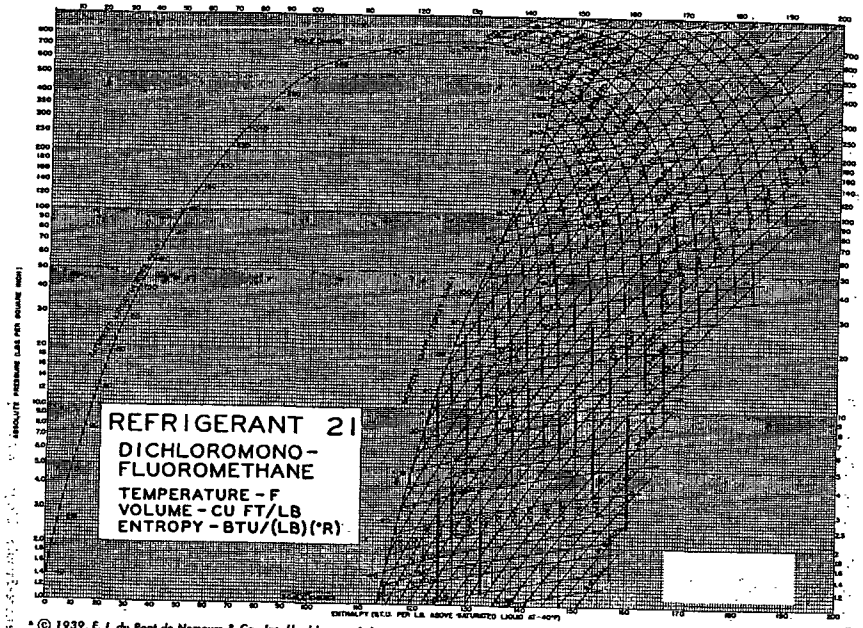

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Fig. 5 .... Pressure-Enthalpy Diagram for Refrigerant 21

Table 7 .... Refrigerant 21 (Dichloromonofluoromethane) Properties of Liquid and Saturated Vapor*

