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VAPOR-LIQUID EQUILIBRIUM DATA COLLECTION

Aromatic Hydrocarbons

Chemistry Data Series

Vol. I, Part 7

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7

Aromatic Hydrocarbons

Tables and diagrams of data for binary and multicomponent mixtures up to moderate pressures. Constants of correlation equations for computer use.

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Aromatic Hydrocarbons

Systems with:

Benzene
Toluene
Styrene
Ethylbenzene
m-Xylene
o-Xylene
p-Xylene
Isopropylbenzene
Propylbenzene
1,2,3-Trimethylbenzene
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Butylbenzene
p-Cymene
1-Methylnaphthalene
Anthracene

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AUTHORS' PREFACE

With part 7 of our Vapor-Liquid Equilibrium Data Collection appearing now, only parts 5 and 8 are still to be completed. Besides, preparation of supplements to parts 1 and 2 has been started. On the whole, we can state to-day, that the amount of work necessary to transform our computerized Dortmund Data Bank (DDB) of vapor-liquid equilibrium data into this printed edition was underestimated by us at the start. So much the more are we indebted to the great number of people who have helped us in various ways. At this point we wish to thank in particular the head of the computer center of the University of Dortmund, Dipl.-Phys. G. Schwichtenberg, and his staff, especially Mr. T. Blaszyk, for their constant co-operation. Likewise we should like to express our gratitude to Dr. R. Eckermann and Chem.-Ing. (grad.) C. Hammer (both DECHEMA, Frankfurt/M.) for their efforts in editing the data collection.

Finally, we should like to mention with thanks all members of our team who were engaged in the preparation of part 7 of our VLE Data Collection; these are: Mrs. U. Arlt, Mrs. A. Brunk, Dipl.-Ing. P. Grenzheuser, Mrs. G. Hennig, Dipl.-Ing. B. Kolbe, Mrs. L. Kunzner, Dr. G. Noçon, Mrs. G. Obermann.

As to the contents of the data sheets, an alteration concerning pure component vapor pressures is to be mentioned here. From this part 7 onwards, including part 5, the vapor pressures of the pure components from the original VLE data publications are used for data evaluation and parameter fitting, wherever such data are reported in the original VLE data set. For this purpose the first Antoine constant (A) is fitted to these pure component vapor pressures, with the two other Antoine constants B and C being taken from our data files for pure compounds, as explained in the General Remarks and Explanations (part 1, p. XXXIX). In case of the Antoine constant A being fitted in this way, it is given at the bottom of the respective data sheet.

Dortmund, August 1980

Ulfert Onken Jürgen Gmeling Wolfgang Arlt

PREFACE OF EDITORS

Subjects of this series are the physical and thermodynamic property data of chemical compounds and mixtures essentially for the fluid state covering PVT data, heat capacity, enthalpy, and entropy data, phase equilibrium data, transport and interfacial tension data.

The main purpose is to provide chemists and engineers with data for process design and development. For computer based calculations in process design appropriate correlation methods and accurate data must be used. These are only in some cases available in the open literature. For that reason the most urgent requirement regarding the publication of data is to offer classified and critically evaluated data, thus giving an impression which of them are reliable or not. This will be the goal of the series.

DECHEMA gives the opportunity to authors especially from universities to publish not only their theoretical results, but also their measured or compiled data, most often a large amount, that would otherwise never have been published.

The work of Dr. Gmehling, Prof. Onken and Dipl.-Chem. Arlt on vapor-liquid equilibria which was partly supported by the Federal Ministry of Research and Technology and DECHEMA has been very fruitful; in particular, it led to an extension of the UNIFAC method. The authors have produced what is probably the largest collection of vapor-liquid equilibrium data that is today available with evaluation programs and experimental data.

We present the evaluation of this material in several parts of the first volume of the series. We hope that this gives particularly the users an instrument that will allow them to solve their problems considerably more easily and quickly than before.

