COMPONENTS:	EVALUATOR:
(1) *m*-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986

CRITICAL EVALUATION:

Quantitative solubility data for the *m*-xylene (1) – water (2) system have been reported in the publications listed in Table 1.

TABLE 1: Quantitative Solubility Studies of
the *m*-Xylene (1) – Water (2) System

Reference	T/K	Solubility	Method
Andrews and Keefer (ref 1)	298	(1) in (2)	spectrophotometric
Bohon and Claussen (ref 2)	274-313	(1) in (2)	spectrophotometric
Pryor and Jentoft (ref 3)	344-544	(1) in (2)	synthetic
Guseva and Parnov (ref 4)	400-512	(1) in (2)	unspecified[a]
Hoegfeldt and Bolander (ref 5)	298	(2) in (1)	Karl Fischer
Englin *et al.* (ref 6)	283-303	(2) in (1)	analytical
Polak and Lu (ref 7)	273,298	mutual	GLC, Karl Fischer
Sutton and Calder (ref 8)	298	(1) in (2)	GLC
Chernoglazova and Simulin (ref 9)	293-343	mutual	synthetic, GLC
Price (ref 10)	298	(1) in (2)	GLC
Krzyzanowska and Szeliga (ref 11)	298	(1) in (2)	GLC
Sanemasa *et al.* (ref 12)	288-318	(1) in (2)	spectrophotometric

a The synthetic method was probably used.

The original data in all these publications are compiled in the Data Sheets immediately following this Critical Evaluation. For convenience, further discussion of this system will be divided into three parts.

1. SOLUBILITY OF *M*-XYLENE (1) IN WATER (2)

All the available data for the solubility of *m*-xylene in water at low temperatures ($T \lesssim 343$K) are summarized in Table 2 with the exception of the datum of Krzyzanowska and Szeliga (ref 11) which does not appear to be independent of that of Price (ref 10) and has therefore been excluded from consideration.

The data are in general in reasonable agreement although with a few exceptions the agreement is insufficient for the average values to be Recommended. Selected data from Table 2 are plotted in Figure 1.

COMPONENTS:	EVALUATOR:
(1) *m*-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986

CRITICAL EVALUATION: (continued)

TABLE 2: Recommended (*R*) and Tentative Values of the Solubility of *m*-Xylene (1) in Water (2)

T/K	Reported values[a] 10^2g(1)/100g sln	"Best" values (± σ_n)[b] 10^2g(1)/100g sln	10^5 x_1
273	2.10* (ref 2), 1.96 (ref 7)	2.03 ± 0.07 (*R*)	3.44 (*R*)
283	1.97* (ref 2)	2.0	3.4
293	1.95* (ref 2), 1.6 (ref 9) 1.60* (ref 12)	1.7 ± 0.2	2.9
298	1.73 (ref 1), 1.96 (ref 2), 1.62 (ref 7), 1.46 (ref 8), 1.7* (ref 9), 1.34 (ref 10), 1.62 (ref 12)	1.6 ± 0.2	2.7
303	1.98* (ref 2), 1.8* (ref 9), 1.65* (ref 12)	1.8 ± 0.1	3.1
313	2.19* (ref 2), 2.2 (ref 9)	2.20 (*R*)	3.73 (*R*)
323	2.6* (ref 9), 2.0* (ref 12)	2.3 ± 0.3	3.9
333	3.2* (ref 9)	3.2	5.4
343	3.5* (ref 3)	3.5	5.9