Temp F	Pressure psia	Pressure psig	Volume cu ft/lb Vapor v_g	Density lb/cu ft Liquid $1/v_f$	Enthalpy** Btu/lb Liquid h_f	Enthalpy** Btu/lb Vapor h_g	Entropy** Btu/(lb)(°R) Liquid s_f	Entropy** Btu/(lb)(°R) Vapor s_g
−40	1.358	27.16*	32.09	94.83	0.00	114.56	0.0000	0.2730
−30	1.888	26.08*	23.61	93.81	2.36	115.76	.0055	.2695
−20	2.578	24.67*	17.66	93.02	4.71	116.96	.0109	.2663
−10	3.463	22.87*	13.43	92.25	7.07	118.17	.0162	.2633
0	4.582	20.59*	10.35	91.49	9.44	119.37	.0214	.2606
2	4.838	20.07*	9.840	91.32	9.92	119.61	0.0225	0.2601
4	5.105	19.63*	9.361	91.24	10.39	119.85	.0235	.2596
6	5.382	19.23*	8.922	91.16	10.63	119.97	.0240	.2593
8	5.674	18.96*	8.910	91.07	10.86	120.09	.0245	.2591
		18.87*	8.486	90.91	11.33	120.33	.0255	.2586
10	5.978	17.75*	8.085	90.74	11.81	120.57	0.0265	0.2581
12	6.294	17.11*	7.707	90.58	12.29	120.81	.0275	.2577
14	6.625	16.43*	7.349	90.42	12.77	121.05	.0286	.2572
16	6.968	15.73*	7.012	90.25	13.25	121.30	.0296	.2567
18	7.325	15.01*	6.694	90.09	13.73	121.54	.0306	.2563
20	7.699	14.25*	6.392	89.93	14.21	121.78	0.0316	0.2559
22	8.087	13.46*	6.107	89.77	14.68	122.02	.0326	.2555
24	8.488	12.64*	5.838	89.61	15.16	122.26	.0336	.2550
26	8.906	11.79*	5.584	89.45	15.64	122.50	.0346	.2546
28	9.341	10.90*	5.342	89.29	16.12	122.74	.0356	.2542
30	9.793	9.98*	5.112	89.13	16.61	122.98	0.0365	0.2538
32	10.26	9.03*	4.894	88.97	17.09	123.22	.0375	.2534
34	10.75	8.05*	4.688	88.81	17.58	123.46	.0385	.2530
36	11.26	7.00*	4.492	88.65	18.07	123.71	.0395	.2526
38	11.78	5.94*	4.306	88.50	18.55	123.95	.0405	.2523
40	12.32	4.84*	4.130	88.34	19.04	124.19	0.0414	0.2519
42	12.88	3.70*	3.963	88.18	19.53	124.43	.0424	.2516
44	13.46	2.52*	3.804	88.02	20.02	124.67	.0434	.2512
46	14.07	1.28*	3.651	87.87	20.51	124.91	.0444	.2509
48	14.69	0.01*	3.507	87.72	21.00	125.15	.0453	.2505
50	15.33	0.63	3.370	87.57	21.49	125.39	.0463	.2502
52	16.00	1.30	3.239	87.34	21.99	125.63	0.0473	0.2499
54	16.69	1.99	3.114	87.18	22.48	125.87	.0482	.2495
56	17.40	2.70	2.995	87.02	22.98	126.11	.0492	.2492
58	18.14	3.44	2.881	86.87	23.48	126.35	.0502	.2489
60	18.90	4.20	2.773	86.73	23.98	126.60	.0511	.2486
62	19.69	4.99	2.669	86.58	24.49	126.84	0.0521	0.2483
64	20.50	5.80	2.570	86.36	24.99	127.08	.0530	.2480
66	21.34	6.64	2.476	86.21	25.49	127.32	.0540	.2477
68	22.20	7.50	2.386	86.06	25.99	127.56	.0549	.2474
70	23.08	8.38	2.300	85.91	26.49	127.79	.0559	.2471
72	24.00	9.30	2.218	85.69	27.00	128.03	0.0568	0.2469
74	24.95	10.25	2.139	85.54	27.51	128.27	.0577	.2466
76	25.92	11.22	2.064	85.40	28.02	128.51	.0587	.2463
78	26.93	12.23	1.992	85.18	28.53	128.74	.0596	.2460
80	27.96	13.26	1.923	85.03	29.03	128.98	.0606	.2458
82	29.02	14.32	1.857	84.89	29.54	129.21	0.0615	0.2455
84	30.11	15.41	1.794	84.68	30.05	129.44	.0624	.2453
86†	31.23	16.53	1.733	84.53	30.56	129.68	.0634	.2450
88	32.39	17.69	1.675	84.32	31.07	129.91	.0643	.2448
90	33.58	18.88	1.619	84.18	31.59	130.14	.0652	.2446
92	34.80	20.10	1.565	84.03	32.11	130.38	0.0662	0.2443
94	36.06	21.36	1.513	83.83	32.63	130.61	.0671	.2441
96	37.35	22.65	1.464	83.68	33.15	130.84	.0680	.2439
98	38.68	23.98	1.417	83.47	33.67	131.07	.0690	.2437
100	40.04	25.34	1.371	83.33	34.18	131.29	.0699	.2434
110	47.40	32.70	1.169	82.44	36.79	132.42	0.0745	0.2424
120	55.76	41.05	1.001	81.57	39.46	133.53	.0791	.2414
130	65.15	50.45	0.8623	80.65	42.13	134.61	.0837	.2405
140	75.72	61.02	0.7457	79.75	44.86	135.66	.0882	.2396
150	87.51	72.81	0.6476	78.80	47.62	136.68	.0927	.2388
160	100.6	85.91	0.5646	77.88	50.43	137.69	.0972	.2381

* From published data (1939) of E.I. du Pont de Nemours & Co., Inc. Used by permission.
* Inches of mercury below one standard atmosphere. ** Based on 0 for the saturated liquid at −40 F. † Standard cycle temperatures.

Table 8 .... Refrigerant 21 (Dichloromonofluoromethane) Properties of Superheated Vapor*

