COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION:

Quantitative solubility data for the system cyclohexane (1) and water (2) have been reported in the references listed in Table 1.

TABLE 1: Quantitatuve Solubility Studies of the Cyclohexane(1) - Water (2) System

Reference	T/K	Solubility	Method
Bennett and Philip (ref 1)	290	(1) in (2)	volumetric
Tarassenkow and Poloshinzewa (ref 2)	287-326	(2) in (1)	synthetic
Berkengeim (ref 3)	293-323	(2) in (1)	Karl Fischer
Black *et al.* (ref 4)	293	(2) in (1)	radiotracer
Durand (ref 5)	289	(1) in (2)	cloud point
McBain and Lissant (ref 6)	298	(1) in (2)	cloud point
Kudchadker and McKetta (ref 7)	311-411[a]	(1) in (2)	not specified
Guseva and Parnov (ref 9,10)	298-494	(1) in (2)	synthetic
Englin *et al.* (ref 11)	289-323	(2) in (1)	analytical
Zel'venskii *et al.* (ref 12)	293	(2) in (1)	radiotracer
Johnson *et al.* (ref 13)	298	(2) in (1)	Karl Fischer
McAuliffe (ref 14)	298	(1) in (2)	GLC
Gregory *et al.* (ref 15)	298	(2) in (1)	Karl Fischer
Rebert and Hayworth (ref 8,16)	403-643[a]	mutual	synthetic
Burd and Braun (ref 17)	368-478[a]	(2) in (1)	GLC
Bröllos *et al.* (ref 18)	275-421[a]	mutual	synthetic
Roddy and Coleman (ref 19)	298	(2) in (1)	radiotracer
Roof (ref 20)	530	mutual	synthetic
Plenkina *et al.* (ref 21)	403-523	(2) in (1)	synthetic
Glasoe and Schultz (ref 22)	288-303	(2) in (1)	Karl Fischer
Pierotti and Liabastre (ref 23)	278-318	(1) in (2)	GLC
Leinonen and Mackay (ref 24)	298	(1) in (2)	GLC
Sultanov and Skripka (ref 25,32)	473-523[a]	(2) in (1)	not specified
Goldman (ref 26)	283-313	(2) in (1)	Karl Fischer
Mackay *et al.* (ref 27,28)	298	(1) in (2)	GLC
Budantseva *et al.* (ref 29)	293	mutual	GLC, Karl Fischer
Kirchnerova and Cave (ref 30)	298	(2) in (1)	Karl Fischer
Price (ref 31)	298	(1) in (2)	GLC

(Table 1 continued next page)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}: [110-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A. Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION:

TABLE 1 (continued)

Reference	T/K	Solubility	Method
Korenman and Aref'eva (ref 33)	293,298	(1) in (2)	titration
Krzyzanowska and Szeliga (ref 35)	298	(1) in (2)	GLC
Rudakov and Lutsyk (ref 36)	298	(1) in (2)	partition coefficient
Schwarz (ref 37)	297	(1) in (2)	chromatographic
Tsonopoulos and Wilson (ref 39)	313-482[a]	mutual	GLC, Karl Fischer

[a]Pressure also varied, see Table 4

Solubility data for cyclohexane in water may also be calculated from the calorimetric data of Gill *et al.* (ref 40) and quantitative solubility data for the cyclohexane-heavy water (D_2O) system are given in the publications of Guseva and Parnov (ref 9) and Backx and Goldman (ref 38).

Apart from the paper by Roof (ref 20), which did not contain sufficient information to justify compilation, the original data in all the publications listed in Table 1 are compiled in the Data Sheets immediately following this Critical Evaluation. The datum of Krzyzanowska and Szeliga (ref 35) does not appear to be indendent of that of Price (ref 31) and so has been excluded from this Evaluation.

Despite the large number of investigations of this system (Table 1), the mutual solubilities are poorly characterised and warrant thorough reinvestigation over the entire liquid range. No data have been "Recommended".

In the Tables which follow values which have been obtained by the Evaluator by graphical interpolation of the original data are indicated by an asterisk (*). "Best" values were obtained by simple averaging. The uncertainty limits (σ_n) attached to these values do not have statistical significance and should be regarded only as convenient representation of the spread of reported values rather than error limits.

For convenience, further discussion of this system will be divided into three sections.

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION: (continued)

1. THE SOLUBILITY OF CYCLOHEXANE (1) IN WATER (2)

Most of the available data for the solubility of cyclohexane in water are summarized in Table 2 below.

In preparing Table 2 below the data of Mackay *et al.* (ref 27) were excluded as the temperature was not specified; anyway, these data are probably superceded by later measurements from the same laboratory (ref 28). The various data reported at high temperature have also been excluded as they are discussed in detail in section 3 below. The datum of Schwarz (ref 37) at 296.7K, although in reasonable agreement with other values, has been excluded for representational convenience.

At 298K, the only temperature where sufficient data have been obtained to enable meaningful evaluation to be made, the approximate values of Guseva and Parnov (ref 9,10) and Korenman and Aref'eva are rejected as is the datum of Pierotti and Liabastre (ref 23) which is markedly higher than all other values. All other data are included in Table 2.

At other temperatures the data are much too scattered to enable a satisfactory evaluation to be made. This can be clearly seen from Figure 1 which plots all the available data. Thus no "Best" values have been calculated in Table 2 other than at 298K. Clearly, this system requires a thorough reinvestigation over the whole temperature range.

TABLE 2: Solubility of Cyclohexane (1) in Water (2)

	Solubility values		
T/K	Reported values 10^3 g(1)/100 g sln	"Best" value ($\pm \sigma_n$)[a] 10^3 g(1)/100 g sln	10^5 x_1
278	8.19 (ref 23)		
288	6.2[b] (ref 5), 8.87 (ref 23)		
293	7.0 (ref 29) 10 (ref 33)		
298	5.5 (ref 14), 5.67 (ref 24), 5.75 (ref 28), 6.65 (ref 31), 5.5 (ref 36)	5.8 ± 0.4	1.2
308	4.54[c] (ref 7), 8.88 (ref 23)		
318	9.13 (ref 23), 7.14* (ref 39)		
323	7.55 (ref 39)		
329	17 (ref 9,10)		
343	10.1 (ref 39)		
344	2.7 (ref 7)		

[a] Best values not calculated except at 298 K (see text)

[b] Refers to 289K

[c] Refers to 310K

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. September 1986.

CRITICAL EVALUATION: (continued)

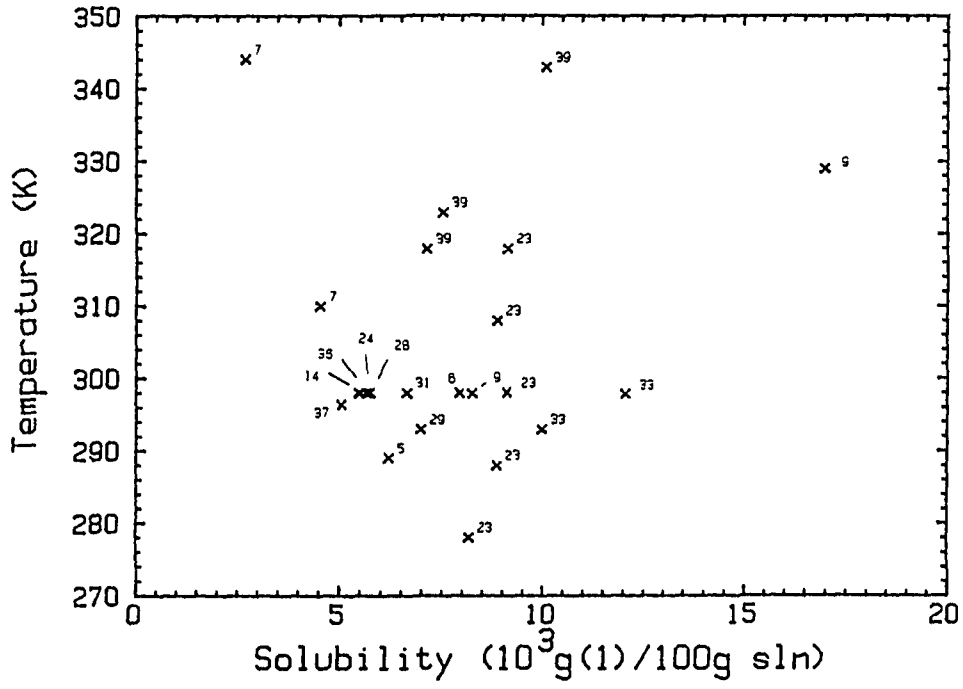

FIGURE 1. Solubility data for cyclohexane (1) in water. Numbers refer to the reference list. No line of best fit plotted because of scatter in data.