[a] Values marked with an asterisk (*) have been obtained by the Evaluator by graphical interpolation of the authors' original data.
[b] Obtained by averaging where appropriate; σ_n has no statistical significance.
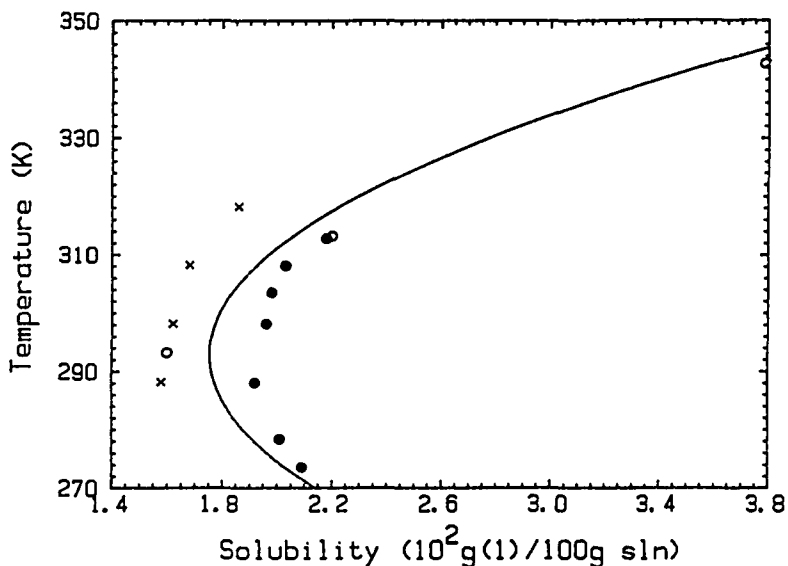

FIGURE 1.   Solubility of *m*-xylene in water; selected data: ref 2 (●); ref 9 (o); ref 12 (x). Solid curve fitted to "Best" values (Table 2).

COMPONENTS:	EVALUATOR:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986.

CRITICAL EVALUATION: (continued)

Table 3 summarizes thermodynamic functions calculated by application of the van't Hoff equation to the solubility data obtained over various temperature ranges. At low temperatures ($T < 343K$) the values of ΔH_{sln} and $\Delta C_{p,sln}$ from the data of Bohon and Claussen (ref 2) and Sanemasa et $al.$ (ref 12) are in good agreement (Table 3) and are close to calorimetric values reported for similar systems ($e.g.$ benzene in water, ref 13). However, the ΔH_{sln} derived from the data of Chernoglazova and Simulin (ref 9) is much too positive.

TABLE 3: Thermoydnamic Functionf for the Dissolution of m-Xylene in Water Derived from Solubility Data

Reference	ΔH_{sln} kJ mol^{-1}	$\Delta C_{p,sln}$ J K^{-1} mol^{-1}
Bohon and Claussen (ref 2)	2.8	386
Pryor and Jentoft (ref 3)	8.6	200
Guseva and Parnov (ref 4)	36.7	55
Chernoglazova and Simulin (ref 9)	11.4	167
Sanemasa (ref 12)	2.6	317
"Best" values (Table 2)	2.9	516

2.   SOLUBILITY OF M-XYLENE (1) IN WATER (2) AT ELEVATED TEMPERATURES

Solubility data for m-xylene in water at elevated temperatures ($ca.$ 340-550K) and system pressure in sealed tubes have been reported by Pryor and Jentoft (ref 3) and Guseva and Parnov (ref 14). The results are plotted in Figure 2 and are clearly in poor agreement. In the absence of comfirmatory studies it is difficult to know which values are more reasonable. However, it may be noted that the thermodynamic functions derived from the data of Pryor and Jentoft are more reasonable than those obtained from Guseva and Parnov's work (Table 3). The interested user is referred to the relevant Data Sheets for the experimental values.