Temp F	Abs Pressure 2 psi Gage Pressure 25.85 in. Vac (Sat Temp −28.2 F) v	h	s	Abs Pressure 4 psi Gage Pressure 21.78 in. Vac (Sat Temp −4.9 F) v	h	s	Abs Pressure 6 psi Gage Pressure 17.71 in. Vac (Sat Temp 10.1 F) v	h	s	Abs Pressure 8 psi Gage Pressure 13.64 in. Vac (Sat Temp 21.6 F) v	h	s
(At Sat)	(22.87)	(115.98)	(0.2689)	(11.74)	(118.78)	(0.2619)	(8.056)	(120.58)	(0.2581)	(6.169)	(121.95)	(0.2556)
0	23.65	119.49	0.2768	11.87	119.40	0.2633	....	....	....	....	....	....
10	24.38	120.76	.2795	12.14	120.66	.2650	....	....	....	....	....	....
20	24.90	122.04	.2822	12.40	121.95	.2667	8.232	121.86	0.2608	....	....	....
30	25.43	123.34	.2849	12.66	123.25	.2714	8.408	123.18	.2635	6.281	123.06	0.2578
40	25.95	124.65	.2876	12.93	124.57	.2741	8.585	124.48	.2661	6.414	124.39	.2605
50	26.47	125.98	0.2902	13.19	125.90	0.2767	8.762	125.81	0.2688	6.547	125.73	0.2631
60	27.00	127.33	.2928	13.45	127.25	.2793	8.939	127.17	.2714	6.681	127.08	.2657
70	27.52	128.69	.2954	13.72	128.61	.2819	9.115	128.53	.2740	6.814	128.44	.2683
80	28.05	130.07	.2979	13.98	129.99	.2845	9.291	129.91	.2766	6.947	129.82	.2709
90	28.57	131.45	.3005	14.24	131.37	.2870	9.467	131.29	.2791	7.079	131.21	.2735
100	29.09	132.85	0.3030	14.51	132.77	0.2895	9.643	132.69	0.2816	7.212	132.61	0.2760
110	29.62	134.26	.3055	14.77	134.18	.2920	9.819	134.11	.2841	7.345	134.03	.2785
120	30.14	135.68	.3080	15.03	135.61	.2945	9.995	135.54	.2866	7.477	135.46	.2810
130	30.66	137.12	.3104	15.29	137.04	.2970	10.17	136.97	.2891	7.609	136.90	.2835
140	31.19	138.57	.3129	15.56	138.49	.2994	10.35	138.42	.2915	7.742	138.35	.2859
150	31.71	140.03	0.3153	15.82	139.96	0.3019	10.52	139.89	0.2940	7.874	139.82	0.2883
160	32.23	141.52	.3177	16.08	141.45	.3043	10.70	141.39	.2964	8.006	141.31	.2908
170	32.76	143.02	.3201	16.35	142.95	.3067	10.87	142.89	.2988	8.138	142.82	.2932
180	33.28	144.53	.3225	16.61	144.46	.3091	11.05	144.40	.3012	8.270	144.33	.2956
190	33.80	146.05	.3249	16.87	145.98	.3114	11.22	145.92	.3035	8.402	145.86	.2979

Temp F	Abs Pressure 10 psi Gage Pressure 9.57 in. Vac (Sat Temp 30.9 F) v	h	s	Abs Pressure 20 psi Gage Pressure 5.3 psi (Sat Temp 62.8 F) v	h	s	Abs Pressure 30 psi Gage Pressure 15.3 psi (Sat Temp 83.8 F) v	h	s	Abs Pressure 40 psi Gage Pressure 25.3 psi (Sat Temp 99.9 F) v	h	s
(At Sat)	(5.014)	(123.10)	(0.2536)	(2.630)	(126.94)	(0.2482)	(1.800)	(129.42)	(0.2453)	(1.373)	(131.29)	(0.2435)
100	5.753	132.54	0.2716	2.834	132.14	0.2578	1.880	131.72	0.2495	1.372	131.29	0.2435
110	5.880	133.95	.2741	2.889	133.56	.2603	1.898	133.16	.2520	1.402	132.74	.2460
120	5.966	135.38	.2766	2.943	135.00	.2628	1.935	134.61	.2546	1.430	134.20	.2486
130	6.072	136.82	.2791	2.998	136.45	.2653	1.973	136.06	.2571	1.459	135.67	.2511
140	6.178	138.28	.2815	3.052	137.91	.2678	2.009	137.53	.2596	1.487	137.15	.2536
150	6.285	139.75	0.2840	3.106	139.39	0.2702	2.046	139.02	0.2620	1.515	138.65	0.2561
160	6.391	141.24	.2864	3.160	140.90	.2727	2.083	140.53	.2645	1.543	140.17	.2585
170	6.497	142.75	.2888	3.214	142.41	.2751	2.119	142.06	.2669	1.572	141.70	.2610
180	6.603	144.27	.2912	3.268	143.93	.2775	2.156	143.59	.2693	1.600	143.24	.2634
190	6.709	145.79	.2936	3.322	145.46	.2799	2.193	145.13	.2717	1.628	144.79	.2658
200	6.815	147.33	0.2959	3.376	147.01	0.2822	2.229	146.68	0.2741	1.656	146.35	0.2682
210	6.921	148.89	.2983	3.430	148.58	.2846	2.266	148.25	.2764	1.683	147.93	.2706
220	7.027	150.46	.3006	3.484	150.16	.2869	2.302	149.84	.2788	1.711	149.52	.2729
230	7.133	152.05	.3029	3.537	151.75	.2892	2.338	151.44	.2811	1.739	151.13	.2753
240	7.329	153.65	.3052	3.591	153.35	.2915	2.375	153.05	.2834	1.767	152.75	.2776
250	7.344	155.26	0.3075	3.645	154.97	0.2938	2.411	154.68	0.2857	1.794	154.38	0.2799
260	7.450	156.88	.3098	3.698	156.60	.2961	2.447	156.31	.2880	1.822	156.01	.2822
270	7.555	158.52	.3120	3.752	158.24	.2984	2.483	157.95	.2903	1.849	157.66	.2845
280	7.661	160.17	.3143	3.805	159.90	.3007	2.520	159.61	.2926	1.877	159.33	.2868
290	7.767	161.84	.3166	3.859	161.57	.3029	2.556	161.30	.2948	1.904	161.02	.2890

