

**D**  
DuPont Fluorochemicals

## **Technical Information**

**T-12 SI**

**Thermodynamic  
Properties  
of  
Freon<sup>®</sup> 12  
(R-12)**

## Thermodynamic Properties of Freon® 12 Refrigerant (R-12) SI Units

Tables of the thermodynamic properties of R-12 have been developed and are presented here. This information is based on values calculated using the NIST REFPROP Database (McLinden, M.O., Klein, S.A., Lemmon, E.W., and Peskin, A.P., NIST Standard Reference Database 23, NIST thermodynamic and transport properties of refrigerants and refrigerant mixtures – REFPROP version 6.01, Standard Reference Data Program, National Institute of Standards and Technology, 1998).

### Units

P = Pressure in kPa. Absolute

T = Temperature in Celcius

$V_f$  = Fluid (liquid) specific volume in cubic meters per kilogram

$V_g$  = Vapour (gas) specific volume in cubic meters per kilogram

$d_f$  and  $d_g$  = Fluid and Vapour (respectively) densities in kilograms per cubic meter

H = Enthalpy (kJ/kg)

S = Entropy (kJ/kg.K)

### Physical Properties

Chemical Formula	$\text{CCl}_2\text{F}_2$
Molecular mass	120.91
Boiling Point At one atmosphere	-29.75°C
Critical Temperature	111.97°C
Critical Pressure	4136 kPa
Critical Density	565.0 kg/m <sup>3</sup>
Critical Volume	0.0018 m <sup>3</sup> /kg