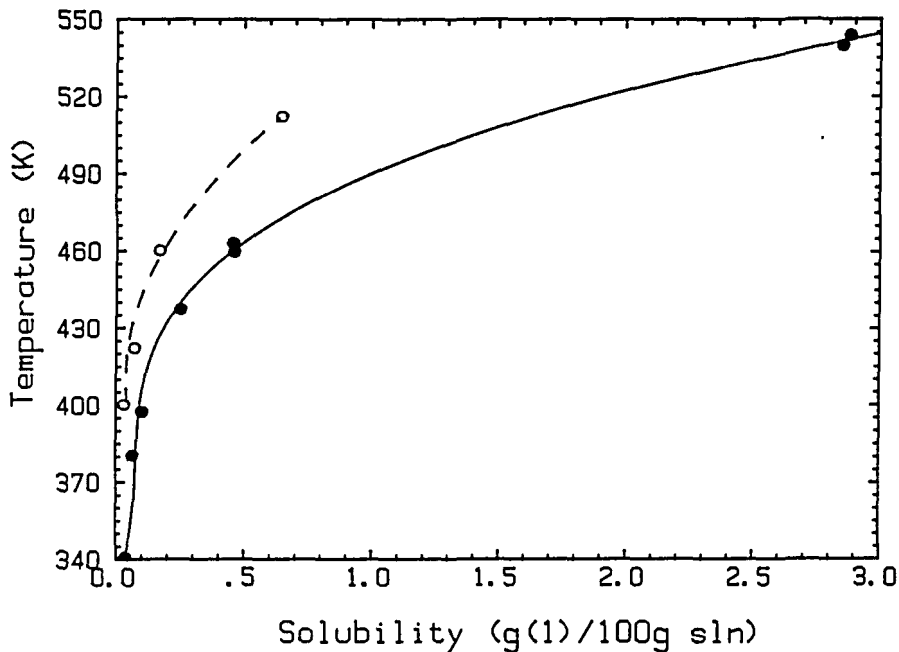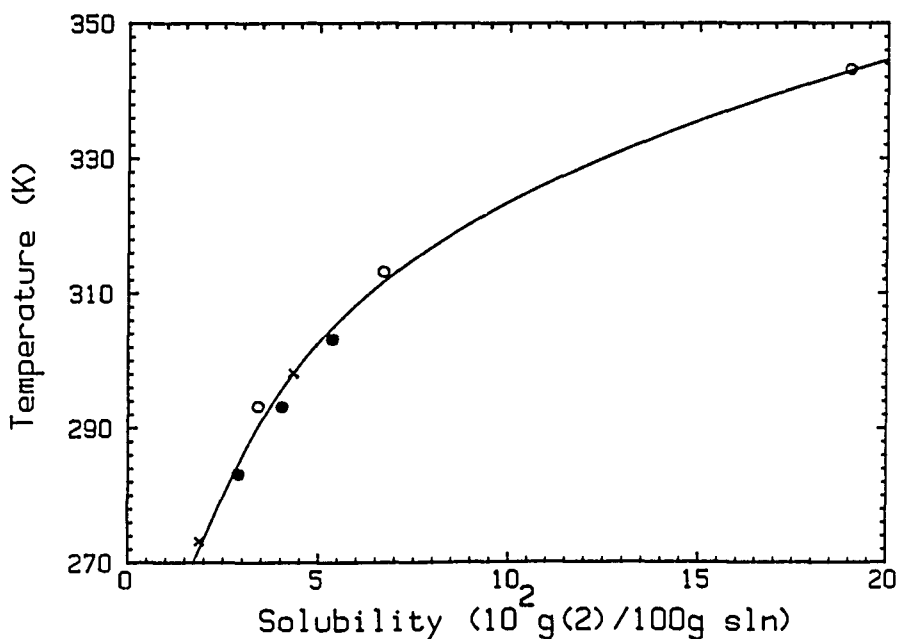| COMPONENTS:	EVALUATOR:
(1) *m*-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986.

CRITICAL EVALUATION: (continued)

FIGURE 2.   Solubility of *m*-xylene in water at elevated temperatures and system pressure: ref 3 (●); ref 4 (o).

3.   SOLUBILITY OF WATER (2) IN *M*-XYLENE (1)

All the reported data for the solubility of water in *m*-xylene are collected in Table 4. The data from independent studies over a range of temperatures are in excellent agreement, enabling a number of values to be Recommended (σ_n ~ 5% relative).

Selected data from Table 4 are also plotted in Figure 3 which emphasizes the general agreement.

COMPONENTS:	EVALUATOR:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986.