2. THE SOLUBILITY OF WATER (2) IN CYCLOHEXANE (1)

There are more solubility data for the hydrocarbon-rich phase than for the water-rich phase. Although the values of Tarassenkow and Poloshinzewa (ref 2) and Englin *et al.* (ref 11) are in good agreement over a wide temperature range, they are approximately twice as large as those reported by Goldman (ref 26) which in turn are close to those of most other studies (see Table 3). It should also be noted that the solubility data reported in ref 2 and ref 11 for a number of well-defined hydrocarbon-water systems are significantly higher than "Recommended" values. Nevertheless, there are insufficient independent data at present to justify exclusion of any values and thus all results are included in Table 3. In view of the lack of agreement between the various studies, the averaged "Best" values should be regarded as very tentative.

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. September 1986.

CRITICAL EVALUATION: (continued)

TABLE 3: Solubility of Water (2) in Cyclohexane (1)

T/K	Solubility values		
	Reported values 10^3g(2)/100g sln	"Best" values ($\pm \sigma_n$) 10^3g(2)/100g sln	$10^4 x_2$
283	4* (ref 2), 6.7 (ref 11), 3.4 (ref 2)	5 ± 1	2.3
293	9* (ref 2), 8.7 (ref 3), 10 (ref 4), 12.2 (ref 11), 9.8 (ref 12), 5.9 (ref 26), 10.1 (ref 29)	9 ± 2	4.2
298	13* (ref 2), 5.6 (ref 13), 6.9 (ref 15), 8.0 (ref 19), 7.4 (ref 22), 7.0 (ref 26), 7.0 (ref 30)	8 ± 2	3.7
303	17* (ref 2), 19.4 (ref 11), 8.7 (ref 22), 9.6 (ref 26)	14 ± 5	6.5
313	31* (ref 2), 31.7 (ref 11), 13.1 (ref 26), 13.3 (ref 39)	24 ± 8	12
323	46* (ref 2), 15 (ref 3), 49 (ref 11), 19.4* (ref 39)	32 ± 15	17

The data in Table 3 are also plotted in Figure 2. This plot shows that the temperature dependence of the solubility observed by Goldman (ref 26) and Glasoe and Schultz (ref 22) is much less than that of ref 2 and ref 11.

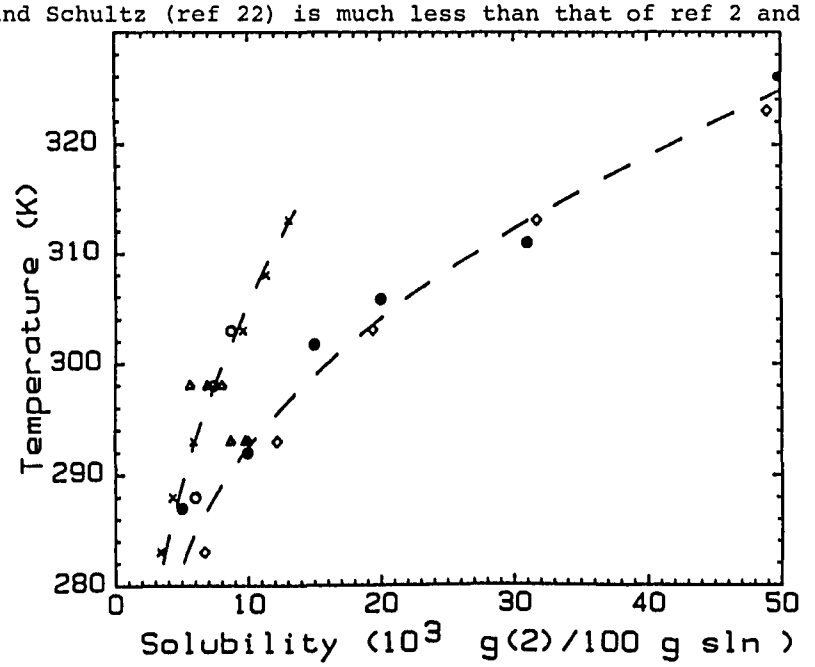

FIGURE 2. Solubility of water in cyclohexane: ref 2 (•); ref 11 (◇); ref 22 (○); ref 26 (x); other data (△). Full lines not drawn through data points because of poor agreement (see text).

(continued)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. C.L. Young, Department of Physical Chemistry, University of Melbourne, Vic., Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION: (continued)

3. THE MUTUAL SOLUBILITIES OF CYCLOHEXANE (1) AND WATER (2) AT ELEVATED PRESSURES

To clarify the relationship between the phases in equilibrium it is convenient to consider the pressure-temperature projection of the pressure-temperature-composition diagram. Cyclohexane + water exhibits type III phase behaviour (ref 41,42) and the projection is topographically similar to that of benzene + water.

Solubilities in the cyclohexane-water system have been studied at higher than atmospheric pressures in the publications listed in Table 4.

TABLE 4: Solubility Studies of the Cyclohexane-Water System at Elevated Pressures

Reference	p/MPa	T/K	Solubility
Kudchadker and McKetta (ref 7)	0.1-3	311-411	(1) in (2)
Guseva and Parnov (ref 9,10)	-[a]	298-493	(1) in (2)
Rebert and Hayworth (ref 8,16)	0.6-22.1	403-643	mutual
Burd and Braun (ref 17)	0.2-3	368-478	(2) in (1)
Bröllos *et al.* (ref 18)	19-174	275-421	mutual
Roof (ref 20)	-[b]	-[b]	-[b]
Plenkina *et al.* (ref 21)	-[a]	403-523	(2) in (1)
Sultanov and Skripka (ref 25,32)	3-79	473-523	(2) in (1)
Tsonopoulos and Wilson (ref 39)	0.3-3	313-482	mutual

a Along three phase line
b Critical point at unspecified composition

In view of the limited amount of data at high pressures and the differing conditions employed, no Critical Evaluation is possible at present. However, the solubilities of water in cyclohexane at $p \simeq 3$ MPa, $T \approx 473$K reported by Burd and Braun (ref 17) and Sultanov and Skripka (ref 25,32) are in reasonable agreement (approximately 3.0 and 3.8 g(2)/100 g sln respectively) but differ significantly from that reported by Tsonopoulos and Wilson (ref 39), (1.7 g(2)/100 g sln). Similarly, the atmospheric pressure data of Kudchadker and McKetta (ref 7) are only in fair agreement with comparable data (Table 3). Their conclusion that the solubility of cyclohexane in water increases linearly with pressure at a given temperature is inconsistent with the results for numerous hydrocarbon-water systems as noted by Guseva and Parnov (ref 9,10).

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia. C.L. Young, Department of Physical Chemistry, University of Melbourne, Vic., Australia. September 1986.

CRITICAL EVALUATION: (continued)

The temperature and pressure of the critical end point have been determined by Rebert and Hayworth (ref 8,16) and by Roof (ref 20). The values are in good agreement.

Reference	T/K	p/MPa
Rebert and Hayworth (ref 8,16)	528.9	8.019
Roof (ref 20)	529.9	8.039

Bröllos *et al.* (ref 18) have reported detailed measurements in the high pressure region between the critical temperatures of the pure components. These data are for the two phase-one phase boundary and at most pressures and temperatures studied the phases are at liquid-like densities. These data are probably reliable as they were determined using a reliable, well-tested experimental method. However, in the absence of confirmatory studies no Critical Evaluation is possible.

The interested user is referred to the original measurements compiled in the data sheets following this Critical Evaluation for experimental values.

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COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [1100-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION: (continued)

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COMPONENTS:	EVALUATOR:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	G.T. Hefter, School of Mathematical and Physical Sciences, Murdoch University, Perth, W.A., Australia.
(2) Water; H_2O; [7732-18-5]	September 1986.