Temp F	Abs Pressure 50 psi Gage Pressure 35.3 psi (Sat Temp 113.3 F) v	h	s	Abs Pressure 60 psi Gage Pressure 45.3 psi (Sat Temp 124.7 F) v	h	s	Abs Pressure 70 psi Gage Pressure 55.3 psi (Sat Temp 134.7 F) v	h	s	Abs Pressure 80 psi Gage Pressure 65.3 psi (Sat Temp 143.8 F) v	h	s
(At Sat)	(1.111)	(132.79)	(0.2421)	(0.9333)	(134.03)	(0.2410)	(0.8045)	(135.10)	(0.2401)	(0.7069)	(136.06)	(0.2393)
150	1.197	138.26	0.2513	0.9838	137.86	0.2474	0.8312	137.45	0.2440	0.7167	137.01	0.2409
160	1.220	139.79	.2538	1.003	139.49	.2499	.8486	139.01	.2465	.7321	138.58	.2435
170	1.243	141.33	.2563	1.023	140.95	.2524	.8658	140.58	.2490	.7476	140.16	.2460
180	1.265	142.88	.2587	1.042	142.51	.2548	.8828	142.13	.2515	.7629	141.74	.2485
190	1.288	144.43	.2612	1.062	144.07	.2573	.8998	143.71	.2539	.7781	143.33	.2509
200	1.311	146.00	0.2636	1.081	145.65	0.2597	0.9168	145.30	0.2564	0.7933	144.93	0.2534
210	1.334	147.59	.2659	1.100	147.25	.2621	.9336	146.90	.2588	.8083	146.54	.2558
220	1.356	149.19	.2683	1.120	148.88	.2645	.9504	148.52	.2612	.8233	148.17	.2582
230	1.379	150.80	.2707	1.139	150.48	.2668	.9671	150.15	.2635	.8383	149.81	.2606
240	1.401	152.42	.2730	1.158	152.11	.2692	.9837	151.79	.2659	.8530	151.46	.2630
250	1.424	154.06	0.2753	1.177	153.76	0.2715	1.000	153.44	0.2682	0.8678	153.12	0.2654
260	1.446	155.71	.2776	1.196	155.41	.2738	1.017	155.10	.2706	.8825	154.78	.2677
270	1.469	157.37	.2799	1.215	157.08	.2761	1.033	156.77	.2729	.8971	156.46	.2700
280	1.491	159.05	.2822	1.234	158.76	.2784	1.050	158.45	.2752	.9117	158.16	.2723
290	1.513	160.74	.2845	1.252	160.45	.2807	1.066	160.16	.2775	.9262	159.87	.2746
300	1.535	162.44	0.2867	1.271	162.16	0.2830	1.082	161.88	0.2797	0.9406	161.59	0.2769
310	1.558	164.16	.2890	1.290	163.88	.2852	1.099	163.61	.2820	.9550	163.32	.2792
320	1.580	165.89	.2912	1.309	165.62	.2875	1.115	165.35	.2842	.9694	165.07	.2814
330	1.602	167.63	.2934	1.327	167.36	.2897	1.131	167.10	.2865	.9838	166.83	.2837
340	1.624	169.38	.2955	1.346	169.12	.2919	1.147	168.86	.2887	.9981	168.60	.2859

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