CRITICAL EVALUATION: (continued)

TABLE 4: Recommended (R) and Tentative Values of the Solubility of Water (2) in m-Xylene (1)

T/K	Reported values[a] 10^2g(2)/100g sln	"Best" values ($\pm \sigma_n$)[b] 10^2g(2)/100g sln	$10^3 x_2$
273	1.88 (ref 7)	1.9	1.1
283	2.89 (ref 6), 2.8* (ref 7)	2.9 ± 0.1 (R)	1.7(R)
293	4.02 (ref 6), 3.7* (ref 7), 3.4 (ref 9)	3.7 ± 0.3 (R)	2.2(R)
298	4.4 (ref 5), 4.7* (ref 6), 4.32 (ref 7), 4.0 (ref 9)	4.4 ± 0.3 (R)	2.6(R)
303	5.36 (ref 6), 4.8 (ref 9)	5.1 ± 0.3 (R)	3.0(R)
313	6.7 (ref 9)	6.7	6.7
323	10* (ref 9)	10	5.9
333	14* (ref 9)	14	8.3
343	19* (ref 9)	19	11

a Values marked with an asterisk (*) have been obtained by the Evaluator by graphical interpolation of the authors' original data.
b Calculated by averaging where appropriate; σ_n has no statistical significance.

FIGURE 3.   Solubility of water in m-xylene: ref 6 (●); ref 7 (x); ref 9 (o).

HWW 2-D

COMPONENTS:	EVALUATOR:
(1) *m*-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. January 1986.

CRITICAL EVALUATION: (continued)

Application of the van't Hoff equation to the data of Englin *et al.* (ref 6) and Chernoglazova and Simulin (ref 9) gives values for ΔH_{sln} of 21.3 and 24.9 kJ mol^{-1} and for $\Delta C_{p,sln}$ of -152 and 208 J K^{-1} mol^{-1} respectively. Comparison with related systems (*e.g.* water in benzene) suggests the data of Chernoglazova and Simulin (ref 9) may be more reliable.

REFERENCES

1.   Andrews, L.J.; Keefer, R.M.   *J. Am. Chem. Soc.*   1949, *71*, 3644-7.

2.   Bohon, R.L.; Claussen, W.F.   *J. Am. Chem. Soc.*   1951, *73* 1571-8.

3.   Pryor, W.A.; Jentoft, R.E.   *J. Chem. Eng. Data*   1961, *6*, 36-7.

4.   Guseva, A.N.; Parnov, E.T.   *Vestn. Mosk. Univ. Khim.*   1963, *18*, 76-9.

5.   Hoegfeldt, E.; Bolander, B. *Ark. Kemi*   1964, *21*, 161-86.

6.   Englin, B.A.; Plate, A.F.; Tugolukov, V.M.; Pryanishnikova, M.A. *Khim. Tekhnol. Topl. Masel* 1965, *10*, 42-6.

7.   Polak, J.; Lu, B.C-Y.   *Can. J. Chem.*   1973, *51*, 4018-23.

8.   Sutton, C.; Calder, J.A.   *J. Chem. Eng. Data*   1975, *20*, 320-2.

9.   Chernoglazova, F.S.; Simulin, Yu.N.   *Zh. Fiz. Khim.*   1976, *50*, 809; Deposited doc. 1976, VINITI 3528-75.

10.   Price, L.C.   *Am. Assoc. Petrol. Geol. Bull.*   1976, *6*, 213-44.

11.   Krzyzanowska, T.; Szeliga, J. *Nafta (Katowice)*   1978, *34*, 413-7.

12.   Sanemasa, I.; Araki, M.; Deguchi, T.; Nagai, H. *Bull. Chem. Soc. Jpn.* 1982, *55*, 1054-62.

13.   Gill, S.J.; Nichols, N.F.; Wadso, I.   *J. Chem. Thermodyn.* 1976, *8*, 445-52.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Andrews, L.J.; Keefer, R.M. *J. Am. Chem. Soc.* 1949, *71*, 3644-77.
VARIABLES:	PREPARED BY:
One temperature: 25°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

The solubility of m-Xylene in water at 25°C was reported to be 010173 g(1)/100 g sln.

