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

	TABLE 1.	Equilibruin	dielectric co	onstant as a	runction of t	emperature	and pressure		
P (kbar)	6)								
(°K)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
				n-Propano	ol				
361.3	12.66	13.37	14.07	14.69	15.27	15.77	16.18	16.54	16.84
	19.70	20.61	21.27	21.82	22.28	22.71	23.16	23.48	23.86
	24.21	24.93	25.62	26.23	26.73	27.16	27.57	27.98	28.36
	29.22	30.04	30.72	31.28	31.78	32.25	32.67	33.06	33.34
	33.22	33.96	34.57	35.13	35.66	36.17	• • •	•••	***
		36.03	36.62	37.16	37.62		•••	***	•••
		38.2	38.9	39.5	•••	***	•••	•••	•••
200.0				sec-Butano	ol				
367 9	7.01	8.21	8.93	9.51	9.98	10.33	10.68	10.99	11.29
		12.54	13.20	13.74	14.22	14.66	15.10	15.50	15.85
		16.00	16.82	17.50	18.03	18.49	18.90	19.27	19.62
		22.03	22.74	23.20	23.76	24.14	24.49	24.81	25.12
		27.09	27.70	28.19	28.60	29.01	29.37	29.66	•••
			33.60	34.04	34.42	34.68	***	•••	• • •
221.0	52.02		6-	Methyl-3-he	ptanol				
364.2	3.79	4.08	4.31	4.52	4.71	4.89	5.03	5.16	5.29
		4.49	4.83	5.11	5.38	5.65	5.89	6.11	6.32
		5.20	5.85	6.39	6.91	7.41	7.84	8.22	8.63
		7.49	8.78	9.98	11.00	11.87	12.59	13.16	13.71
		10.10	11.74	13.02	14.12	14.96	15.65	16.27	16.82
		13.69	15.31	16.60	17.61	18.35	18.98	19.43	19.85
			16.74	17.90	18.86	19.58	20.11	20.55	20.85
			18.88	20.05	20.88	21.47	21.96	22.33	22.60
			21.39	22.35	23.01	23.40	23.7		• • •
	/	P (kbar) 361.3 12.66 303.2 19.70 273.1 24.21 244.5 29.22 224.8 33.22 216.0 35.36 208.0 37.42 367.9 7.01 325.3 11.75 307.1 14.85 272.5 21.15 247.1 26.38 221.0 32.52 364.2 3.79 333.9 4.10 304.4 4.58 274.2 5.97 258.4 7.97 243.4 11.34 236.7 12.50 229.2 15.30	P (kbar) 361.3 12.66 13.37 303.2 19.70 20.61 273.1 24.21 24.93 244.5 29.22 30.04 224.8 33.22 33.96 216.0 35.36 36.03 208.0 37.42 38.2 367.9 7.01 8.21 325.3 11.75 12.54 307.1 14.85 16.00 272.5 21.15 22.03 247.1 26.38 27.09 221.0 32.52 33.11 364.2 3.79 4.08 333.9 4.10 4.49 304.4 4.58 5.20 274.2 5.97 7.49 258.4 7.97 10.10 243.4 11.34 13.69 236.7 12.50 15.10 229.2 15.30 17.27	P (kbar) 0 0.5 1.0 361.3 12.66 13.37 14.07 303.2 19.70 20.61 21.27 273.1 24.21 24.93 25.62 244.5 29.22 30.04 30.72 224.8 33.22 33.96 34.57 216.0 35.36 36.03 36.62 208.0 37.42 38.2 38.9 367.9 7.01 8.21 8.93 325.3 11.75 12.54 13.20 307.1 14.85 16.00 16.82 272.5 21.15 22.03 22.74 247.1 26.38 27.09 27.70 221.0 32.52 33.11 33.60 6- 364.2 3.79 4.08 4.31 333.9 4.10 4.49 4.83 304.4 4.58 5.20 5.85 274.2 5.97 7.49 8.78 258.4 7.97 10.10 11.74 243.4 11.34 13.69	(*K) 0 0.5 1.0 1.5 ***Propance** 361.3 12.66 13.37 14.07 14.69 303.2 19.70 20.61 21.27 21.82 273.1 24.21 24.93 25.62 26.23 244.5 29.22 30.04 30.72 31.28 224.8 33.22 33.96 34.57 35.13 216.0 35.36 36.03 36.62 37.16 208.0 37.42 38.2 38.9 39.5 ***sec-Butance** 367.9 7.01 8.21 8.93 9.51 325.3 11.75 12.54 13.20 13.74 307.1 14.85 16.00 16.82 17.50 272.5 21.15 22.03 22.74 23.20 247.1 26.38 27.09 27.70 28.19 221.0 32.52 33.11 33.60 34.04 6-Methyl-3-he 364.2 3.79 4.08 4.31 4.52 333.9 4.10 4.49 4.83 5.11 304.4 4.58 5.20 5.85 6.39 274.2 5.97 7.49 8.78 9.98 258.4 7.97 10.10 11.74 13.02 243.4 11.34 13.69 15.31 16.60 23.67 12.50 15.10 16.74 17.90 229.2 15.30 17.27 18.88 20.05	P (kbar) 0 0.5 1.0 1.5 2.0	## Propanol 361.3	P (kbar)	## Propanol 1.5 2.0 2.5 3.0 3.5

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

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's 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

ρ(P, 0) 10⁴A (1

P is the pressure

our lowest to became evident from which we basis of the l extrapolate sn and Cole.

The isobarifound to be a ing to the equ

Pertinent valuare listed in

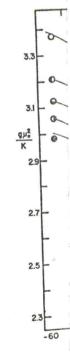


Fig. 1. gµ0³/1
n-propanol. K
3 kbar; = 4
from W. L. Le
Mass., 1949; d
2.12². O = 1 at
(bottom insert
and G. Rinck,
density data
= 2 kbar.