CRITICAL EVALUATION: (continued)

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The Evaluator thanks Dr Brian Clare for the regression analyses and graphics and Dr Marie-Claire Haulait-Pirson for comments and a preliminary draft of the reference list. Section 3 was written jointly with C. L. Young, Department of Physical Chemistry, University of Melbourne, Australia.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Tarassenkow, D.N.; Poloshinzewa, E.N.
(2) Water; H_2O; [7732-18-5]	*Ber. Dtsch. Chem. Ges.* 1932, *65B*, 184-6.
VARIABLES:	PREPARED BY:
Temperature: 14-53°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	g(2)/100 g sln	$10^4 x_2$ (compiler)
14	0.005	2.3
19	0.010	4.7
28.5	0.015	7.0
32.5	0.020	9.3
38	0.031	14.5
53	0.050	23.3

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
No details were reported in the paper.	(1) Kahlbaum; dried over calcium chloride and twice distilled over Na-K. (2) not specified.
	ESTIMATED ERROR:
	soly. ± 0.01%
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Berkengeim, T.I.
(2) Water; H_2O; [7732-18-5]	*Zavod. Lab.* 1941, *41*, 592-4.
VARIABLES:	**PREPARED BY:**
Temperature: 20 and 50°C	A. Maczynski

EXPERIMENTAL VALUES:

Solubility of Water in Cyclohexane

t/°C	g(2)/100 g sln	$10^4 x_2$ (compiler)
20	0.0087	4.1
50	0.015	7.0

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solubility of (2) in (1) was determined by the Karl Fischer reagent method.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; CP reagent; b.p. 80°C; used as received.

(2) not specified.

ESTIMATED ERROR:

not specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Black, C.; Joris, G.G.; Taylor, H.S.
(2) Water; H_2O; [7732-18-5]	*J. Chem. Phys.* 1948, *16*, 537-43.
VARIABLES:	**PREPARED BY:**
One temperature: 20°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 20°C and at a total saturation pressure of 1 atm was reported to be 0.010 g(2)/100 g(1). The corresponding mass percent and mole fraction, x_2, calculated by the compiler are 0.010 g(2)/100 g sln and 4.7×10^{-4}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The method described in ref 1 in which tritium oxide acts as a tracer, was used.
Air saturated with radioactive water vapor was bubbled through the (1) sample until saturation was attained. Dissolved water was separated from (1) by absorption on calcium oxide. The tritium was transferred in the counter through equilibration with ethanol vapor.

SOURCE AND PURITY OF MATERIALS:

(1) Ohio State University under an American Petroleum Institute project; purity not specified; used as received.

(2) not specified.

ESTIMATED ERROR:

soly. a few percent (type of error not specified).

REFERENCES:

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7734-18-5]	Durand, R. *C.R. Hebd. Seances Acad. Sci.* 1948, *226*, 409-10.
VARIABLES:	**PREPARED BY:**
One temperature: 16°C	M. C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 16°C was reported to be 0.08 cm^3(1)/dm^3(2).

With the assumption of a solution density of 1.00 g cm^{-3} and a density value of 0.782 g cm^{-3} for cyclohexane at 16°C (ref 2), the corresponding mass percent is 0.0062 g(1)/100 g sln and the corresponding mole fraction, x_1, is 1.3 x 10^{-5} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The thermostatic method described in ref 1 was used. Addition of pipetted volumes of (1) to (2) followed by shaking is repeated till appearance of turbidity.	(1) not specified (2) distilled
	ESTIMATED ERROR: soly. ± 0.005 cm^3(1)/dm^3(2)

REFERENCES:

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	McBain, J.W.; Lissant, K.J. *J. Phys. Colloid. Chem.* 1951, *55*, 655-62.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 0.008 g(1)/100 ml sln.
With the assumption of a solution density of 1.00 g cm^{-3}, the corresponding mass percent is 0.008 g(1)/100 g sln and the corresponding mole fraction, x_1, is 1.7 x 10^{-5} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
10 mL of (2) was pipetted into glass vials, following which, varying amounts of (1) were added to each bottle by direct weighing. The vials were shaken overnight. When two vials had been obtained, one clear and one with excess hydrocarbon and containing amounts differing by less than 1 mg, the two values were averaged and the mean taken as the amount solubilized.	(1) C.P. grade. (2) distilled and boiled to remove CO_2.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Kudchadker, A.P.; McKetta, J.J.
(2) Water; H_2O; [7732-18-5]	*A.I.Ch.E.J.* 1961, *7*, 707.
VARIABLES:	**PREPARED BY:**
Temperature: 100-280°F Pressure: 14.7-450 psia	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of cyclohexane in water. Smoothed data

		t = 100°F (310.93 K)		t = 160°F (344.26 K)	
p/psia	p/MPa (compiler)	$10^5 x_1$	g(1)/100 g sln (compiler)	$10^5 x_1$	g(1)/100 g sln (compiler)
14.7	0.101	0.97	0.00454	0.58	0.00271
20.0	0.138	1.34	0.00626	1.00	0.00468
30.0	0.207	2.03	0.00949	1.60	0.00748
40.0	0.276	2.72	0.01272	2.20	0.01029
50.0	0.345	3.41	0.01594	2.93	0.01323
60.0	0.414	4.10	0.01917	3.45	0.01613
80.0	0.552	5.48	0.02562	4.71	0.02202
100.0	0.689	6.85	0.03202	5.92	0.02767
120.0	0.827	8.22	0.03842	7.18	0.03356
140.0	0.965	9.60	0.04487	8.43	0.03940
160.0	1.103	11.03	0.05155	9.71	0.04538
180.0	1.241	12.04	0.05627	10.92	0.05104
200.0	1.379	13.8	0.06449	12.28	0.05739
250.0	1.724	17.08	0.07981	15.41	0.07201
300.0	2.068	20.2	0.09438	18.24	0.08522
350.0	2.413	23.11	0.10796	21.0	0.09811
400.0	2.758	25.84	0.12070	23.61	0.11029
450.0	3.103	28.35	0.13241	25.98	0.12135

(continued)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The experimental technique and the analytical procedure are described in detail in ref 1. No more details are given in the paper.	(1) pure grade stock; purity of about 99.6% (gas chromatography) (2) distilled; boiled to remove any dissolved gases.
	ESTIMATED ERROR: not specified.
	REFERENCES: 1. Davis, J.E. M.S. Thesis, The University of Texas, Austin, 1959.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Kudchadker, A.P.; McKetta, J.J.
(2) Water; H_2O; [7732-18-5]	*A.I.Ch.E.J.* 1961, *7*, 707.

Solubility of cyclohexane in water. Smoothed data

		t = 220°F (377.59 K)		t = 280°F (410.93 K)	
p/psia	p/MPa (compiler)	$10^5 x_1$	g(1)/100 g sln (compiler)	$10^5 x_1$	g(1)/100 g sln (compiler)
14.7	0.101				
20.0	0.138				
30.0	0.207	0.72	0.00337		
40.0	0.276	1.32	0.00617		
50.0	0.345	1.92	0.00898		
60.0	0.414	2.51	0.01173	0.70	0.00327
80.0	0.552	3.70	0.01730	1.91	0.00893
100.0	0.689	4.89	0.02286	3.13	0.01463
120.0	0.827	6.05	0.02828	4.40	0.02057
140.0	0.965	7.27	0.03398	5.62	0.02627
160.0	1.103	8.48	0.03964	6.82	0.03188
180.0	1.241	9.69	0.04529	7.95	0.03716
200.0	1.379	10.8	0.05048	9.08	0.04244
250.0	1.724	13.92	0.06505	12.1	0.05655
300.0	2.068	16.68	0.07794	14.6	0.06823
350.0	2.413	19.2	0.08971		
400.0	2.758	21.52	0.10054		
450.0	3.103	23.46	0.10959		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Guseva, A.N.; Parnov, E.I. *Zh. Fiz. Khim.* 1963, *37*, 2763.
VARIABLES:	**PREPARED BY:**
Temperature: 25-220.5°C	A. Maczynski

EXPERIMENTAL VALUES:

Solubility of cyclohexane in water

t/°C	g(1)/100 g(2)	g(1)/100 g sln	$10^4\ x_1$ (compiler)
25	0.008	0.008	0.17
56	0.017	0.017	0.36
94	0.028	0.028	0.60
127	0.0517	0.0517	1.11
162	0.146	0.146	3.13
220.5	1.785	1.784	38.72

The same data are reported in ref 1.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility of (1) in (2) was determined in sealed glass ampules at pressures less than 17 kg/cm^2. No more details were reported in the paper.	(1) not specified. (2) not specified.
	ESTIMATED ERROR: Not specified.
	REFERENCES: 1. Guseva, A.N.; Parnov, E.I. *Radiokhimiya* 1963, *5*, 507-9.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Englin, B.A.; Plate, A.F.; Tugolukov, V.M.; Pryanishnikova, M.A. *Khim. Tekhnol. Topl. Masel* 1965, *10*, 42-6.
VARIABLES:	**PREPARED BY:**
Temperature: 10-50°C	A. Maczynski and M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	g(2)/100 g sln	$10^4 x_2$ (compiler)
10	0.0067	3.1
20	0.0122	5.70
30	0.0194	9.06
40	0.0317	14.8
50	0.0490	22.9

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Component (1) was introduced into a thermostatted flask and saturated for 5 hours with (2). Next, calcium hydride was added and the evolving hydrogen volume measured and hence the concentration of (2) in (1) was evaluated.