The corresponding mole fraction, x_1, calculated by the compilers is 2.93×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A mixture of (1) and (2) was rotated for twenty hours in a constant temperature bath at 25°C. A sample (5-20 mL) of the aqueous phase was withdrawn and extracted with a measured volume of hexane (10-50 mL) by shaking in a glass-stoppered Erlenmeyer flask. Next, the absorbance of the hexane phase was measured against a hexane blank on the Beckman spectrophotometer.	(1) Eastman Kodak Co. best grade; fractionally distilled; b.p. 139.5°C. (2) Not specified.
	ESTIMATED ERROR: Not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Bohon, R.L.; Claussen, W.F. *J. Am. Chem. Soc.* <u>1951</u>, *73*, 1571-8.
VARIABLES: Temperature: 0.4-39.6°C	PREPARED BY: G.T. Hefter

EXPERIMENTAL VALUES:

Solubility of m-xylene in water

$t/°C$	g(1)/100g sln^a (compiler)	$10^5 x_1$ (compiler)
0.4	0.0209	3.54
5.2	0.0201	3.41
14.9	0.0192	3.25
21.0	0.0196	3.33
25.0	0.0196^b	3.33^b
25.6	0.0196	3.33
30.3	0.0198	3.36
34.9	0.0203	3.44
39.6	0.0218	3.69

^{a}Solubilities of (1) in (2) were reported as "optical density" (absorbance) measurements. Solubilities were calculated by the compiler using the Beer-Lambert law, the stated cell path-length (1 cm) and the authors' "extinction coefficients" (absorptivities) and corrected optical densities. This gave a solubility of g(1)/L sln which was then converted to g(1)/100g sln by assuming a solution density of 1.00 kg/L.

^{b}Given in the original paper as 0.196g(1)/L sln.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A round-bottomed flask containing about 4 mL of (1) and 400 mL of (2) was evacuated, suspended in a thermostat, shaken for 24h and then allowed to settle for at least another 24h. Next, desired quantities of the water layer were syphoned into 6 glass-stoppered Erlenmeyer flasks. These 6 flasks had previously been tared, partially filled with a suitable amount of diluent water, and reweighed. Weighed portions of the samples were inserted into a quartz cuvette and measured in a Beckman DU spectrophotometer. Absorbances were corrected for adsorption of (1) onto the walls of the cuvette.	(1) Oronite Chemical Co. was sulphonated, hydrolysed, steam distilled, washed, dried by passing through silica gel and finally distilled. Purity was judged by refractometry (no value given). (2) Air-free conductivity water (no details given).
	ESTIMATED ERROR: Temp. ± 0.02°C Soly. ± 0.5% relative
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Pryor, W.A.; Jentoft, R.E. *J. Chem. Eng. Data* <u>1961</u>, *6*, 36-7.
VARIABLES: Temperature: 67.7-270.6°C	PREPARED BY: A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

Solubility of m-xylene in water

Cloud point appears	Cloud point disappears	Midpoint	$10^3 x_1$	g(1)/100 g sln (compiler)
64.4	71.1	67.7	0.0590	0.0348
105.6	109.0	107.3	0.1127	0.0664
122.7	125.6	124.2	0.1749	0.1031
162.7	165.6	164.2	0.4265	0.2509
185.6	187.3	186.4	0.7825	0.4595
187.8	190.0	189.9	0.7762	0.4559
264.4	268.9	266.6	4.956	2.852
-	270.6	270.6	5.00	2.88

