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CHEN, DANNHAUSER, AND JOHARI

									> D (labora)			
_								P (kbar)				
	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	0	Γ(°K)∕	T	
					ol	n-Propan						
$\rho(P, 0)$	16.84	16.54	16.18	15.77	15.27	14.69	14.07	13.37	12.66	361.3		
10 ⁴ A (1	23.86	23.48	23.16	22.71	22.28	21.82	21.27	20.61	19.70	303.2		
* P is the pressure	28.36	27.98	27.57	27.16	26.73	26.23	25.62	24.93	24.21	273.1		
	33.34	33.06	32.67	32.25	31.78	31.28	30.72	30.04	29.22	244.5		
our lowest te			•••	36.17	35.66	35.13	34.57	33.96	33.22	224.8		
from which we	•••		•••	•••	37.62	37.16	36.62	36.03	35.36	216.0		
basis of the]	•••	•••	•••	•••		39.5	38.9	38.2	37.42	208.0		
extrapolate sn					ol	sec-Butan						
and Cole.	11.29	10.99	10.68	10.33	9.98	9.51	8.93	8.21	7.01	367.9		
found to be a	15.85	15.50	15.10	14.66	14.22	13.74	13.20	12.54	11.75	325.3		
ing to the equ	19.62	19.27	18.90	18.49	18.03	17.50	16.82	16.00	14.85	307.1		
	25.12	24.81	24.49	24.14	23.76	23.20	22.74	22.03	21.15	272.5		
P	•••	29.66	29.37	29.01	28.60	28.19	27.70	27.09	26.38	247.1		
Pertinent valu	•••	•••	•••	34.68	34.42	34.04	33.60	33.11	32.52	221.0		
are listed in ?					otanol	Methyl-3-hej	6-					
	5.29	5.16	5.03	4.89	4.71	4.52	4.31	4.08	3.79	364.2		
	6.32	6.11	5.89	5.65	5.38	5.11	4.83	4.49	4.10	333.9		
10	8.63	8.22	7.84	7.41	6.91	6.39	5.85	5.20	4.58	304.4		
3.3-	13.71	13.16	12.59	11.87	11.00	9.98	8.78	7.49	5.97	274.2		
	16.82	16.27	15.65	14.96	14.12	13.02	11.74	10.10	7.97	258.4		
-0	19.85	19.43	18.98	18.35	17.61	16.60	15.31	13.69	11.34	243.4		
3.1 - 0	20.85	20.55	20.11	19.58	18.86	17.90	16.74	15.10	12.50	236.7		
Cu ²	22.60	22.33	21.96	21.47	20.88	20.05	18.88	17.27	15.30	229.2		
K			23 7	23 40	23 01	22 35	21 30	20 01	18 25	217 5		

TABLE I. Equilibruim dielectric constant as a function of temperature and pressure.

Samples

Alcohols were reagent, or better, grade. 6-Methyl-3-heptanol (Chemical Samples Company) was 98% pure as received. Each alcohol was refluxed for several hours over CaH2 and then subjected to a careful fractionation. The GC analyses showed only trivial amounts of impurities.

1,2-Dichloroethane was chromatoquality (Matheson, Coleman and Bell) and was used without further purification. n-Butyl chloride (Fisher, certified quality) was fractionated before use. The density and index of refraction of both compounds agree well with literature values.

n-Hexane was Matheson, Coleman and Bell chromatoquality, (99.5+%; major impurity is methylcyclopropane) used without further purification after tests showed its dielectric constant to be the same as carefully dried, 99.9+% pure, samples. All of the solvent for one solute came from the same lot of material.

Decalin (Distillation Products Industries, mixture of isomers) was distilled from CaH2. Its density at 27° was 0.8820 g/ml; $n_D^{25} = 1.4727$; $\epsilon_0(30^\circ) = 2.165$.

RESULTS

Pure Alcohols

The equilibrium dielectric constant of n-propanol, sec-butanol, and 6-methyl-3-heptanol was measured as a function of pressure and temperature. Isothermal data were plotted on a large scale as a function of pressure. Interpolated data are listed in Table I. The only data available for comparison are Gilchrist, Earley, and Cole's⁹ for *n*-propanol: our values of ϵ_0 at 1 kbar extrapolate to 43.8 at 191°K (their highest temperature), about 2% higher than their result. At



FIG. 1. guo2/1 n-propanol. K 3 kbar; •=4 1 from W. L. Le Mass., 1949; d 2.12². O = 1 at (bottom insert and G. Rinck density data 1 $\Theta = 2$ kbar.

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