SOURCE AND PURITY OF MATERIALS:

(1) not specified.

(2) not specified.

ESTIMATED ERROR:

not specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water, H_2O; [7732-18-5]	Zel'venskii, Ya.D; Efremov, A.A.; Larin, G.M. *Khim. Tekhnol. Topl. Masel* 1965, *10*, 3-7.
VARIABLES:	**PREPARED BY:**
One temperature: 20°C	A. Maczynski

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 20°C was reported to be 0.0098 g(2)/100 g sln.

The corresponding mole fraction, x_2, calculated by the compiler is 4.6×10^{-4}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Saturated solutions of tritium labeled (2) in (1) were prepared in two ways. In the first, nitrogen was passed through the vessel with (2) and next through the vessel with (1) and frozen. In the second, about 500 mL of (1) and 1 mL (2) were stirred. The concentration of (2) in (1) was calculated from scintillation measurements.	(1) source not specified; pure grade; shaken with conc. H_2SO_4 + HNO_3; washed with water, dried over sodium, and distilled; purity not specified. b.p. 80.82°C. (2) source not specified; commercial; 1 Ci/mL HTO used as received.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Johnson, J.R.; Christian, S.D.; Affsprung, H.E. *J. Chem. Soc. A* 1966, 77-8.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 25°C was reported to be 0.0024 mol(2) dm^{-3} sln.
With the assumption of a solution density of 0.7739 g cm^{-3} (density value of pure cyclohexane reported in ref 2), the corresponding mass percent is 0.0056 g(2)/100 g sln and the corresponding mole fraction, x_2, is 2.6×10^{-4} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solute isopiestic apparatus described in ref 1 was used. Samples were equilibrated in constant-temperature water-baths. Water solubilities were determined using the Beckman Model KF-3 Aquameter.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; certified or reagent grade; distilled through a 30-plate oldershaw column.

(2) not specified.

ESTIMATED ERROR:

temp. ± 0.1 K
soly. ± 0.0003 mol(2) dm^{-3} sln
(type of error not specified)

REFERENCES:

1. Christian, S.D.; Affsprung, H.E.; Johnson, J.R.; Worley, J.D. *J. Chem. Educ.* 1963, *40*, 419.
2. Goldman, S. *Can. J. Chem.* 1974, *52*, 1668.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	McAuliffe, C.
(2) Water; H_2O; [7732-18-5]	*J. Phys. Chem.* 1966, *70*, 1267-75.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 55 mg (1)/kg sln.

The corresponding mole fraction, x_1, calculated by the compiler, is 1.18×10^{-5}.

The same value is also reported in refs 1 and 2.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

In a 250 mL glass bottle, 10-20 mL of (1) was vigorously shaken for 1 hr or magnetically stirred for 1 day, with 200 mL of (2) at 25°C. In the case of shaking, the solution was allowed to stand for 2 days to permit separation of small (1) droplets. Absence of emulsion was checked microscopically. A 50 µL sample of the (1) saturated water was withdrawn with a Hamilton Syringe and injected into the fractionator of the gas chromatograph. A hydrogen-flame ionization detector was used. Many details are given in the paper.

SOURCE AND PURITY OF MATERIALS:

(1) Phillips Petroleum Co.; 99+% purity; used as received.

(2) distilled.

ESTIMATED ERROR:

temp. ± 1.5 K

soly. 2.3 mg (1)/kg sln (standard deviation from mean)

REFERENCES:

1. McAuliffe, C. *Nature (London)* 1963, *200*, 1092.

2. McAuliffe, C. *Am. Chem. Soc. Div. Petrol. Chem.* 1964, *9*, 275.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Gregory, M.D.; Christian, S.D.; Affsprung, H.E. *J. Phys. Chem.* 1967, *71*, 2283-9.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 25°C was reported to be 0.00297 mol(2)dm^{-3} sln.
With the assumption of a solution density of 0.7739 g cm^{-3} (density value of pure cyclohexane reported in ref 2), the corresponding mass percent is 0.0069 g(2)/100 g sln and the corresponding mole fraction, x_2, is 3.2 x 10^{-4} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Solubility of (2) in (1) was obtained using the solute isopiestic method described in ref 1. The samples were titrated by the Karl Fischer method using a Beckman KF-3 aquameter. The Karl Fisher reagent was standardized alternatively by titrating weighed amounts of sodium tartrate dihydrate or by titrating a 25° water-saturated benzene solution.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; reagent grade; fractionally distilled using a 30-plate oldershaw column.

(2) not specified.

ESTIMATED ERROR:

temp. ± 0.1 K

REFERENCES:

1. Christian, S.D.; Affsprung, H.E.; Johnson, J.R.; Worley, J.D. *J. Chem. Educ.* 1963, *40*, 419.
2. Goldman, S. *Can. J. Chem.* 1974, *52*, 1668.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Cyclohexane; C_6H_{12}; [110-82-7] 2. Water; H_2O; [7732-18-5]	Rebert, C. J.; Hayworth, K. E. *Am. Inst. Chem. Engnrs. J.* 1967, *13*, 118-121.
VARIABLES: Pressure and temperature along one phase-two phase boundary.	PREPARED BY: C. L. Young

EXPERIMENTAL VALUES:

		Smoothed data			
T/K	T/°C	*P*/MPa	*p*/psi	g (1)/100 g (soln.)	$x_{C_6H_{12}}$
593	320	11.43	1657	2.7	0.0059
603	330	13.06	1894		
613	340	14.92	2164		
623	350	16.86	2445		
633	360	19.21	2785		
643	370	21.83	3165		
643.8[a]	370.6	22.14	3210		
643	320	22.06	3199		
633	360	20.07	2910		
623	350	18.25	2646		
613	340	16.65	2414		
603	330	15.23	2209		
593	320	14.17	2054		
583	310	13.39	1942		
580	307	13.24	1920		
577	304	13.21	1916		
575	302	13.28	1925		
573	300	13.69	1985		
568	295	15.88	2303		
565	292	17.52	2540		
563	290	18.63	2702		
603	330	13.46	1952		
613	340	15.44	2239	9.0	0.021
623	350	17.70	2566		

(cont.)

AUXILIARY INFORMATION

METHOD APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Samples of mixtures of known composition confined over mercury. Samples heated in a vapor bath and the pressure-temperature phase boundaries determined by direct observation of appearance or disappearance of a phase. Apparatus similar to that described in ref. (1).	1. No details given.
	ESTIMATED ERROR: $\delta T/K = \pm 0.05$ $\delta p/psi = \pm 1.$
	REFERENCES: 1. Rebert, C. J.; Kay, W. B. *Am. Inst. Chem. Engnrs. J.* 1959, *5*, 285.

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Cyclohexane; C_6H_{12}; [110-82-7]	Rebert, C. J. ; Hayworth, K. E.
2. Water; H_2O; [7732-18-5]	*Am. Inst. Chem. Engnrs. J.*
	1967, *13*, 118-121.