(The column header above "Midpoint" is $t/°C$, spanning the three temperature columns.)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Mixture of (1) and (2) were carefully weighed into glass ampoules. The ampoules were sealed allowing just enough space for thermal expansion. The ampoule, observed through a telescope from behind a safety barrier, was suspended in a 4-liter stirred silicone oil bath, and the bath was heated until the (1) dissolved. On cooling, a cloud of fine (1) droplets appeared, making the suspension opaque. The temperature was raised until the cloud disappeared. The cycle was repeated three to four times until reliable appearance and disappearance temperatures for the cloud were recorded.	(1) source not specified; 99.8% by freezing point; main impurities are isomeric xylenes; used as received. (2) not specified.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Guseva, A.N.; Parnov, E.I. *Vestn. Mosk. Univ. Khim.* <u>1963</u>, *18*, 76-9.
VARIABLES:	PREPARED BY:
Temperature: 127-239°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

Solubility of m-xylene in water

$t/°C$	$g(1)/100 \ g \ sln$	$10^4 x_1$ (compiler)
127	0.031	0.53
149	0.072	1.22
187	0.168	2.85
239	0.648	11.06

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The measurements were made in sealed glass tubes. No details were reported in the paper.	(1) source not specified; n_D^{20} 1.4974. (2) doubly distilled.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Hoegfeldt, E.; Bolander, B. *Ark. Kemi*, 1964, *21*, 161-86.

VARIABLES:	PREPARED BY:
One temperature: 25°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

The solubility of water in m-Xylene was reported to be 0.021 mol (2) L^{-1} sln.

The corresponding mass percent and mol fraction, x_2, calculated by the compilers are 0.044 g(2)/100 g sln and 0.0026.

The assumption that 1.00 L sln = 860 g sln was used in the calculation.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The water determination was carried out according to Johansson's modification of the Karl Fischer titration in ref 1, 2.	(1) Fluka; 0.3% of ethylbenzene, 0.03% of o-Xylene; purity 99.6%; used as received. (2) Not specified.

ESTIMATED ERROR:
Temp. ±0.03°C
Soly. ±0.001 mol(2) L^{-1} sln (type of error not specified)

REFERENCES:
1. Hardy, C.J.; Greenfield, B.F.; Scargill, D.
   J. Chem. Soc. 1961, *90*.
2. Johansson, A.
   Sv. Papperstidn. 1947, *11B*, 124.

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Englin, B.A.; Plate, A.F.; Tugolukov, V.M.; Pryanishnikova, M.A. *Khim. Tekhnol. Topl. Masel* <u>1965</u>, *10*, 42-6.

VARIABLES:	PREPARED BY:
Temperature: 10-30°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

Solubility of Water in m-Xylene

$t/°C$	g(2)/100 g sln	$10^3 x_2$ (compiler)
10	0.0289	1.70
20	0.0402	2.37
30	0.0536	3.15

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Component (1) was introduced into a thermostatted flask and saturated for 5 hr. with (2). Next, calcium hydride was added and the evolving hydrogen volume measured and hence the concentration of (2) in (1) was evaluated.	(1) Not specified. (2) Not specified.
	ESTIMATED ERROR: Not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Polak, J.; Lu, B.C.-Y. *Can. J. Chem.* <u>1973</u>, *51*, 4018-23.

VARIABLES:	PREPARED BY:
Temperature: 0-25°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

Solubility of m-xylene in water

$t/°C$	mg(1)/kg(2)	g(1)/100 g sln (compiler)	$10^5 x_1$ (compiler)
0(a)	196(c)	0.0196	3.32
25(b)	162(c)	0.0162	2.75

Solubility of water in m-xylene

$t/°C$	mg(2)/kg(1)	g(2)/100 g sln (compiler)	$10^3 x_2$ (compiler)
0(a)	188(d)	0.0188	1.11
25(b)	432(e)	0.0432	2.54

a-e See "Estimated Error"

AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Approximately 50 mL of (1) together with (2) were placed in a 125 mL Hypo-vial which was closed with a teflon coated rubber septum and placed in a constant-temperature water bath. The system was stirred magnetically for 24 hr and left in the bath for 3 days or was kept in the bath without stirring for 7 days, before samples were taken for analysis. The solubility of water in the organic layer was determined by Karl Fischer titration and the solubility of hydrocarbon in the water layer was determined by gas chromatography.	(1) Phillips Petroleum Co.; pure grade reagent (99+%); shaken three times with distilled water. (2) distilled.

