



Fig. K.—COMPRESSIBILITY CHARTS FOR ETHANE-NITROGEN MIXTURES INVESTIGATED

Table F.—CALCULATED SATURATED LIQUID AND VAPOR DENSITIES FOR ETHANE-NITROGEN MIXTURES

Saturated Liquid Densities Calculated from Phase Equilibrium Data

95.02% C ₂ H ₆ 4.98% N ₂		84.99% C ₂ H ₆ — 15.01% N ₂				68.31% C ₂ H ₆ 31.69% N ₂		15.03% C ₂ H ₆ 84.97% N ₂		1.98% C ₂ H ₆ 98.02% N ₂	
		Run 1		Run 2							
Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc
52.0	0.3713	61.5	0.2823	23.4	0.3961	-150.0	0.5915	-146.5	0.4247	-228.1	0.3940
32.0	0.4061	58.7	0.2974	-0.4	0.4355	-155.0	0.5967	-173.2	0.4921	-232.0	0.4288
10.0	0.4344	54.0	0.3179	-45.7	0.4923	-155.0	0.5929	-202.0	0.5528	-240.0	0.488
-20.0	0.4632	50.0	0.3315	-47.4	0.4771	-165.0	0.6029			-249.0	0.525
-20.0	0.4678	42.0	0.3545	-70.0	0.5006	-172.8	0.6122			-268.0	0.583
-50.0	0.4947	-45.0	0.4880	-100.0	0.5282	-184.0	0.6185				
-80.0	0.5202	-70.0	0.5103	-100.0	0.5303	-197.8	0.6289				
-120.0	0.5509	-100.0	0.5360	-130.0	0.5642	-207.0	0.6359				
-155.0	0.5757	-130.0	0.5670	-155.0	0.5760	-207.0	0.6386				
-187.0	0.6011	-155.0	0.5850	-184.0	0.5970	-213.0	0.6433				
		-184.0	0.6058	-184.0	0.6031	-220.5	0.6497				
		-197.8	0.6209	-220.5	0.6276	-238.0	0.6600				
		-220.0	0.6341	-249.0	0.6414						
				-276.4	0.6611						

5.1% C ₂ H ₆ 94.9% N ₂	
Temp °F	Density gm/cc
-155.8	0.2328
-169.2	0.2721
-193.2	0.3341
-221.0	0.4111
-230.8	0.4956

Saturated Vapor Densities Calculated with Equation of State

14.94% C ₂ H ₆ 85.06% N ₂		5.10% C ₂ H ₆ 94.90% N ₂		1.98% C ₂ H ₆ 98.02% N ₂	
Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc
-76.7	0.1841	-200.3	0.3573	-197.6	0.2615
-71.7	0.1305	-180.9	0.2556	-178.9	0.1838
-76.6	0.0821	-156.4	0.2320	-172.0	0.1515
-85.0	0.0575	-135.5	0.0487	-178.3	0.0429
-94.8	0.0411			-188.0	0.0275
-118.9	0.0193				
-135.0	0.0117				
-170.0	0.0090				

Saturated Vapor and Liquid Densities Calculated from P-V-T Data

95.03% C ₂ H ₆ 4.97% N ₂		85.01% C ₂ H ₆ 14.99% N ₂		70.27% C ₂ H ₆ 29.73% N ₂		50.26% C ₂ H ₆ 49.74% N ₂		29.96% C ₂ H ₆ 70.04% N ₂	
Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc	Temp °F	Density gm/cc
9.3	0.4251	3.0	0.4144	-13.8	0.4129	-27.4	0.3702*	-59.5	0.3272*
45.7	0.3720	35.9	0.3611	12.0	0.3614	-8.4	0.3197*	-40.9	0.2767*
75.8	0.2998	56.4	0.3079	30.4	0.3094	5.1	0.2679*	-28.8	0.2262*
82.9	0.2306	66.0	0.2550	40.4	0.2577	15.0	0.2161*	-23.2	0.1762*
82.1	0.1600*	69.9	0.2152	48.2	0.2068*	20.0	0.1651*	-23.8	0.1264*
72.5	0.1073*	70.1	0.1599*	50.6	0.1563*	14.5	0.1134*	-35.6	0.0758*
37.3	0.0547*	60.0	0.1039*	40.8	0.1052*	-7.6	0.0628*	-56.5	0.0421*
		21.5	0.0483*	12.1	0.0540*				

* Vapor densities