EXPERIMENTAL VALUES:

		Smoothed data			
T/K	T/°C	P/MPa	p/psi	g (1)/100 g (soln.)	$x_{C_6H_{12}}$
633	360	20.61	2989	9.0	0.021
635	362	21.38	3100		
636.5	363.3	21.94	3182		
635	362	22.32	3236		
633	360	22.45	3255		
632.6[a]	359.4	22.49	3261		
632	359	22.51	3264		
631	358	22.54	3269		
629	356	22.62	3280		
627	354	22.71	3294		
625	352	22.81	3308		
623	350	22.96	3329		
621	348	23.16	3358		
619	346	23.48	3405		
507	235	3.68	533	33.3	0.0966
517	245	4.36	632		
527	255	5.18	751		
537	265	6.10	885		
547	275	7.12	1032		
557	285	8.25	1196		
567	295	9.57	1388		
573	300	10.30	1494		
578	305	11.07	1605		
583	310	11.96	1734		
588	315	12.87	1866		
593	320	13.79	2000		
598	325	14.96	2169		
603	330	16.13	2339		
608	335	17.50	2538		
613	340	19.07	2765		
493	220	3.68	533	60.0	0.0243
503	230	4.47	648		
513	240	5.35	776		
523	250	6.30	914		
533	260	7.45	1081	94.8	0.0796
543	270	8.78	1273		
553	280	10.29	1492		
563	290	12.17	1764		
573	300	14.32	2076		
583	310	17.79	2580		
493	220	2.42	351		
503	230	2.88	417		
513	240	3.42	496		
523	250	4.09	593		
533	260	4.86	705		
535	262	5.06	734		
537	264	5.28	765		
539	266	5.54	803		
542.1	268.9	6.25	906		
541	268	6.60	957		
540.4	267.2	6.73	976		
540	267	6.76	980		
536	263	7.06	1024		
534	261	7.08	1027		
533	260	7.06	1024		
528	255	6.93	1005		
523	250	6.76	980		
518	245	6.56	951		
516.4[b]	243.2	6.48	939		

(cont.)

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Cyclohexane; C_6H_{12}; [110-82-7]	Rebert, C. J.; Hayworth, K. E.
2. Water; H_2O; [7732-18-5]	*Am. Inst. Chem. Engnrs. J.* 1967, *13*, 118-121.

EXPERIMENTAL VALUES:

Smoothed data

T/K	T/°C	P/MPa	p/psi	g (1)/100 g (soln.)	$x_{C_6H_{12}}$
	Three phase equilibrium locus				
403	130	0.66	95		
413	140	0.86	124		
423	150	1.08	156		
433	160	1.32	192		
443	170	1.63	237		
453	180	2.01	291		
463	190	2.46	357		
473	200	2.99	433		
483	210	3.58	519		
493	220	4.32	627		
503	230	5.18	751		
508	235	5.64	818		
513	240	6.14	890		
518	245	6.68	968		
523	250	7.28	1055		
528	255	7.92	1148		
528.9	255.7	8.01	1162		

[a] Critical point.

[b] Three-phase point.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Burd, S.D.; Braun, W.G. *Proc. Div. Refining, Am. Petrol. Inst.* 1968, *48*, 464-76.
VARIABLES:	**PREPARED BY:**
Temperature and pressure	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Hydrocarbon-rich liquid phase composition for the three-phase conditions.

p/psia	p/MPa (compiler)	t/°F	T/K (compiler)	g(2)/100 g sln	x_2 (compiler)
25	0.172	202	367.59	0.22	0.0102
50	0.345	241	389.26	0.46	0.0211
100	0.689	284	413.15	0.82	0.0372
150	1.034	312	428.70	1.20	0.0537
200	1.379	333	440.37	1.58	0.0698
250	1.724	350	449.81	1.93	0.0842
300	2.068	364	457.60	2.25	0.0971
350	2.413	377	464.82	2.60	0.1109
400	2.758	388	470.93	3.00	0.1262
24	0.165	200	366.48	0.22	0.0102
59	0.407	250	394.26	0.49	0.0225
127	0.876	300	422.04	1.03	0.0464
250	1.724	350	450.82	1.90	0.0830
450	3.103	400	477.60	3.70	0.1520

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The vapor and liquid phase compositions have been determined for the (1)-(2) system in the two-phase hydrocarbon-rich liquid region. Equilibrium points were obtained by incremental addition of water followed by stirring, settling, sampling and chromatographic analysis. This procedure was continued until addition of water resulted in no pressure increase, indicating three-phase conditions. Many details are given in the paper.

SOURCE AND PURITY OF MATERIALS:

(1) Phillips Petroleum Company; 99.5% purity.

(2) laboratory distilled.

ESTIMATED ERROR:

soly. ± 0.004 weight fraction of the (2) present.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Brollos, K.; Peter, K.; Schneider, G. M. *Ber. Bunsenges. Phys. Chem.* 1970, *74*, 682-6.
VARIABLES:	**PREPARED BY:**
Pressure and temperature on one phase-two phase boundary.	C. L. Young

EXPERIMENTAL VALUES:

Values of pressure and temperature on the one phase-two phase boundary

T/K	p/bar	x_1	g (1)/100 g soln
379.8	1742	0.100	34.1
369.0	1403		
363.0	1200		
360.1	1000		
351.5	798		
343.5	595		
333.7	395		
329.2	328		
330.0	293		
333.0	271		
334.2	245		
338.0	217		
392.2	1600	0.150	45.2
384.0	1400		
376.5	1202		
369.2	1000		
361.2	800		
351.0	600		
346.5	500		
340.0	394		
338.0	347		
339.0	299		

(cont.)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Measurements were made in a steel optical cell within an aluminum block furnace. The cell contents were stirred magnetically. Pressure was measured using a movable piston and Bourdon gauge. Temperature was measured with a steel-sheathed thermocouple. Components were charged into the cell and the transition from one phase to two phases was observed visually.

SOURCE AND PURITY OF MATERIALS:

1. Merck sample purity 99.9 mole per cent.
2. Twice distilled.

ESTIMATED ERROR:

$\delta T/K = \pm 0.1$
$\delta P/P = \pm 0.01$
(estimated by compiler)

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Brollos, K.; Peter, K.; Schneider, G. M.
(2) Water; H_2O; [7732-18-5]	*Ber. Bunsenges. Phys. Chem.* 1970, *74*, 682-6.

Values of pressure and temperature on the one phase-two phase boundary

T/K	p/bar	x_1	g (1)/100 g soln
340.5	250	0.150	45.2
357.7	222		
403.5	1610	0.200	53.9
393.9	1408		
387.0	1204		
378.7	1002		
369.0	800		
359.5	600		
352.2	500		
347.0	416		
343.0	328		
342.0	298		
345.0	246		
355.0	223		
412.4	1600	0.298	66.5
404.7	1400		
396.2	1200		
387.1	1004		
375.3	800		
363.8	600		
360.4	550		
349.2	398		
346.2	339		
346.5	237		
349.5	224		
352.7	214		
414.9	1600	0.400	75.7
406.5	1398		
399.2	1200		
390.1	995		
378.0	800		
364.3	600		
355.6	465		
347.6	352		
345.0	295		
342.0	230		
335.0	195		
421.5	1718	0.500	82.4
419.0	1645		
416.5	1584		
408.0	1406		
399.0	1195		
388.9	1004		
376.0	789		
364.0	600		
350.0	460		
340.1	375		
343.0	330		
338.5	250		
330.0	200		
413.0	1603	0.600	87.5
405.4	1405		
395.8	1200		
386.4	1000		
375.3	800		
362.0	595		
345.7	395		
336.2	319		
333.4	290		

(cont.)

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Brollos, K.; Peter, K.; Schneider, G. M.
(2) Water; H_2O; [7732-18-5]	*Ber. Bunsenges. Phys. Chem.* 1970, *74*, 682-6.

Values of pressure and temperature on the one phase-two phase boundary

T/K	p/bar	x_1	g (1)/100 g soln
329.4	261	0.600	87.5
326.5	243		
323.1	220		
318.5	205		
406.7	1600	0.700	91.6
399.0	1405		
389.1	1200		
380.5	1000		
367.2	800		
351.1	588		
332.5	400		
325.0	342		
314.0	299		
300.5	250		
395.4	1605	0.800	96.9
387.1	1403		
377.6	1200		
367.2	1005		
353.9	800		
337.5	600		
316.5	400		
305.0	295		
295.1	244		
275.2	200		

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Roddy, J.W.; Coleman, C.F.
(2) Water; H_2O; [7732-18-5]	*Talanta* 1968, *15*, 1281-6.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 25°C was reported to be 0.00345 mol(2) dm^{-3} sln corresponding to a mole fraction, x_2, of 3.75×10^{-4}. The corresponding mass percent value calculated by the compiler is 0.0080 g(2)/100 g sln.
The compiler's calculation assumes a solution density of 0.7739 g mL^{-1} (density of cyclohexane reported in ref 1).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A method of gravimetric absorption monitored by tritium tracer was used. (1) was equilibrated with a slight excess of tritiated water by shaking over a period of at least 8 hr in a thermostat. The phases were allowed to separate for at least 16 hr and then were sampled for tritium analysis. Most of the (1) phase was weighed into a boiling flask of a closed distillation system and then distilled through a magnesium perchlorate weighing tube. The magnesium perchlorate was then dissolved for measurement of its tritium content by liquid scintillation counting with a Packard Tri-Carb Scintillation Spectrometer.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; spectral-grade reagent.