ESTIMATED ERROR:
temp. (a) ± 0.02°C, (b) ± 0.01°C
soly. (c) ± 1.7%, (d) ± 4.7%,
      (e) ± 3.1% (from two or three determinations)

REFERENCES:

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Sutton, C.; Calder, J.A. *J. Chem. Eng. Data* 1975, *20*, 320-2.
VARIABLES: One temperature: 25°C	PREPARED BY: A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

The solubility of m-xylene in water at 25°C was reported to be 146.0 mg(1)/kg(2). The corresponding mass percent and mole fraction, x_1, calculated by the compilers are 0.01460 g(1)/100 g sln and 2.48×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The concentration of (1) in (2) was determined by gas chromatography.	(1) Aldrich Chemical Co. or Matheson Coleman and Bell 99+%. (2) distilled.
	ESTIMATED ERROR: temp. ± 0.1°C soly. 1.6 mg(1)/kg(2) (the standard deviation of the mean for six replicates)
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Chernoglazova, F.S.; Simulin, Yu.N. *Zh. Fiz. Khim.* 1976, *50*, 809. *Deposited doc.* 1976, VINITI 3528-75.
VARIABLES: Temperature: 20-70°C	PREPARED BY: A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

Solubility of m-Xylene in Water

$t/°C$	g(1)/100 g sln	$10^5 x_1$ (compiler)
20	0.016	2.7
40	0.022	3.7
70	0.038	6.4

Solubility of Water in m-Xylene

$t/°C$	g(2)/100 g sln	$10^3 x_2$ (compiler)
20	0.034	2.0
40	0.067	3.9
70	0.190	11.1

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility of (1) in (2) was determined by the synthetic method of Fuhner, ref 1. Glass tubes filled with 50-100 mL of (2) were frozen and then (1) was micropipetted. Next, the tubes were sealed and thermo-statted for 6 hrs at 70°C and 72 hrs at 20°C. The solubility was followed visually. The samples were incre-mented at regular steps 0.005 g (1)/ 100 g (2). The mean value from 5-6 determinations was adopted. The solubility of (2) in (1) was determined by gas chromatography. The LKhM-7a instrument equipped with a katharometer was employed.	(1) Source not specified; 99.9 purity by glc. (2) Distilled.
	ESTIMATED ERROR: Not specified.
	REFERENCES: 1. Fuhner, H.; *Chem. Ber.* 1924, *57*, 514.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Price, L.C. *Am. Assoc. Petrol. Geol. Bull.* <u>1976</u>, *60*, 213-44.

VARIABLES:	PREPARED BY:
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of m-xylene in water at 25°C and at system pressure was reported to be 134.0 mg(1)/kg(2). The corresponding mass percent and mole fraction, x_1, calculated by the compiler are 0.0134 g(1)/100 g sln and 2.27×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility was determined at laboratory temperatures by use of screw-cap test tubes. The (1) phase floated on top of the water and insured saturation of the (2) phase in 2 to 4 days. Analyses were carried out by GSC using a Hewlett-Packard model 5751 gas chromatograph with dual-flame ionization detectors. Many details are given in the paper.	(1) Phillips Petroleum Company; Chemical Samples Company or Aldrich Chemical Company; 99+%. (2) distilled.

ESTIMATED ERROR:
temp. ± 1°C soly. ± 2.0 mg(1)/kg(2)

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Krzyzanowska, T.; Szeliga, J. *Nafta (Katowice)*, <u>1978</u>, *12*, 413-7.

VARIABLES:	PREPARED BY:
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of m-xylene in water at 25°C was reported

to be 134.0 mg(1)/kg(2).

The corresponding mass percent and mole fraction, x_1, calculated

by compiler are 0.0134 g(1)/100 g sln and 2.27×10^{-5}.

Editor's Note: Based on the results for this and other hydrocarbon-water systems, uncertainity exists about whether the datum compiled here is independent of that of Price for the same system (see previous page).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The saturated solutions of (1) in (2) were prepared in two ways. First, 200 μL of (1) was injected into 20 mL of (2) and thermostatted at 25°C. Second, the mixture of (1) and (2) as above was thermostatted at 70°C and then cooled to 25°C. The time required to obtain equilibrium was three weeks. The solubility of (1) in (2) was measured by glc. A Perkin-Elmer model F-11 gas chromatograph equipped with a 100-150 mesh Porasil column (70°C) and a flame ionization detector was used. Saturated solutions of heptane in (2) were used as standard solutions.	(1) not specified. (2) not specified.
	ESTIMATED ERROR: soly. 3.4 mg(1)/kg(2) (standard deviation from 7-9 determinations).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Water; H_2O; [7732-18-5]	Sanemasa, I.; Araki, M.; Deguchi, T.; Nagai, H. *Bull. Chem. Soc. Jpn.* <u>1982</u>, *55*, 1054-62.
VARIABLES: Temperature: 15-45°C	PREPARED BY: G.T. Hefter

EXPERIMENTAL VALUES:

The solubility of m-xylene in water

t /°C	10^3 mol(1)/dm^3 sln	g(1)/100 g sln (compiler)^a	$10^5\ x_1$ (compiler)^a
15	1.49 ± 0.04	0.0158	2.68
25	1.52 ± 0.06	0.0162	2.75
35	1.57 ± 0.10	0.0168	2.85
45	1.73 ± 0.08	0.0186	3.15

a Assuming solution densities to be the same as those of pure water at the same temperature (ref 1).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The apparatus is similar to an earlier design (ref 2) and is described in detail in the paper. 100-200 cm^3 of (2) and 10-20 cm^3 of liquid (1) were placed in separate but connected thermostatted flasks. After thermal equilibrium was established a recirculating stream of air was used to vaporize liquid (1) and to transport the vapor to the flask containing (2). Five 10 cm^3 aliquots were withdrawn into separatory funnels. The concentration of (1) in (2) was then determined by extraction into chloroform followed by UV-spectrophotometry. Standards for the spectrophotometry were prepared by weight from pure liquid solutes.	(1) Analytical reagent grade (Wako Pure Chemical Ind. Ltd.), stated purity 98.0%, used without further purification. (2) Redistilled; no further details given.
	ESTIMATED ERROR: soly. see table, type of error not specified. temp. ± 0.1°C.

	REFERENCES:
	1. Kell, G.S.
	   J. Chem. Eng. Data <u>1975</u>, *20*, 97.
	
	2. Sanemasa, I.; Araki, M.; Deguchi, Y.; Nagai, H.
	   Chem. Lett. <u>1981</u>, 225-8.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) m-Xylene; C_8H_{10}; [108-38-3] (2) Artificial seawater (ref 1)	Sutton, C.; Calder, J.A. *J. Chem. Eng. Data* <u>1975</u>, *20*, 320-2.

VARIABLES:
  One temperature: 25.0°C
  One salinity: 34.5 g salts/kg sln
	PREPARED BY:
	
	  M. Kleinschmidt

EXPERIMENTAL VALUES:

The solubility of m-xylene in artificial seawater is reported to be

106.0 mg(1)/kg sln. The corresponding mass percent and mole fraction,

x_1 calculated by the compiler are 0.01060 g(1)/100 g sln and 1.85×10^{-5}

assuming the artificial seawater composition of ref 1.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A test tube containing (1) was placed in a flask containing (2) thus allowing for equilibration through the vapor phase. The saturated solution was extracted with hexane and analyzed by gas chromatography.	(1) from either Aldrich Chemical Co. or Matheson Coleman and Bell, 99+% pure. (2) made from doubly distilled water and salts 99+% pure.

	ESTIMATED ERROR:
	  temp. ± 0.1°C
	  soly. 0.6 (std. dev.)

	REFERENCES:
	  1. Lyman, J.; Fleming, R.H.;
	      J. Mar. Res. <u>1940</u>, *3*, 135.