	.4991	.4718		1.65	1.60	.1686	G
VAN LAAR	.5048	.4679		1.66	1.60	.1685	G
WILSON	1392.4523	-972.3621		1.44	1.72	.1510	G
NRTL	45.9991	365.8195	.3009	1.60	1.63	.1494	G
UNIQUAC	455.8949	-464.3693		1.27	2.64	.3052	G

Please take data corresponding to NRTL

T-X-Y Data



EXPERIMENTAL DATA

T DEG C	X1	Y1
145.10	.0850	.4940
134.40	.1760	.6860
129.30	.2520	.7560
123.20	.3510	.8230
118.30	.4390	.8650
116.20	.4820	.8750
113.10	.5420	.8980
108.20	.6760	.9350
104.40	.8000	.9630
102.10	.8900	.9810
101.20	.9290	.9870

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