(2) tritiated water at 5 Ci/mL; New England Nuclear Corp.; diluted to about 1 mCi/mL.

ESTIMATED ERROR:

soly. better than 1% (type of error not specified)

REFERENCES:

1. Goldman, S. *Can. J. Chem.*, 1974, *52*, 1968.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Plenkina, R.M.; Pryanikova, R.O.; Efremova, G.D. *Zh. Fiz. Khim.* 1971, *45*, 2389 Deposited doc. 1971, VINITI 3028-71.
VARIABLES: Temperature: 130-250°C	**PREPARED BY:** A. Maczynski

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	x_2	g(2)/100 g sln (compiler)
130	0.036	0.79
163.0	0.093	2.15
188.0	0.130	3.10
200.9	0.154	3.75
213.5	0.193	4.87
219.0	0.216	5.52
232.0	0.265	7.16
244.0	0.322	9.23
250.0	0.350	10.33

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solubility of (2) in (1) was determined in sealed glass tubes.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; CP reagent; crystallized several times; m.p. 6.50°C.

(2) distilled.

ESTIMATED ERROR:

temp. ± 0.5 K

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Glasoe, P.K.; Schultz, S.D.
(2) Water; H_2O; [7732-18-5]	*J. Chem. Eng. Data* 1972, *17*, 66-8.
VARIABLES:	**PREPARED BY:**
Temperature: 15-30°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	mol(2)dm^{-3} sln	g(2)/100 g sln (compiler)	$10^4 x_2$ (compiler)
15	0.0026 ± 0.0001	0.0060[a]	2.8
25	0.0032 ± 0.0002	0.0074[a]	3.5
30	0.0037 ± 0.0002	0.0087[a]	4.1

[a] calculated with the assumption of a solution density of 0.7831, 0.7739 and 0.7692 g cm^{-3} at respectively 15, 25 and 30°C; these values are the density values of pure cyclohexane at these temperatures (ref 1).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

(1) was saturated with (2) by allowing it to stand in contact with (2) in a closed pyrex storage bottle protected from atmospheric moisture and placed in a constant temperature water bath. The concentration of (2) in (1) was determined by the Karl Fischer method using a conventional "dead-stop" end-point apparatus. The Karl Fischer reagent was standardized using standard sodium tartrate.

SOURCE AND PURITY OF MATERIALS:

(1) source not specified; reagent grade; purified by distillation and dried over molecular sieve.

(2) distilled in a pyrex system.

ESTIMATED ERROR:

soly.: see above (type of error not specified.

REFERENCES:

1. Timmermans, J. *Physico-chemical constants of pure organic compounds* Elsevier, 1950.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Pierotti, R.A.; Liabastre, A.A.
(2) Water; H_2O; [7732-18-5]	"Structure and properties of water solutions" U.S. Nat. Tech. Inform. Serv., PB Rep., 1972, No. 21163, 113 pp.
VARIABLES:	PREPARED BY:
Temperature: 278.26-318.36 K	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of cyclohexane in water

T/ K	g(1)/100 g sln	$10^3 x_1$
278.26	0.008193 ± 0.00017	0.01837
288.36	0.008870 ± 0.00025	0.01991
298.26	0.008884 ± 0.00024	0.01998
308.36	0.008884 ± 0.00025	0.02004
318.36	0.009132 ± 0.00025	0.02068

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

10 mL of (2) were placed along with 4-10 drops of (1) in 10 mL serum bottles, which were then tightly capped, and placed in a rotating basket and rotated for 24 hours. The bottles were then hand shaken to remove (1) droplets from the stoppers and then replaced in the bath with the tops down for an additional 24 hours. The solute concentrations were determined by use of a flame-ionization gas chromatograph. Many details about equipment, operating conditions and calculation are given in the paper.

SOURCE AND PURITY OF MATERIALS:

(1) Fisher Scientific Co.; certified grade; used as received.

(2) laboratory distilled water.

ESTIMATED ERROR:

soly.: standard deviation from at least 15 measurements are given above.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12} [110-82-7] (2) Water; H_2O; [7732-18-5]	Leinonen, P.J.; Mackay, D. *Can. J. Chem. Eng.* 1973, *51*, 230-3.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 56.7 mg(l)dm^{-3} sln.
With the assumption of a solution density of 1.00 g cm^{-3}, the corresponding mass percent is 0.00567 g(l)/100 g sln and the corresponding mole fraction, x_1, is 1.21 x 10^{-5} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A mixture of (1) and (2) was equilibrated for at least 12 hrs in a 200 mL Teflon stoppered vessel with gentle shaking. The solution was allowed to settle for 6 hrs and the aqueous phase was tested (Tyndall effect). Both phases were analysed by the gas chromatographic technique of internal standardization. The (1) in the aqueous phase was extracted into 5 mL of heptane and the extract analysed by GLC. The instrument was a Hewlett-Packard model equipped with a flame ionization detector.

SOURCE AND PURITY OF MATERIALS:

(1) Phillips Petroleum Co.; research grade; purity 99%+; used without further purification.

(2) doubly distilled.

ESTIMATED ERROR:

temp. ± 0.1 K
soly. ± 1 mg(l)dm^{-3} sln

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Goldman, S.
(2) Water; H_2O; [7732-18-5]	*Can. J. Chem.* 1974, *52*, 1668-80.
VARIABLES:	**PREPARED BY:**
Temperature: 10-40°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	mol(2)dm^{-3} sln	g(2)/100 g sln (compiler)	$10^4 x_2$ (compiler)
10	0.00147	0.0034[a]	1.6
15	0.00185	0.0043[a]	2.0
20	0.00255	0.0059[a]	2.8
25	0.00301	0.0070[a]	3.3
30	0.00410	0.0096[a]	4.5
35	0.00485	0.0114[a]	5.3
40	0.00552	0.0131[a]	6.1

[a] calculated with the assumption of a solution density of 0.7878, 0.7831, 0.7785, 0.7739, 0.7692, 0.7643 and 0.7595 g cm^{-3} at respectively 10, 15, 20, 25, 30, 35 and 45°C; these values are the density values of pure cyclohexane at these temperatures (ref 1).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

(1) was equilibrated with an excess of (2) in 175 mL bottles fitted with Bakelite screw caps. The bottles immersed in a water-bath were given end-over-end rotation at 20 r.p.m. After equilibration, aliquots (5 mL ± 0.2%) were taken with calibrated Hamilton syringes and injected into the titration vessel. Analyses were performed with an Aquatest II automatic Karl Fischer Titrator.

SOURCE AND PURITY OF MATERIALS:

(1) certified grade; washed with water, dried with silica gel, and distilled.
d_4^{25} 0.77390 ± 0.00002

(2) distilled.

ESTIMATED ERROR:

temp. ± 0.02 K
soly. ± 0.00024 (mean of std. dev.)