Frankfurt/Main, August 1980

Dieter Behrens
Reiner Eckermann

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R = RECOMMENDED VALUES

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C6H6	BENZENE		
	COCL2O	PHOSGENE	1
	CCL4	TETRACHLOROMETHANE	2- 58 58 R
		C2H3N ACETONITRILE	537-538
	CHBR3	TRIBROMOMETHANE	59- 61
	CHCLF2	DIFLUOROCHLOROMETHANE	62- 63
	CHCL3	CHLOROFORM	64- 83
	CH3I	METHYL IODIDE	84
	CH3NO2	NITROMETHANE	85- 88 88 R
	CH4S	METHANETHIOL	89
	CS2	CARBON DISULFIDE	90-101
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	C2H3CL3	1,1,1-TRICHLOROETHANE	121
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	C2H6OS	DIMETHYLSULFOXIDE	164-169
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1ST COMPONENT	2ND COMPONENT	3RD COMPONENT 4TH COMPONENT		PAGE
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	C4H11N	DIETHYLAMINE		205-207
	C5H5N	PYRIDINE		208-221
	C5H11NO	DIETHYLFORMAMIDE		222-225 225 P
	C6F6	HEXAFLUOROBENZENE		226-237 237 P
	C6H4CL2	P-DICHLOROBENZENE		238
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	C6H5F	FLUOROBENZENE		252
	C6H5NO2	NITROBENZENE		253-254
	C6H7N	ANILINE		255-266 266 R
	C6H11CL	CHLOROCYCLOHEXANE		267-270
	C6H11NO	6-CAPROLACTAM		271
	C6H13N	CYCLOHEXYLAMINE		272-274
	C6H15N	TRIETHYLAMINE		275-277 277 R
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	C7H8	TOLUENE		279-301 301 R
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	CS2	CARBON DISULFIDE		354-361
	C2HCL3	TRICHLOROETHYLENE		362-371
	C2H3N	ACETONITRILE		372-375
	C2H3NO	METHYL ISOCYANATE		376
	C2H4CL2	1,2-DICHLOROETHANE		377-384 384 R
	C2H5NO2	NITROETHANE		385
	C2H6OS	DIMETHYLSULFOXIDE		386
	C2H8N2	ETHYLENEDIAMINE		387
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	C4H4S	THIOPHENE		395-396
	C4H7N	BUTYRONITRILE		397
	C4H8O2S	SULFOLANE		398-399
	C4H11N	DIETHYLAMINE		400
	C5H5N	PYRIDINE		401-407
	C6F6	HEXAFLUOROBENZENE		408-414 414 R
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	C9H12	PROPYLBENZENE	457
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	C6H5NO2 NITROBENZENE		527
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	C14H10 PHENANTHRENE		536

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	ANILINE	C6H7N	255-266 266 R
	BENZONITRILE	C7H5N	278
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	N,N-DIMETHYLFORMAMIDE	C3H7NO	178-184 184 R
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	ETHYLBENZENE	C8H10	306
		ISOPROPYLBENZENE C9H12 ALPHA-METHYLSTYRENE C9H10	543
	ETHYL BROMIDE	C2H5BR	159
	ETHYLENEDIAMINE	C2H8N2	170-176
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	FLUOROBENZENE	C6H5F	252
	HEXAFLUOROBENZENE	C6F6	226-237 237 R
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	METHYL ETHYL KETOXIME C4H9NO			194-198 198 R
	N-METHYLFORMAMIDE C2H5NO			161-162
	METHYL IODIDE CH3I			84
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	NITROMETHANE CH3NO2			85- 88 88 R
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	OCTAMETHYL-CYCLOTETRASILOXANE C8H24O4SI4			317-321
	PENTACHLOROETHANE C2HCL5			119
	PHOSGENE CCL2O			1
	PROPYLBENZENE C9H12			323
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	STYRENE C8H8			305
	SULFOLANE C4H8O2S			190-191
	P-TERPHENYL C18H14			327-328
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	TETRACHLOROETHYLENE C2CL4			112
	TETRACHLOROMETHANE CCL4			2- 58 58 R
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	TETRAETHYL SILANE C8H20SI			313-316 316 R
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	1,4-THIOXANE-S-OXIDE C4H8O2S			192-193
	TOLUENE C7H8			279-301 301 R
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ETHYLBENZENE		C8H10	
	ACETONITRILE	C2H3N	465
	ACRYLONITRILE	C3H3N	467
	ANILINE	C6H7N	471-475 475 R
	BUTYLBENZENE	C10H14	477
	CHLOROBENZENE	C6H5CL	469
	1,2-DICHLOROETHANE	C2H4CL2	466
	DIETHYLAMINE	C4H11N	468
	ISOPROPYLBENZENE	C9H12	476
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STYRENE		C8H8	
	ACRYLONITRILE	C3H3N	446
	ETHYLBENZENE	C8H10	447-455
	ALPHA-METHYLSTYRENE	C9H10	456
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	ACETONITRILE	C2H3N	372-375
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	DIETHYLAMINE C4H11N			400
	N,N-DIMETHYLFORMAMIDE C3H7NO			390-394
	DIMETHYLSULFOXIDE C2H6OS			386
	ETHYLBENZENE C8H10			443
		ISOPROPYLBENZENE	C9H12	
		ALPHA-METHYLSTYRENE	C9H10	544
	ETHYLENEDIAMINE C2H8N2			387
	FLUOROBENZENE C6H5F			418-421 421 R
	O-FLUOROTOLUENE C7H7F			436-439
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	TRIETHYLAMINE	C6H15N	524-526
M-XYLENE		C8H10	
	ANILINE	C6H7N	483
	N,N-DIMETHYLFORMAMIDE	C3H7NO	481
	PYRIDINE	C5H5N	482
	TETRACHLOROMETHANE	CCL4	478-480
	P-XYLENE	C8H10	484-485
O-XYLENE		C8H10	
	1,2-DICHLOROETHANE	C2H4CL2	490
	N,N-DIMETHYLFORMAMIDE	C3H7NO	493
	ETHYLENEDIAMINE	C2H8N2	491-492
	PENTACHLOROETHANE	C2HCL5	489
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	ACETONITRILE	C2H3N	499
	ANILINE	C6H7N	509
	CHLOROBENZENE	C6H5CL	508
	1,2-DICHLOROETHANE	C2H4CL2	500
	N,N-DIMETHYLFORMAMIDE	C3H7NO	501
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