**TABLE 1**  
**Freon®12 Saturation Properties - Temperature Table**

Temp °C	Pressure [kPa]	Volume [m <sup>3</sup> /kg]		Density [kg/m <sup>3</sup> ]		Enthalpy [kJ/kg]			Entropy [kJ/K-kg]		Temp °C
		Liquid v <sub>f</sub>	Vapour v <sub>g</sub>	Liquid d <sub>f</sub>	Vapour d <sub>g</sub>	Liquid H <sub>f</sub>	Latent H <sub>fg</sub>	Vapour H <sub>g</sub>	Liquid S <sub>f</sub>	Vapour S <sub>g</sub>	
-100	1.2	0.0006	10.0000	1679.0	0.100	113.3	192.8	306.1	0.6077	1.7210	-100
-99	1.3	0.0006	9.1670	1677.0	0.109	114.1	192.4	306.5	0.6124	1.7170	-99
-98	1.4	0.0006	8.4100	1674.0	0.119	115.0	192.0	307.0	0.6171	1.7130	-98
-97	1.6	0.0006	7.7250	1671.0	0.129	115.8	191.6	307.4	0.6218	1.7100	-97
-96	1.7	0.0006	7.1040	1669.0	0.141	116.6	191.3	307.9	0.6264	1.7060	-96
-95	1.9	0.0006	6.5400	1666.0	0.153	117.4	190.9	308.3	0.6310	1.7030	-95
-94	2.0	0.0006	6.0270	1663.0	0.166	118.2	190.6	308.8	0.6356	1.6990	-94
-93	2.2	0.0006	5.5610	1661.0	0.180	119.1	190.1	309.2	0.6402	1.6960	-93
-92	2.4	0.0006	5.1360	1658.0	0.195	119.9	189.8	309.7	0.6448	1.6920	-92
-91	2.6	0.0006	4.7480	1655.0	0.211	120.7	189.4	310.1	0.6493	1.6890	-91
-90	2.9	0.0006	4.3950	1653.0	0.228	121.5	189.1	310.6	0.6538	1.6860	-90
-89	3.1	0.0006	4.0720	1650.0	0.246	122.4	188.6	311.0	0.6583	1.6830	-89
-88	3.4	0.0006	3.7760	1648.0	0.265	123.2	188.3	311.5	0.6628	1.6800	-88
-87	3.6	0.0006	3.5050	1645.0	0.285	124.0	188.0	312.0	0.6672	1.6770	-87
-86	3.9	0.0006	3.2570	1642.0	0.307	124.8	187.6	312.4	0.6716	1.6740	-86
-85	4.3	0.0006	3.0290	1640.0	0.330	125.7	187.2	312.9	0.6761	1.6710	-85
-84	4.6	0.0006	2.8190	1637.0	0.355	126.5	186.8	313.3	0.6804	1.6680	-84
-83	5.0	0.0006	2.6270	1634.0	0.381	127.3	186.5	313.8	0.6848	1.6660	-83
-82	5.3	0.0006	2.4490	1632.0	0.408	128.1	186.2	314.3	0.6892	1.6630	-82
-81	5.8	0.0006	2.2860	1629.0	0.437	129.0	185.7	314.7	0.6935	1.6600	-81
-80	6.2	0.0006	2.1360	1626.0	0.468	129.8	185.4	315.2	0.6978	1.6580	-80
-79	6.7	0.0006	1.9970	1624.0	0.501	130.6	185.1	315.7	0.7021	1.6550	-79
-78	7.1	0.0006	1.8680	1621.0	0.535	131.5	184.6	316.1	0.7064	1.6530	-78
-77	7.7	0.0006	1.7490	1618.0	0.572	132.3	184.3	316.6	0.7106	1.6500	-77
-76	8.2	0.0006	1.6390	1616.0	0.610	133.1	184.0	317.1	0.7149	1.6480	-76
-75	8.8	0.0006	1.5380	1613.0	0.650	134.0	183.5	317.5	0.7191	1.6450	-75
-74	9.4	0.0006	1.4430	1610.0	0.693	134.8	183.2	318.0	0.7233	1.6430	-74
-73	10.1	0.0006	1.3560	1608.0	0.738	135.6	182.9	318.5	0.7275	1.6410	-73
-72	10.8	0.0006	1.2740	1605.0	0.785	136.5	182.4	318.9	0.7317	1.6390	-72
-71	11.5	0.0006	1.1990	1602.0	0.834	137.3	182.1	319.4	0.7358	1.6370	-71
-70	12.3	0.0006	1.1290	1600.0	0.886	138.2	181.7	319.9	0.7400	1.6340	-70
-69	13.1	0.0006	1.0630	1597.0	0.941	139.0	181.3	320.3	0.7441	1.6320	-69
-68	14.0	0.0006	1.0020	1594.0	0.998	139.8	181.0	320.8	0.7482	1.6300	-68
-67	14.9	0.0006	0.9455	1591.0	1.058	140.7	180.6	321.3	0.7523	1.6280	-67
-66	15.8	0.0006	0.8925	1589.0	1.120	141.5	180.3	321.8	0.7564	1.6260	-66
-65	16.8	0.0006	0.8430	1586.0	1.186	142.4	179.8	322.2	0.7604	1.6250	-65
-64	17.9	0.0006	0.7968	1583.0	1.255	143.2	179.5	322.7	0.7645	1.6230	-64
-63	19.0	0.0006	0.7536	1581.0	1.327	144.1	179.1	323.2	0.7685	1.6210	-63
-62	20.1	0.0006	0.7132	1578.0	1.402	144.9	178.8	323.7	0.7726	1.6190	-62
-61	21.3	0.0006	0.6754	1575.0	1.481	145.8	178.3	324.1	0.7766	1.6170	-61
-60	22.6	0.0006	0.6399	1572.0	1.563	146.6	178.0	324.6	0.7806	1.6160	-60
-59	24.0	0.0006	0.6067	1570.0	1.648	147.5	177.6	325.1	0.7845	1.6140	-59
-58	25.4	0.0006	0.5755	1567.0	1.738	148.3	177.3	325.6	0.7885	1.6120	-58
-57	26.8	0.0006	0.5463	1564.0	1.831	149.2	176.8	326.0	0.7924	1.6110	-57
-56	28.4	0.0006	0.5188	1561.0	1.928	150.0	176.5	326.5	0.7964	1.6090	-56
-55	30.0	0.0006	0.4930	1559.0	2.029	150.9	176.1	327.0	0.8003	1.6080	-55
-54	31.6	0.0006	0.4687	1556.0	2.134	151.7	175.8	327.5	0.8042	1.6060	-54
-53	33.4	0.0006	0.4458	1553.0	2.243	152.6	175.4	328.0	0.8081	1.6050	-53
-52	35.2	0.0007	0.4243	1550.0	2.357	153.5	174.9	328.4	0.8120	1.6030	-52
-51	37.1	0.0007	0.4040	1548.0	2.475	154.3	174.6	328.9	0.8159	1.6020	-51
-50	39.1	0.0007	0.3849	1545.0	2.598	155.2	174.2	329.4	0.8197	1.6000	-50
-49	41.2	0.0007	0.3669	1542.0	2.725	156.0	173.9	329.9	0.8236	1.5990	-49
-48	43.4	0.0007	0.3499	1539.0	2.858	156.9	173.4	330.3	0.8274	1.5980	-48
-47	45.6	0.0007	0.3339	1536.0	2.995	157.8	173.0	330.8	0.8313	1.5960	-47