REFERENCES:

1. Timmermans, J. *Physico-chemical constants of pure organic compounds* Elsevier, 1950.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Mackay, D.; Shiu, W.J.; Wolkoff, A.W. "Water Quality Parameters" Symp. 1973, ASTM Spec. Tech. Publ. 1975, *573*, 251-8.
VARIABLES:	**PREPARED BY:**
not specified	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The authors reported three different values for the solubility of cyclohexane in water: 55.8, 50.2 and 61.7 mg(1)dm^{-3} sln. Using the mean value and assuming a solution density of 1.00 g mL^{-1}, the corresponding mass percent, calculated by the compiler, is 0.0056 g(1)/100 g sln and the corresponding mole fraction, x_1, is 1.2×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
(1) is partially partitioned into the vapor phase by equilibration of the aqueous sample with helium in a gas syringe, the vapor then being transferred to a gas sampling valve and then to the column of a gas chromatograph equipped with a flame ionization detector. By injecting gas samples from repeated equilibrations it is possible to calculate the amount of (1) in the original sample.	(1) not specified. (2) not specified.
	ESTIMATED ERROR: soly. ± 10% (compiler)
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Mackay, D.; Shiu, W.Y.
(2) Water; H_2O; [7732-18-5]	*Can. J. Chem. Eng.* 1975, *53*, 239-41.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 0.0575 g(1)dm^{-3} sln.
With the assumption of a solution density of 1.00 g cm^{-3}, the corresponding mass percent is 0.00575 g(1)/100 g sln and the corresponding mole fraction, x_1, is 1.23 x 10^{-5} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solubility of (1) in (2) was determined using a vapor phase extraction technique followed by gas chromatographic analysis. Equilibration apparatus and procedure are given in detail in the paper. The gas chromatograph was a Hewlett-Packard Model equipped with a hydrogen flame-ionization detector.

SOURCE AND PURITY OF MATERIALS:

(1) Phillips Petroleum Co.; research grade (>99.9%); used as received.

(2) distilled.

ESTIMATED ERROR:

temp. ± 0.1 K
soly. ± 0.0073 g(1)dm^{-3} sln

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Budantseva, L.S.; Lesteva, T.M.; Nemstov, M.S. *Zh. Fiz. Khim.* 1976, *50*, 1344. Deposited doc. 1976, VINITI 438-76.
VARIABLES:	**PREPARED BY:**
One temperature: 20°C	A. Maczynski

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 20°C was reported to be $x_1 = 1.5 \times 10^{-5}$.
The corresponding mass percent calculated by the compiler is 0.0070 g(1)/100 g sln.

The solubility of water in cyclohexane at 20°C was reported to be $x_2 = 4.7 \times 10^{-4}$.
The corresponding mass percent calculated by the compiler is 0.0101 g(2)/100 g sln.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility of (1) in (2) was determined by glc. The solubility of (2) in (1) was determined by Karl Fischer reagent method.	(1) source not specified; pure or analytical reagent grade; purity <99.9%. (2) not specified.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Kirchnerova, J.; Cave, G.C.B. *Can. J. Chem.* 1976, *54*, 3909-16.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of water in cyclohexane at 25°C was reported to be 0.0030 mol(2)/dm^3 sln.
With the assumption of a solution density of 0.7739 g cm^{-3} (density value of pure cyclohexane reported in ref 1, the corresponding mass percent is 0.0070 g(2)/100 g sln and the corresponding mole fraction, x_2, is 3.3 x 10^{-4} (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The Karl Fischer dead-stop back-titration method was used. 50 mL of (1) was placed in the equilibration vessel. A test tube containing 6 mL of (2) was then placed in the vessel so that the rim of the tube rested against the upper inside wall of the vessel. The vessel was then stoppered, placed inside a plastic bag and submerged in a water thermostat. Trials had shown that the concentration of (2) in (1) became constant within 2 days. 10 mL of (1) saturated with (2) were transferred to the titration vessel for water determination. Apparatus is described in the paper.

SOURCE AND PURITY OF MATERIALS:

(1) Fisher C-555; purified by double crystallization; purity 99.6% (gas chromatographic analysis); d_4^{25} 0.7734 ± 0.0001

(2) distilled and de-ionized

ESTIMATED ERROR:

temp. ± 0.1 K
soly. ± 0.0002 mol(2)/dm^3 sln (std. dev. from 5 determinations)

REFERENCES:

1. Goldman, S. *Can. J. Chem.* 1974, *52*, 1668.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Price, L.C. *Am. Assoc. Petrol. Geol. Bull.* 1976, *60*, 213-44.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C and at system pressure was reported to be 66.5 mg(1)/kg(2). The corresponding mass percent and mole fraction, x_1, calculated by the compiler are 0.00665 g(1)/100 g sln and 1.423×10^{-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 GLC 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 K soly. ± 0.8 mg(1)/kg(2)
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12} [110-82-7] (2) Water; H_2O; [7732-18-5]	Skripka, V.G. *Tr. Vses. Neftegazov. Nauch. Issled. Inst.* 1976, *61*, 139-51. Sultanov, R.G.; Skripka, V.G. *Zh. Fiz. Khim.* 1973, *47*, 1035.
VARIABLES: Temperature: 200-250°C Pressure: 2.8-78.5 MPa	**PREPARED BY:** A. Maczynski

EXPERIMENTAL VALUES:

Solubility of water in cyclohexane

t/°C	p/kg cm^{-2}	p/MPa (compiler)	x_2	g(2)/100 g sln (compiler)
200	29	2.8	0.156	3.81
	50	4.9	0.091	2.10
	100	9.8	0.052	1.16
	150	14.7	0.046	1.02
	200	19.6	0.043	0.95
	300	29.4	0.042	0.93
	400	39.2	0.042	0.93
	500	49.0	0.042	0.93
	600	58.8	0.042	0.93
	700	68.6	0.042	0.93
	800	78.5	0.041	0.91
225	46.2	4.5	0.230	6.01
	50	4.9	0.209	5.35
	100	9.8	0.128	3.05
	150	14.7	0.100	2.32
	200	19.6	0.087	2.00
	300	29.4	0.084	1.92
	400	39.2	0.080	1.83
	500	49.0	0.076	1.73
	600	58.8	0.072	1.63
	700	68.6	0.068	1.54
	800	78.5	0.055	1.23

(continued)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The experimental technique was described in ref 1. No details reported in the paper.	(1) source not specified, chemical reagent grade; purity not specified; used as received. (2) distilled.
	ESTIMATED ERROR: not specified.
	REFERENCES: 1. Sultanov, R.G.; Skripka, V.G.; Namiot, A.Yu. *Gazov. Prom.* 1971, *4*, 6.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Skripka, V.G. *Tr. Vses. Neftegazov. Nauch. Issled. Inst.* 1967, *61*, 139-51.
(2) Water; H_2O; [7732-18-5]	Sultanov, R.G.; Skripka, V.G. *Zh. Fiz. Khim.* 1973, *47*, 1035.

t/°C	p/kg cm^{-2}	p/MPa (compiler)	x_2	g(2)/100 g sln (compiler)
250	70	6.9	0.345	10.13
	100	9.8	0.232	6.07
	150	14.7	0.182	4.55
	200	19.6	0.165	4.06
	300	29.4	0.145	3.50
	400	39.2	0.131	3.13
	500	49.0	0.122	2.89
	600	58.8	0.114	2.68
	700	68.6	0.106	2.47
	800	78.5	0.100	2.32

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Korenman, I.M.; Aref'eva, R.P.
(2) Water; H_2O; [7732-18-5]	Patent USSR, 553 524, 1977.04.05 C.A. *87*:87654
VARIABLES:	**PREPARED BY:**
One temperature: 20°C	A. Maczynski

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 20°C was reported to be 0.10 g(1)mL(2).

The corresponding mass percent and mole fraction, x_1, calculated by the compiler are 0.010 g(1)/100 g sln and 2.1×10^{-5}.

The compiler's calculations assume a solution density of 1.00 g mL^{-1}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
About 100-500 mL(2) was placed in a glass cylinder and 10-50 mg of an insoluble indicator was added and (1) was microburetted until the indicator floated to form a colored thin layer on the cylinder wall 2-3 cm above the liquid layer. After each drop of (1), the mixture was vigorously mixed for 0.5-1.5 min.	(1) not specified. (2) not specified.
	ESTIMATED ERROR: not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Korenman, I.M.; Aref'eva, R.P.
(2) Water; H_2O; [7732-18-5]	*Zh. Prikl. Khim.* 1978, *51*, 957-8.
VARIABLES:	**PREPARED BY:**
Temperature: 25°C	A. Maczynski and Z. Maczynska

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 0.12 g(1)dm^{-3} sln.
The corresponding mass percent and mole fraction, x_1, calculated by the compiler are 0.012 g(1)/100 g sln and 2.6×10^{-5}.
The compilers calculations assume a solution density of 1.00 g mL^{-1}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
About 200-500 mL(2) was placed in a ground-joint glass cylinder and 20-50 mg of an insoluble indicator (dithizon, phenolphthalein, etc.) was added, and (1) was microburetted until the indicator floated to form a colored thin layer on the cylinder wall above the liquid layer. Blanks were made to determine the excess of (1).	(1) not specified. (2) not specified.
	ESTIMATED ERROR: soly. ± 0.01 g(1)dm^{-3} sln (standard deviation from 6 determinations).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Krzyzanowska, T.; Szeliga, J.
(2) Water; H_2O; [7732-18-5]	*Nafta (Katowice)* 1978, *12*, 413-7.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water at 25°C was reported to be 66.5 mg(1)/kg(2).
The corresponding mass percent and mole fraction, x_1, calculated by compiler are 0.00665 g(1)/100 g sln and 1.423×10^{-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.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

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 at 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.

SOURCE AND PURITY OF MATERIALS:

(1) not specified.

(2) not specified.

ESTIMATED ERROR:

soly. 1.3 mg(1)/kg(2) (standard deviation from 7-9 determinations)

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7]	Rudakov, E.S.; Lutsyk, A.I.
(2) Water; H_2O; [7732-18-5]	*Zh. Fiz. Khim.* 1979, *53*, 1298-1300.
VARIABLES:	**PREPARED BY:**
One temperature: 25°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

The authors reported the partition coefficient α of cyclohexane between the gas and aqueous phase. α = 8.0 ± 02. $\alpha = C_g/C_s$ with C_s being the concentration of the compound in dilute aqueous solution at 25°C and C_g the concentration in the gas phase in equilibrium with the aqueous solution (both in moles per liter).

The compiler has assumed that when (1) and (2) are not very soluble in each other, C_s may be taken as the water solubility and C_g as the vapor pressure of (1). The value of p (where p is the vapor pressure in mm of Hg) is taken from ref 1. p = 97.58 mm of Hg and $\log C_g = \log p - 4.269 = -2.28$ expressed in moles per liter. Therefore $C_s = 6.56 \times 10^{-4}$ moles per liter. With the assumption of a solution density of 1.00 g mL^{-1}, the corresponding mass percent is 0.0055 g(1)/100 g sln and the corresponding mole fraction, x_1, is 1.2×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The equilibrium distribution was attained after shaking for 10 min the thermostatted reactor containing (2) and the (1) vapor. After being allowed to stand for 10 min, equal calibrated volumes of samples of the gas and solution were introduced by a syringe into a special cell for the removal of (1) by blowing, built into the gas line of the chromatograph and the partition coefficient α was determined as the ratio of the areas of the peaks of the substrate arising from the two phases.	(1) not specified. (2) not specified.
	ESTIMATED ERROR: soly. ± 10% (estimated by the compiler)
	REFERENCES: 1. Hine, J.; Mooker, P.K. *J. Org. Chem.* 1975, *4*, 292.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Schwarz, F.P. *Anal. Chem.*, 1980, *52*, 10-15.
VARIABLES:	**PREPARED BY:**
One temperature: 23.5°C	M.C. Haulait-Pirson

EXPERIMENTAL VALUES:

Solubility of cyclohexane in water at 23.5°C was reported to be 0.0052 ± 0.0002 g(1)/100 g sln.

The corresponding mole fraction, x_1 was calculated by the compiler to be 1.1×10^{-5}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

An elution chromatography method was used where (1) was the stationary phase and (2) the mobile phase. A transparent column was packed with an inert support (chromosorb P) coated with a known amount of the liquid solute (1). This solute column was connected to a water reservoir (connected to a compressed gas regulator). Water was forced through the column by the pressure of the compressed gas (ca. 14 kPa). As the total volume of water flowing through the column increased, a solute depleted zone, different in color from the stationary phase, developed and increased in length. The solubility is calculated from the amount of solute removed from the column, i.e. length of the solute depleted zone, and the volume of water passed through the column. Many details about preparation of the solute column and calculation are given in the paper.

SOURCE AND PURITY OF MATERIALS:

(1) 99.9% purity used without further purification

(2) distilled

ESTIMATED ERROR:

temp. ± 1.5°C
soly. 4% (average std. dev.)

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Water; H_2O; [7732-18-5]	Tsonopoulos, C.; Wilson, G.M. *A. I. Ch. E. J.* 1983, *29*, 990-9.
VARIABLES: Temperature: 313-482 K Pressure: 0.03-3.0 MPa	PREPARED BY: G.T. Hefter

EXPERIMENTAL VALUES:

The solubility of cyclohexane in water

T/K	p / MPa	$10^4\ x_1$	10^2 g(1)/100 g sln (compiler)
313.15	0.03151	0.156[b]	0.728
373.15	0.2723	0.379[b]	1.77
422.04	-[a]	1.03	4.81
423.15	1.0032	1.30	6.07
473.15	2.965	3.92	18.3
482.21	-[a]	4.93	23.0

a Not specified.

b Other data presented but rejected by the authors.

(continued)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
All experimental details are given in an Appendix deposited in a Documentation Centre rather than in the original paper. The solubility of (1) in (2) was measured by gas chromatography, whilst that of (2) in (1) was measured by Karl Fischer titration.	(1) No details given (2) No details given
	ESTIMATED ERROR: soly. ± 5% relative; repeatability of replicate analyses. temp. not stated. press. ± 1%; type of error not stated.
	REFERENCES:

(1) Cyclohexane; C_6H_{12}; [110-82-7]
(2) Water; H_2O; [7732-18-5]

(continued)

The solubility of water in cyclohexane

T/K	p^a/MPa	$10^3\ x_2$	g(2)/100 g sln (compiler)
313.15	0.03151	0.887,0.924,1.13	0.021[a]
373.15	0.2723	4.35, 5.12	0.10[a]
423.15	1.0082	20.4,24.0	0.47[a]
473.15	2.965	79.3	1.81

a Average value.

The three phase critical point was reported to be 529.4 K, 8.025 MPa and $x_1 = 1.748 \times 10^{-3}$ (0.82 g(1)/100 g sln, compiler).

The authors also report equations fitted to their own and literature data over the range 273-529 K, *viz.*

$$\ln x_1 = -209.11689 + 8325.49/T + 29.8231 \ln T$$

$$\ln x_2 = -62.7645 - 654.027/T + 9.99967 \ln T$$

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Deuterium oxide; (heavy water); D_2O; [7789-20-0]	Guseva, A.N.; Parnov, E.I. *Radiokhimiya* 1963, *5*, 507-9.
VARIABLES:	**PREPARED BY:**
Temperature: 71-179.5°C	A. Maczynski

EXPERIMENTAL VALUES:

Solubility of cyclohexane in deuterium oxide

t/°C	$10^4 x_1$	g(1)/100 g sln (compiler)
71	0.331	0.0139
143	1.48	0.0622
168	3.2	0.134
179.5	4.47	0.188

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The solubility of (1) in (2) was determined in sealed glass tubes.	(1) not specified. (2) distilled.
	ESTIMATED ERROR:
	not specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cyclohexane; C_6H_{12}; [110-82-7] (2) Deuterium oxide (heavy water); D_2O; [7789-20-0]	Backx, P.; Goldman, S. *J. Phys. Chem.* 1981, *85*, 2975-9.
VARIABLES:	**PREPARED BY:**
Temperature: 283-313 K	A. Maczynski

EXPERIMENTAL VALUES:

Solubility of deuterium oxide in cyclohexane

T/K	$10^4 x_2$	std. dev.	10^4 g(2)/100 g sln (compiler)
283	1.57	0.08	0.374
288	1.81	0.10	0.431
293	2.42	0.10	0.576
298	2.80	0.11	0.666
303	3.61	0.24	0.859
308	4.64	0.56	1.104
313	5.35	0.24	1.274

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

In a 175-ml milk-dilution bottle fitted with a Bakelite screw cap and a Teflon insert and rotated end-over-end, (1) was equilibrated with an excess of (2), sampled with Hamilton syringes and titrated in an Aquatest II automatic Karl Fischer Titrator.

SOURCE AND PURITY OF MATERIALS:

(1) certified grade; washed with water, dried with silica gel, and distilled; d^{25} 0.77390.

(2) obtained from the manufacturer; minimum isotopic purity of 99.7 atom % D.

ESTIMATED ERROR:

Temp. ± 0.01 K
Std. dev. of soly calcd from 18-32 determinations reported above.

REFERENCES: