



**DuPont™ ISCEON® 9 Series**

REFRIGERANTS

Technical Information

# **Thermodynamic Properties of DuPont™ ISCEON® M049Plus™ SI Units**



*The miracles of science™*



# Thermodynamic Properties of DuPont™ ISCEON® MO49Plus™ Refrigerant

Tables of the thermodynamic properties of DuPont™ ISCEON® MO49Plus™ 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 mixture–REFPROP version 8.0, Standard Reference Data Program, National Institute of Standards and Technology, 2007.)

## Units

P = Pressure in kPa

T = Temperature in Celsius

$V_f$  = Fluid (liquid) specific volume in  $m^3/kg$

$V_g$  = Vapor (gas) specific volume in  $m^3/kg$

$d_f$  = Density of saturated vapour in  $kg/m^3$

$d_g$  = Density of saturated liquid in  $kg/m^3$

H = Enthalpy in kJ/kg

S = Entropy in kJ/K·kg

Reference points for Enthalpy and Entropy:

Enthalpy = 200 kJ/kg

Entropy = 1 kJ/kg·K for saturated liquid at 0°C

## Physical Properties

Chemical Formula	CF <sub>3</sub> CH <sub>2</sub> F/CF <sub>3</sub> CHF/C <sub>4</sub> H <sub>10</sub> /C <sub>5</sub> H <sub>12</sub> (78.5/19.5/1.4/0.6)	
Molecular Weight	g/mol	104
Boiling Point at 1 atm	°C	-29
Critical Temperature	°C	96.0
Critical Pressure	kPa abs	4096
Critical Density	kg/m <sup>3</sup>	513

**Table 1**  
**DuPont™ ISCEON® MO49Plus™ 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	VAPOR	LIQUID v <sub>l</sub>	VAPOR v <sub>g</sub>	LIQUID d <sub>l</sub>	VAPOR d <sub>g</sub>	LIQUID H <sub>l</sub>	LATENT H <sub>lg</sub>	VAPOR H <sub>g</sub>	LIQUID S <sub>l</sub>	VAPOR S <sub>g</sub>	
-100	1.1	0.7	0.0006	20.7921	1564.7	0.048	74.9	251.0	325.9	0.474	1.937	-100
-99	1.2	0.7	0.0006	18.8086	1561.8	0.053	76.1	250.4	326.5	0.481	1.932	-99
-98	1.3	0.8	0.0006	17.0383	1559.0	0.059	77.3	249.7	327.1	0.488	1.927	-98
-97	1.4	0.9	0.0006	15.4561	1556.1	0.065	78.6	249.1	327.7	0.495	1.922	-97
-96	1.6	1.0	0.0006	14.0399	1553.3	0.071	79.8	248.5	328.3	0.502	1.917	-96
-95	1.7	1.1	0.0006	12.7706	1550.4	0.078	81.0	247.9	328.9	0.509	1.913	-95
-94	1.9	1.2	0.0006	11.6312	1547.6	0.086	82.3	247.2	329.5	0.516	1.908	-94
-93	2.1	1.4	0.0006	10.6071	1544.8	0.094	83.5	246.6	330.1	0.523	1.904	-93
-92	2.3	1.5	0.0006	9.6853	1541.9	0.103	84.7	246.0	330.7	0.530	1.899	-92
-91	2.5	1.6	0.0006	8.8546	1539.1	0.113	85.9	245.4	331.3	0.536	1.895	-91
-90	2.7	1.8	0.0007	8.1050	1536.3	0.123	87.2	244.7	331.9	0.543	1.891	-90
-89	2.9	2.0	0.0007	7.4277	1533.5	0.135	88.4	244.1	332.5	0.550	1.887	-89
-88	3.2	2.2	0.0007	6.8150	1530.6	0.147	89.6	243.5	333.1	0.556	1.883	-88
-87	3.5	2.4	0.0007	6.2599	1527.8	0.160	90.8	242.9	333.7	0.563	1.879	-87
-86	3.8	2.6	0.0007	5.7566	1525.0	0.174	92.0	242.3	334.3	0.569	1.875	-86
-85	4.1	2.8	0.0007	5.2996	1522.2	0.189	93.3	241.7	335.0	0.576	1.871	-85
-84	4.5	3.1	0.0007	4.8841	1519.4	0.205	94.5	241.1	335.6	0.582	1.868	-84
-83	4.8	3.4	0.0007	4.5060	1516.6	0.222	95.7	240.5	336.2	0.589	1.864	-83
-82	5.2	3.7	0.0007	4.1616	1513.8	0.240	96.9	239.9	336.8	0.595	1.860	-82
-81	5.6	4.0	0.0007	3.8474	1511.0	0.260	98.1	239.3	337.4	0.602	1.857	-81
-80	6.1	4.3	0.0007	3.5605	1508.2	0.281	99.4	238.7	338.0	0.608	1.854	-80
-79	6.6	4.7	0.0007	3.2983	1505.4	0.303	100.6	238.1	338.7	0.614	1.850	-79
-78	7.1	5.1	0.0007	3.0583	1502.5	0.327	101.8	237.5	339.3	0.620	1.847	-78
-77	7.6	5.5	0.0007	2.8385	1499.7	0.352	103.0	236.9	339.9	0.627	1.844	-77
-76	8.2	6.0	0.0007	2.6370	1496.9	0.379	104.2	236.3	340.5	0.633	1.841	-76
-75	8.8	6.4	0.0007	2.4520	1494.1	0.408	105.5	235.7	341.2	0.639	1.838	-75
-74	9.5	7.0	0.0007	2.2821	1491.3	0.438	106.7	235.1	341.8	0.645	1.835	-74
-73	10.2	7.5	0.0007	2.1258	1488.5	0.470	107.9	234.5	342.4	0.651	1.832	-73
-72	10.9	8.1	0.0007	1.9820	1485.7	0.505	109.1	233.9	343.0	0.657	1.829	-72
-71	11.7	8.7	0.0007	1.8495	1482.9	0.541	110.3	233.3	343.7	0.663	1.827	-71
-70	12.5	9.4	0.0007	1.7273	1480.0	0.579	111.6	232.7	344.3	0.670	1.824	-70
-69	13.4	10.1	0.0007	1.6144	1477.2	0.619	112.8	232.1	344.9	0.676	1.821	-69
-68	14.3	10.8	0.0007	1.5102	1474.4	0.662	114.0	231.6	345.6	0.682	1.819	-68
-67	15.3	11.6	0.0007	1.4139	1471.6	0.707	115.2	231.0	346.2	0.687	1.816	-67
-66	16.3	12.4	0.0007	1.3247	1468.8	0.755	116.5	230.4	346.8	0.693	1.814	-66
-65	17.4	13.3	0.0007	1.2421	1465.9	0.805	117.7	229.8	347.5	0.699	1.811	-65
-64	18.5	14.2	0.0007	1.1655	1463.1	0.858	118.9	229.2	348.1	0.705	1.809	-64
-63	19.7	15.2	0.0007	1.0945	1460.3	0.914	120.1	228.6	348.7	0.711	1.807	-63
-62	21.0	16.3	0.0007	1.0285	1457.4	0.972	121.4	228.0	349.4	0.717	1.804	-62
-61	22.3	17.4	0.0007	0.9672	1454.6	1.034	122.6	227.4	350.0	0.723	1.802	-61
-60	23.7	18.5	0.0007	0.9102	1451.7	1.099	123.8	226.8	350.6	0.728	1.800	-60
-59	25.2	19.8	0.0007	0.8572	1448.9	1.167	125.1	226.2	351.3	0.734	1.798	-59
-58	26.8	21.0	0.0007	0.8078	1446.0	1.238	126.3	225.6	351.9	0.740	1.796	-58
-57	28.4	22.4	0.0007	0.7617	1443.2	1.313	127.5	225.0	352.6	0.746	1.794	-57
-56	30.1	23.8	0.0007	0.7188	1440.3	1.391	128.8	224.4	353.2	0.751	1.792	-56
-55	31.9	25.4	0.0007	0.6787	1437.4	1.473	130.0	223.8	353.8	0.757	1.790	-55
-54	33.7	26.9	0.0007	0.6412	1434.6	1.560	131.2	223.2	354.5	0.763	1.788	-54
-53	35.7	28.6	0.0007	0.6062	1431.7	1.650	132.5	222.6	355.1	0.768	1.786	-53
-52	37.8	30.3	0.0007	0.5735	1428.8	1.744	133.7	222.0	355.7	0.774	1.785	-52
-51	39.9	32.2	0.0007	0.5428	1425.9	1.842	135.0	221.4	356.4	0.780	1.783	-51
-50	42.1	34.1	0.0007	0.5141	1423.0	1.945	136.2	220.8	357.0	0.785	1.781	-50
-49	44.5	36.1	0.0007	0.4872	1420.1	2.053	137.5	220.2	357.7	0.791	1.780	-49
-48	46.9	38.2	0.0007	0.4619	1417.2	2.165	138.7	219.6	358.3	0.796	1.778	-48
-47	49.5	40.4	0.0007	0.4383	1414.3	2.282	139.9	219.0	358.9	0.802	1.776	-47
-46	52.2	42.8	0.0007	0.4160	1411.4	2.404	141.2	218.4	359.6	0.807	1.775	-46
-45	54.9	45.2	0.0007	0.3951	1408.5	2.531	142.4	217.8	360.2	0.813	1.773	-45
-44	57.8	47.7	0.0007	0.3755	1405.6	2.663	143.7	217.2	360.9	0.818	1.772	-44
-43	60.9	50.3	0.0007	0.3570	1402.6	2.801	144.9	216.5	361.5	0.824	1.771	-43
-42	64.0	53.1	0.0007	0.3396	1399.7	2.945	146.2	215.9	362.1	0.829	1.769	-42
-41	67.3	56.0	0.0007	0.3232	1396.7	3.094	147.5	215.3	362.8	0.834	1.768	-41

**Table 1 (continued)**  
**DuPont™ ISCEON® MO49Plus™ 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	VAPOR	LIQUID v <sub>l</sub>	VAPOR v <sub>g</sub>	LIQUID d <sub>l</sub>	VAPOR d <sub>g</sub>	LIQUID H <sub>l</sub>	LATENT H <sub>lg</sub>	VAPOR H <sub>g</sub>	LIQUID S <sub>l</sub>	VAPOR S <sub>g</sub>	
-40	70.7	59.0	0.0007	0.3077	1393.8	3.249	148.7	214.7	363.4	0.840	1.766	-40
-39	74.3	62.1	0.0007	0.2932	1390.8	3.411	150.0	214.1	364.0	0.845	1.765	-39
-38	77.9	65.3	0.0007	0.2794	1387.8	3.579	151.2	213.4	364.7	0.851	1.764	-38
-37	81.8	68.7	0.0007	0.2665	1384.9	3.753	152.5	212.8	365.3	0.856	1.763	-37
-36	85.7	72.3	0.0007	0.2542	1381.9	3.934	153.8	212.2	366.0	0.861	1.761	-36
-35	89.9	75.9	0.0007	0.2426	1378.9	4.121	155.0	211.6	366.6	0.867	1.760	-35
-34	94.2	79.8	0.0007	0.2317	1375.9	4.316	156.3	210.9	367.2	0.872	1.759	-34
-33	98.6	83.7	0.0007	0.2213	1372.9	4.518	157.6	210.3	367.9	0.877	1.758	-33
-32	103.2	87.9	0.0007	0.2115	1369.9	4.728	158.8	209.6	368.5	0.882	1.757	-32
-31	108.0	92.2	0.0007	0.2022	1366.8	4.944	160.1	209.0	369.1	0.888	1.756	-31
-30	113.0	96.6	0.0007	0.1935	1363.8	5.169	161.4	208.4	369.7	0.893	1.755	-30
-29	118.1	101.2	0.0007	0.1851	1360.8	5.402	162.7	207.7	370.4	0.898	1.754	-29
-28	123.4	106.0	0.0007	0.1772	1357.7	5.643	163.9	207.1	371.0	0.903	1.753	-28
-27	128.9	111.0	0.0007	0.1697	1354.7	5.892	165.2	206.4	371.6	0.909	1.752	-27
-26	134.6	116.2	0.0007	0.1626	1351.6	6.150	166.5	205.8	372.3	0.914	1.751	-26
-25	140.5	121.5	0.0007	0.1558	1348.5	6.417	167.8	205.1	372.9	0.919	1.750	-25
-24	146.6	127.0	0.0007	0.1494	1345.4	6.693	169.1	204.4	373.5	0.924	1.749	-24
-23	152.9	132.8	0.0007	0.1433	1342.3	6.978	170.4	203.8	374.1	0.929	1.748	-23
-22	159.4	138.7	0.0007	0.1375	1339.2	7.273	171.7	203.1	374.8	0.934	1.747	-22
-21	166.1	144.8	0.0007	0.1320	1336.1	7.577	173.0	202.4	375.4	0.940	1.747	-21
-20	173.0	151.2	0.0008	0.1267	1333.0	7.892	174.3	201.7	376.0	0.945	1.746	-20
-19	180.2	157.8	0.0008	0.1217	1329.8	8.216	175.5	201.1	376.6	0.950	1.745	-19
-18	187.6	164.5	0.0008	0.1169	1326.7	8.551	176.8	200.4	377.2	0.955	1.744	-18
-17	195.2	171.5	0.0008	0.1124	1323.5	8.897	178.2	199.7	377.8	0.960	1.744	-17
-16	203.0	178.8	0.0008	0.1081	1320.3	9.254	179.5	199.0	378.5	0.965	1.743	-16
-15	211.1	186.3	0.0008	0.1039	1317.1	9.622	180.8	198.3	379.1	0.970	1.742	-15
-14	219.5	194.0	0.0008	0.1000	1313.9	10.001	182.1	197.6	379.7	0.975	1.741	-14
-13	228.1	201.9	0.0008	0.0962	1310.7	10.392	183.4	196.9	380.3	0.980	1.741	-13
-12	236.9	210.2	0.0008	0.0926	1307.5	10.795	184.7	196.2	380.9	0.985	1.740	-12
-11	246.1	218.6	0.0008	0.0892	1304.2	11.211	186.0	195.5	381.5	0.990	1.740	-11
-10	255.5	227.4	0.0008	0.0859	1301.0	11.639	187.3	194.8	382.1	0.995	1.739	-10
-9	265.1	236.4	0.0008	0.0828	1297.7	12.080	188.7	194.1	382.7	1.000	1.738	-9
-8	275.1	245.6	0.0008	0.0798	1294.4	12.534	190.0	193.3	383.3	1.005	1.738	-8
-7	285.3	255.2	0.0008	0.0769	1291.2	13.001	191.3	192.6	383.9	1.010	1.737	-7
-6	295.8	265.0	0.0008	0.0742	1287.8	13.482	192.6	191.9	384.5	1.015	1.737	-6
-5	306.6	275.2	0.0008	0.0715	1284.5	13.977	194.0	191.1	385.1	1.020	1.736	-5
-4	317.8	285.6	0.0008	0.0690	1281.2	14.487	195.3	190.4	385.7	1.025	1.736	-4
-3	329.2	296.3	0.0008	0.0666	1277.8	15.011	196.6	189.6	386.3	1.030	1.735	-3
-2	340.9	307.3	0.0008	0.0643	1274.5	15.550	198.0	188.9	386.9	1.035	1.735	-2
-1	353.0	318.7	0.0008	0.0621	1271.1	16.105	199.3	188.1	387.5	1.040	1.734	-1
0	365.4	330.3	0.0008	0.0600	1267.7	16.675	200.7	187.4	388.0	1.044	1.734	0
1	378.1	342.3	0.0008	0.0579	1264.3	17.262	202.0	186.6	388.6	1.049	1.733	1
2	391.1	354.6	0.0008	0.0560	1260.8	17.865	203.4	185.8	389.2	1.054	1.733	2
3	404.5	367.3	0.0008	0.0541	1257.4	18.484	204.7	185.0	389.8	1.059	1.732	3
4	418.2	380.3	0.0008	0.0523	1253.9	19.121	206.1	184.3	390.3	1.064	1.732	4
5	432.3	393.6	0.0008	0.0506	1250.4	19.775	207.4	183.5	390.9	1.069	1.731	5
6	446.8	407.3	0.0008	0.0489	1246.9	20.448	208.8	182.7	391.5	1.074	1.731	6
7	461.6	421.4	0.0008	0.0473	1243.4	21.138	210.2	181.9	392.0	1.079	1.731	7
8	476.7	435.8	0.0008	0.0458	1239.8	21.848	211.5	181.1	392.6	1.083	1.730	8
9	492.3	450.6	0.0008	0.0443	1236.3	22.577	212.9	180.2	393.2	1.088	1.730	9
10	508.2	465.8	0.0008	0.0429	1232.7	23.325	214.3	179.4	393.7	1.093	1.729	10
11	524.5	481.3	0.0008	0.0415	1229.1	24.093	215.7	178.6	394.3	1.098	1.729	11
12	541.2	497.3	0.0008	0.0402	1225.5	24.883	217.1	177.8	394.8	1.103	1.729	12
13	558.4	513.6	0.0008	0.0389	1221.8	25.693	218.4	176.9	395.4	1.107	1.728	13
14	575.9	530.4	0.0008	0.0377	1218.1	26.524	219.8	176.1	395.9	1.112	1.728	14
15	593.8	547.6	0.0008	0.0365	1214.5	27.378	221.2	175.2	396.5	1.117	1.728	15
16	612.2	565.1	0.0008	0.0354	1210.7	28.254	222.6	174.4	397.0	1.122	1.727	16
17	630.9	583.1	0.0008	0.0343	1207.0	29.153	224.0	173.5	397.5	1.127	1.727	17
18	650.1	601.6	0.0008	0.0332	1203.2	30.076	225.4	172.6	398.1	1.131	1.727	18
19	669.8	620.4	0.0008	0.0322	1199.4	31.024	226.8	171.7	398.6	1.136	1.726	19

**Table 1 (continued)**  
**DuPont™ ISCEON® MO49Plus™ 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	VAPOR	LIQUID v <sub>l</sub>	VAPOR v <sub>g</sub>	LIQUID d <sub>l</sub>	VAPOR d <sub>g</sub>	LIQUID H <sub>l</sub>	LATENT H <sub>fg</sub>	VAPOR H <sub>g</sub>	LIQUID S <sub>l</sub>	VAPOR S <sub>g</sub>	
20	689.9	639.8	0.0008	0.0313	1195.6	31.996	228.3	170.8	399.1	1.141	1.726	20
21	710.4	659.5	0.0008	0.0303	1191.8	32.993	229.7	169.9	399.6	1.146	1.726	21
22	731.4	679.8	0.0008	0.0294	1187.9	34.016	231.1	169.0	400.1	1.151	1.726	22
23	752.9	700.5	0.0008	0.0285	1184.0	35.067	232.5	168.1	400.6	1.155	1.725	23
24	774.8	721.6	0.0008	0.0277	1180.1	36.144	234.0	167.2	401.1	1.160	1.725	24
25	797.2	743.3	0.0009	0.0268	1176.2	37.249	235.4	166.3	401.6	1.165	1.725	25
26	820.1	765.4	0.0009	0.0261	1172.2	38.384	236.8	165.3	402.1	1.170	1.724	26
27	843.5	788.0	0.0009	0.0253	1168.2	39.547	238.3	164.4	402.6	1.174	1.724	27
28	867.3	811.1	0.0009	0.0245	1164.1	40.741	239.7	163.4	403.1	1.179	1.724	28
29	891.7	834.7	0.0009	0.0238	1160.1	41.966	241.2	162.4	403.6	1.184	1.723	29
30	916.6	858.9	0.0009	0.0231	1155.9	43.223	242.6	161.5	404.1	1.189	1.723	30
31	942.0	883.5	0.0009	0.0225	1151.8	44.513	244.1	160.5	404.5	1.193	1.723	31
32	967.9	908.7	0.0009	0.0218	1147.6	45.836	245.6	159.5	405.0	1.198	1.723	32
33	994.4	934.5	0.0009	0.0212	1143.4	47.193	247.0	158.5	405.5	1.203	1.722	33
34	1021.4	960.7	0.0009	0.0206	1139.2	48.587	248.5	157.4	405.9	1.207	1.722	34
35	1048.9	987.5	0.0009	0.0200	1134.9	50.016	250.0	156.4	406.4	1.212	1.722	35
36	1077.0	1014.9	0.0009	0.0194	1130.6	51.483	251.5	155.4	406.8	1.217	1.721	36
37	1105.7	1042.9	0.0009	0.0189	1126.2	52.989	253.0	154.3	407.3	1.222	1.721	37
38	1134.9	1071.4	0.0009	0.0183	1121.8	54.534	254.5	153.2	407.7	1.226	1.721	38
39	1164.7	1100.5	0.0009	0.0178	1117.4	56.121	256.0	152.1	408.1	1.231	1.720	39
40	1195.1	1130.2	0.0009	0.0173	1112.9	57.749	257.5	151.1	408.5	1.236	1.720	40
41	1226.0	1160.5	0.0009	0.0168	1108.3	59.421	259.0	149.9	408.9	1.241	1.720	41
42	1257.6	1191.4	0.0009	0.0164	1103.8	61.138	260.5	148.8	409.3	1.245	1.719	42
43	1289.8	1222.9	0.0009	0.0159	1099.1	62.901	262.0	147.7	409.7	1.250	1.719	43
44	1322.6	1255.0	0.0009	0.0155	1094.5	64.712	263.6	146.5	410.1	1.255	1.719	44
45	1356.0	1287.8	0.0009	0.0150	1089.7	66.572	265.1	145.4	410.5	1.260	1.718	45
46	1390.0	1321.2	0.0009	0.0146	1085.0	68.483	266.7	144.2	410.9	1.264	1.718	46
47	1424.7	1355.3	0.0009	0.0142	1080.1	70.446	268.2	143.0	411.2	1.269	1.717	47
48	1460.0	1390.0	0.0009	0.0138	1075.2	72.464	269.8	141.8	411.6	1.274	1.717	48
49	1495.9	1425.3	0.0009	0.0134	1070.3	74.538	271.3	140.6	411.9	1.279	1.717	49
50	1532.5	1461.4	0.0009	0.0130	1065.3	76.671	272.9	139.3	412.3	1.284	1.716	50
51	1569.8	1498.1	0.0009	0.0127	1060.2	78.865	274.5	138.1	412.6	1.288	1.716	51
52	1607.8	1535.6	0.0009	0.0123	1055.1	81.121	276.1	136.8	412.9	1.293	1.715	52
53	1646.4	1573.7	0.0010	0.0120	1049.9	83.442	277.7	135.5	413.2	1.298	1.715	53
54	1685.8	1612.6	0.0010	0.0117	1044.6	85.831	279.3	134.2	413.5	1.303	1.714	54
55	1725.8	1652.1	0.0010	0.0113	1039.2	88.291	280.9	132.9	413.8	1.308	1.714	55
56	1766.6	1692.4	0.0010	0.0110	1033.8	90.825	282.6	131.5	414.1	1.312	1.713	56
57	1808.1	1733.5	0.0010	0.0107	1028.3	93.435	284.2	130.1	414.3	1.317	1.713	57
58	1850.3	1775.3	0.0010	0.0104	1022.7	96.124	285.8	128.7	414.6	1.322	1.712	58
59	1893.2	1817.9	0.0010	0.0101	1017.1	98.897	287.5	127.3	414.8	1.327	1.711	59
60	1936.9	1861.2	0.0010	0.0098	1011.3	101.758	289.2	125.9	415.0	1.332	1.711	60
61	1981.3	1905.3	0.0010	0.0096	1005.5	104.710	290.9	124.4	415.2	1.337	1.710	61
62	2026.6	1950.3	0.0010	0.0093	999.5	107.757	292.5	122.9	415.4	1.342	1.709	62
63	2072.5	1996.0	0.0010	0.0090	993.5	110.905	294.2	121.4	415.6	1.347	1.709	63
64	2119.3	2042.5	0.0010	0.0088	987.3	114.159	296.0	119.8	415.8	1.352	1.708	64
65	2166.9	2089.9	0.0010	0.0085	981.0	117.524	297.7	118.2	415.9	1.357	1.707	65
66	2215.3	2138.2	0.0010	0.0083	974.6	121.006	299.4	116.6	416.0	1.362	1.706	66
67	2264.5	2187.2	0.0010	0.0080	968.1	124.613	301.2	114.9	416.1	1.367	1.705	67
68	2314.5	2237.2	0.0010	0.0078	961.4	128.350	303.0	113.2	416.2	1.372	1.704	68
69	2365.4	2288.1	0.0010	0.0076	954.6	132.227	304.7	111.5	416.3	1.377	1.703	69
70	2417.1	2339.8	0.0011	0.0073	947.6	136.252	306.5	109.7	416.3	1.382	1.702	70
71	2469.7	2392.5	0.0011	0.0071	940.5	140.435	308.4	107.9	416.3	1.387	1.701	71
72	2523.2	2446.1	0.0011	0.0069	933.2	144.786	310.2	106.1	416.3	1.392	1.700	72
73	2577.5	2500.6	0.0011	0.0067	925.7	149.318	312.1	104.2	416.2	1.397	1.699	73
74	2632.8	2556.1	0.0011	0.0065	918.1	154.045	314.0	102.2	416.2	1.403	1.698	74
75	2689.0	2612.6	0.0011	0.0063	910.1	158.980	315.9	100.2	416.1	1.408	1.696	75
76	2746.1	2670.1	0.0011	0.0061	902.0	164.143	317.8	98.1	415.9	1.413	1.695	76
77	2804.1	2728.6	0.0011	0.0059	893.6	169.551	319.7	96.0	415.7	1.419	1.693	77
78	2863.1	2788.2	0.0011	0.0057	884.9	175.229	321.7	93.8	415.5	1.424	1.692	78
79	2923.1	2848.8	0.0011	0.0055	875.9	181.202	323.7	91.5	415.2	1.430	1.690	79

**Table 1** (continued)  
**DuPont™ ISCEON® MO49Plus™ 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	VAPOR	LIQUID v <sub>l</sub>	VAPOR v <sub>g</sub>	LIQUID d <sub>l</sub>	VAPOR d <sub>g</sub>	LIQUID H <sub>l</sub>	LATENT H <sub>lg</sub>	VAPOR H <sub>g</sub>	LIQUID S <sub>l</sub>	VAPOR S <sub>g</sub>	
80	2984.0	2910.5	0.0012	0.0053	866.6	187.500	325.8	89.1	414.9	1.435	1.688	80
81	3046.0	2973.3	0.0012	0.0052	856.9	194.161	327.9	86.7	414.6	1.441	1.686	81
82	3108.9	3037.3	0.0012	0.0050	846.7	201.226	330.0	84.1	414.1	1.447	1.684	82
83	3173.0	3102.5	0.0012	0.0048	836.1	208.748	332.2	81.4	413.6	1.453	1.682	83
84	3238.0	3168.9	0.0012	0.0046	824.9	216.792	334.4	78.6	413.0	1.459	1.679	84
85	3304.1	3236.5	0.0012	0.0044	813.1	225.436	336.8	75.6	412.4	1.465	1.677	85
86	3371.4	3305.4	0.0012	0.0043	800.5	234.783	339.1	72.5	411.6	1.471	1.674	86
87	3439.7	3375.7	0.0013	0.0041	787.1	244.967	341.6	69.1	410.7	1.478	1.670	87
88	3509.1	3447.4	0.0013	0.0039	772.5	256.170	344.2	65.5	409.6	1.485	1.667	88
89	3579.7	3520.7	0.0013	0.0037	756.6	268.647	346.9	61.5	408.4	1.492	1.662	89
90	3651.4	3595.5	0.0014	0.0035	738.8	282.780	349.8	57.1	406.9	1.500	1.658	90

**Table 2**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)**

**ABSOLUTE PRESSURE, kPa**

TEMP. °C	10			20			30			40			TEMP. °C
	-69.07 °C			-58.81 °C			-52.20 °C			-47.20 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	1.6223	344.9	1.821	0.8474	351.4	1.798	0.5797	355.6	1.785	0.4428	358.8	1.777	
-65	1.6559	347.6	1.835	—	—	—	—	—	—	—	—	—	-65
-60	1.6970	351.1	1.851	—	—	—	—	—	—	—	—	—	-60
-55	1.7379	354.6	1.867	0.8633	354.1	1.810	—	—	—	—	—	—	-55
-50	1.7787	358.1	1.883	0.8842	357.6	1.826	0.5859	357.2	1.792	—	—	—	-50
-45	1.8195	361.6	1.899	0.9049	361.2	1.842	0.6000	360.8	1.808	0.4475	360.4	1.784	-45
-40	1.8602	365.2	1.915	0.9255	364.9	1.858	0.6140	364.5	1.824	0.4581	364.1	1.800	-40
-35	1.9008	368.9	1.930	0.9461	368.5	1.873	0.6279	368.2	1.840	0.4687	367.9	1.816	-35
-30	1.9414	372.6	1.945	0.9667	372.3	1.889	0.6418	372.0	1.855	0.4793	371.6	1.831	-30
-25	1.9819	376.3	1.961	0.9872	376.0	1.904	0.6556	375.7	1.871	0.4898	375.4	1.847	-25
-20	2.0224	380.1	1.976	1.0076	379.8	1.919	0.6694	379.6	1.886	0.5002	379.3	1.862	-20
-15	2.0629	383.9	1.991	1.0281	383.7	1.934	0.6831	383.4	1.901	0.5106	383.2	1.877	-15
-10	2.1033	387.8	2.006	1.0485	387.6	1.949	0.6968	387.3	1.916	0.5210	387.1	1.892	-10
-5	2.1437	391.7	2.020	1.0688	391.5	1.964	0.7105	391.3	1.931	0.5313	391.1	1.907	-5
0	2.1841	395.7	2.035	1.0892	395.5	1.979	0.7242	395.3	1.946	0.5417	395.1	1.922	0
5	2.2245	399.7	2.050	1.1095	399.5	1.994	0.7378	399.3	1.960	0.5520	399.1	1.937	5
10	2.2648	403.8	2.064	1.1298	403.6	2.008	0.7514	403.4	1.975	0.5623	403.2	1.951	10
15	2.3052	407.9	2.078	1.1501	407.7	2.022	0.7650	407.5	1.989	0.5725	407.3	1.966	15
20	2.3455	412.0	2.093	1.1703	411.9	2.037	0.7786	411.7	2.004	0.5828	411.5	1.980	20
25	2.3858	416.2	2.107	1.1906	416.1	2.051	0.7922	415.9	2.018	0.5930	415.7	1.995	25
30	2.4260	420.5	2.121	1.2108	420.3	2.065	0.8058	420.1	2.032	0.6032	420.0	2.009	30
35	2.4663	424.7	2.135	1.2311	424.6	2.079	0.8193	424.4	2.046	0.6134	424.3	2.023	35
40	2.5066	429.1	2.149	1.2513	428.9	2.093	0.8328	428.8	2.060	0.6236	428.6	2.037	40
45	2.5468	433.4	2.163	1.2715	433.3	2.107	0.8464	433.1	2.074	0.6338	433.0	2.051	45
50	2.5871	437.8	2.177	1.2917	437.7	2.121	0.8599	437.6	2.088	0.6440	437.4	2.064	50
55	2.6273	442.3	2.190	1.3119	442.2	2.134	0.8734	442.0	2.102	0.6542	441.9	2.078	55
60	2.6675	446.8	2.204	1.3320	446.7	2.148	0.8869	446.5	2.115	0.6643	446.4	2.092	60
65	2.7077	451.3	2.217	1.3522	451.2	2.161	0.9004	451.1	2.129	0.6745	451.0	2.105	65
70	2.7479	455.9	2.231	1.3724	455.8	2.175	0.9139	455.7	2.142	0.6846	455.6	2.119	70
75	2.7881	460.5	2.244	1.3925	460.4	2.188	0.9274	460.3	2.156	0.6948	460.2	2.132	75
80	2.8283	465.2	2.257	1.4127	465.1	2.202	0.9408	465.0	2.169	0.7049	464.9	2.146	80

**ABSOLUTE PRESSURE, kPa**

TEMP. °C	50			60			70			80			TEMP. °C
	-43.12 °C			-39.66 °C			-36.64 °C			-33.94 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.3592	361.4	1.771	0.3027	363.6	1.766	0.2619	365.5	1.762	0.2310	367.3	1.759	
-40	0.3646	363.8	1.781	—	—	—	—	—	—	—	—	—	-40
-35	0.3732	367.5	1.797	0.3095	367.2	1.781	0.2640	366.8	1.768	—	—	—	-35
-30	0.3818	371.3	1.813	0.3167	371.0	1.797	0.2703	370.7	1.784	0.2354	370.3	1.772	-30
-25	0.3903	375.1	1.828	0.3239	374.8	1.813	0.2765	374.5	1.799	0.2409	374.2	1.788	-25
-20	0.3987	379.0	1.844	0.3310	378.7	1.828	0.2827	378.4	1.815	0.2464	378.2	1.803	-20
-15	0.4071	382.9	1.859	0.3381	382.6	1.843	0.2888	382.4	1.830	0.2518	382.1	1.819	-15
-10	0.4155	386.8	1.874	0.3451	386.6	1.859	0.2949	386.3	1.846	0.2572	386.1	1.834	-10
-5	0.4238	390.8	1.889	0.3522	390.6	1.874	0.3010	390.4	1.861	0.2626	390.1	1.849	-5
0	0.4322	394.8	1.904	0.3592	394.6	1.888	0.3070	394.4	1.876	0.2679	394.2	1.864	0
5	0.4405	398.9	1.918	0.3661	398.7	1.903	0.3130	398.5	1.890	0.2732	398.3	1.879	5
10	0.4487	403.0	1.933	0.3731	402.8	1.918	0.3190	402.6	1.905	0.2785	402.4	1.894	10
15	0.4570	407.1	1.948	0.3800	407.0	1.932	0.3250	406.8	1.920	0.2837	406.6	1.908	15
20	0.4652	411.3	1.962	0.3869	411.1	1.947	0.3309	411.0	1.934	0.2890	410.8	1.923	20
25	0.4735	415.5	1.976	0.3938	415.4	1.961	0.3369	415.2	1.948	0.2942	415.0	1.937	25
30	0.4817	419.8	1.990	0.4007	419.7	1.975	0.3428	419.5	1.963	0.2994	419.3	1.952	30
35	0.4899	424.1	2.005	0.4075	424.0	1.990	0.3487	423.8	1.977	0.3046	423.7	1.966	35
40	0.4981	428.5	2.019	0.4144	428.3	2.004	0.3546	428.2	1.991	0.3098	428.0	1.980	40
45	0.5063	432.9	2.032	0.4212	432.7	2.018	0.3605	432.6	2.005	0.3150	432.4	1.994	45
50	0.5144	437.3	2.046	0.4281	437.2	2.031	0.3664	437.0	2.019	0.3201	436.9	2.008	50
55	0.5226	441.8	2.060	0.4349	441.7	2.045	0.3723	441.5	2.032	0.3253	441.4	2.021	55
60	0.5308	446.3	2.074	0.4417	446.2	2.059	0.3781	446.1	2.046	0.3304	445.9	2.035	60
65	0.5389	450.9	2.087	0.4485	450.7	2.072	0.3840	450.6	2.060	0.3356	450.5	2.049	65
70	0.5471	455.5	2.101	0.4553	455.3	2.086	0.3898	455.2	2.073	0.3407	455.1	2.062	70
75	0.5552	460.1	2.114	0.4621	460.0	2.099	0.3957	459.9	2.087	0.3458	459.8	2.076	75
80	0.5633	464.8	2.128	0.4689	464.7	2.113	0.4015	464.6	2.100	0.3510	464.5	2.089	80
85	0.5714	469.5	2.141	0.4757	469.4	2.126	0.4074	469.3	2.113	0.3561	469.2	2.103	85
90	0.5796	474.3	2.154	0.4825	474.2	2.139	0.4132	474.1	2.127	0.3612	474.0	2.116	90
95	0.5877	479.1	2.167	0.4893	479.0	2.152	0.4190	478.9	2.140	0.3663	478.8	2.129	95
100	0.5958	483.9	2.180	0.4961	483.8	2.165	0.4248	483.7	2.153	0.3714	483.7	2.142	100
105	0.6039	488.8	2.193	0.5028	488.7	2.178	0.4306	488.6	2.166	0.3765	488.5	2.155	105



**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)**

ABSOLUTE PRESSURE, kPa													
TEMP. °C	90			100			101.325			110			TEMP. °C
	-31.50 °C			-29.26 °C			-28.98 °C			-27.20 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.2068	368.8	1.756	0.1873	370.2	1.754	0.1850	370.4	1.754	0.1712	371.5	1.752	
-30	0.2083	370.0	1.761	—	—	—	—	—	—	—	—	—	-30
-25	0.2133	373.9	1.777	0.1911	373.6	1.768	0.1885	373.5	1.767	0.1730	373.3	1.759	-25
-20	0.2182	377.9	1.793	0.1956	377.6	1.784	0.1929	377.5	1.783	0.1771	377.3	1.775	-20
-15	0.2231	381.8	1.809	0.2000	381.6	1.799	0.1973	381.5	1.798	0.1812	381.3	1.791	-15
-10	0.2279	385.8	1.824	0.2044	385.6	1.815	0.2017	385.6	1.814	0.1852	385.3	1.806	-10
-5	0.2327	389.9	1.839	0.2088	389.6	1.830	0.2060	389.6	1.829	0.1892	389.4	1.822	-5
0	0.2374	394.0	1.854	0.2131	393.7	1.845	0.2102	393.7	1.844	0.1932	393.5	1.837	0
5	0.2422	398.1	1.869	0.2174	397.8	1.860	0.2145	397.8	1.859	0.1971	397.6	1.852	5
10	0.2469	402.2	1.884	0.2217	402.0	1.875	0.2187	402.0	1.874	0.2010	401.8	1.867	10
15	0.2516	406.4	1.899	0.2259	406.2	1.890	0.2229	406.2	1.888	0.2049	406.0	1.881	15
20	0.2563	410.6	1.913	0.2302	410.4	1.904	0.2271	410.4	1.903	0.2088	410.2	1.896	20
25	0.2610	414.9	1.927	0.2344	414.7	1.919	0.2313	414.7	1.917	0.2127	414.5	1.911	25
30	0.2656	419.2	1.942	0.2386	419.0	1.933	0.2354	419.0	1.932	0.2165	418.8	1.925	30
35	0.2703	423.5	1.956	0.2428	423.4	1.947	0.2396	423.3	1.946	0.2204	423.2	1.939	35
40	0.2749	427.9	1.970	0.2470	427.7	1.961	0.2437	427.7	1.960	0.2242	427.6	1.953	40
45	0.2795	432.3	1.984	0.2512	432.2	1.975	0.2478	432.1	1.974	0.2280	432.0	1.967	45
50	0.2841	436.8	1.998	0.2554	436.6	1.989	0.2520	436.6	1.988	0.2318	436.5	1.981	50
55	0.2887	441.3	2.012	0.2595	441.1	2.003	0.2561	441.1	2.002	0.2356	441.0	1.995	55
60	0.2933	445.8	2.025	0.2637	445.7	2.017	0.2602	445.7	2.016	0.2394	445.6	2.009	60
65	0.2979	450.4	2.039	0.2678	450.3	2.030	0.2643	450.2	2.029	0.2432	450.1	2.023	65
70	0.3025	455.0	2.053	0.2719	454.9	2.044	0.2683	454.9	2.043	0.2469	454.8	2.036	70
75	0.3071	459.7	2.066	0.2761	459.5	2.057	0.2724	459.5	2.056	0.2507	459.4	2.050	75
80	0.3116	464.4	2.080	0.2802	464.3	2.071	0.2765	464.2	2.070	0.2544	464.1	2.063	80
85	0.3162	469.1	2.093	0.2843	469.0	2.084	0.2805	469.0	2.083	0.2582	468.9	2.076	85
90	0.3208	473.9	2.106	0.2884	473.8	2.098	0.2846	473.8	2.096	0.2619	473.7	2.090	90
95	0.3253	478.7	2.119	0.2925	478.6	2.111	0.2887	478.6	2.110	0.2657	478.5	2.103	95
100	0.3299	483.6	2.132	0.2966	483.5	2.124	0.2927	483.5	2.123	0.2694	483.4	2.116	100
105	0.3344	488.5	2.145	0.3007	488.4	2.137	0.2967	488.4	2.136	0.2731	488.3	2.129	105
110	0.3389	493.4	2.158	0.3048	493.3	2.150	0.3008	493.3	2.149	0.2769	493.2	2.142	110
115	0.3435	498.4	2.171	0.3089	498.3	2.163	0.3048	498.3	2.162	0.2806	498.2	2.155	115

ABSOLUTE PRESSURE, kPa													
TEMP. °C	120			130			140			150			TEMP. °C
	-25.28 °C			-23.48 °C			-21.79 °C			-20.18 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.1577	372.7	1.750	0.1462	373.8	1.749	0.1363	374.9	1.747	0.1277	375.9	1.746	
-25	0.1579	372.9	1.751	—	—	—	—	—	—	—	—	—	-25
-20	0.1617	377.0	1.767	0.1487	376.7	1.760	0.1375	376.3	1.753	0.1278	376.0	1.747	-20
-15	0.1655	381.0	1.783	0.1522	380.7	1.776	0.1408	380.4	1.769	0.1309	380.2	1.763	-15
-10	0.1692	385.1	1.799	0.1557	384.8	1.792	0.1441	384.5	1.785	0.1340	384.3	1.779	-10
-5	0.1729	389.2	1.814	0.1591	388.9	1.807	0.1473	388.7	1.800	0.1370	388.4	1.794	-5
0	0.1766	393.3	1.829	0.1625	393.0	1.822	0.1505	392.8	1.816	0.1400	392.6	1.810	0
5	0.1802	397.4	1.844	0.1659	397.2	1.837	0.1536	397.0	1.831	0.1430	396.8	1.825	5
10	0.1838	401.6	1.859	0.1693	401.4	1.852	0.1568	401.2	1.846	0.1460	401.0	1.840	10
15	0.1874	405.8	1.874	0.1726	405.6	1.867	0.1599	405.4	1.861	0.1489	405.2	1.855	15
20	0.1910	410.1	1.889	0.1759	409.9	1.882	0.1630	409.7	1.875	0.1518	409.5	1.869	20
25	0.1946	414.4	1.903	0.1792	414.2	1.896	0.1661	414.0	1.890	0.1547	413.8	1.884	25
30	0.1981	418.7	1.917	0.1825	418.5	1.911	0.1692	418.3	1.904	0.1576	418.2	1.898	30
35	0.2016	423.0	1.932	0.1858	422.9	1.925	0.1722	422.7	1.919	0.1604	422.6	1.913	35
40	0.2052	427.4	1.946	0.1891	427.3	1.939	0.1753	427.1	1.933	0.1633	427.0	1.927	40
45	0.2087	431.9	1.960	0.1923	431.7	1.953	0.1783	431.6	1.947	0.1661	431.4	1.941	45
50	0.2122	436.4	1.974	0.1956	436.2	1.967	0.1813	436.1	1.961	0.1690	435.9	1.955	50
55	0.2157	440.9	1.988	0.1988	440.7	1.981	0.1843	440.6	1.975	0.1718	440.5	1.969	55
60	0.2191	445.4	2.002	0.2020	445.3	1.995	0.1873	445.2	1.989	0.1746	445.0	1.983	60
65	0.2226	450.0	2.015	0.2052	449.9	2.009	0.1903	449.8	2.002	0.1774	449.7	1.997	65
70	0.2261	454.7	2.029	0.2084	454.5	2.022	0.1933	454.4	2.016	0.1802	454.3	2.010	70
75	0.2295	459.3	2.042	0.2116	459.2	2.036	0.1963	459.1	2.030	0.1830	459.0	2.024	75
80	0.2330	464.0	2.056	0.2148	463.9	2.049	0.1993	463.8	2.043	0.1858	463.7	2.037	80
85	0.2364	468.8	2.069	0.2180	468.7	2.063	0.2023	468.6	2.056	0.1886	468.5	2.051	85
90	0.2399	473.6	2.082	0.2212	473.5	2.076	0.2052	473.4	2.070	0.1914	473.3	2.064	90
95	0.2433	478.4	2.096	0.2244	478.3	2.089	0.2082	478.2	2.083	0.1941	478.1	2.077	95
100	0.2468	483.3	2.109	0.2276	483.2	2.102	0.2111	483.1	2.096	0.1969	483.0	2.090	100
105	0.2502	488.2	2.122	0.2307	488.1	2.115	0.2141	488.0	2.109	0.1996	487.9	2.103	105
110	0.2536	493.1	2.135	0.2339	493.0	2.128	0.2170	493.0	2.122	0.2024	492.9	2.117	110
115	0.2570	498.1	2.148	0.2371	498.0	2.141	0.2200	498.0	2.135	0.2052	497.9	2.129	115
120	0.2604	503.1	2.161	0.2402	503.1	2.154	0.2229	503.0	2.148	0.2079	502.9	2.142	120

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)**

**ABSOLUTE PRESSURE, kPa**

TEMP. °C	160			170			180			190			TEMP. °C
	-18.67 °C			-17.22 °C			-15.84 °C			-14.51 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.1201	376.8	1.745	0.1134	377.7	1.744	0.1074	378.6	1.743	0.1020	379.4	1.742	
-15	0.1223	379.9	1.757	0.1146	379.6	1.751	0.1078	379.3	1.745	-	-	-	-15
-10	0.1252	384.0	1.773	0.1174	383.7	1.767	0.1105	383.5	1.762	0.1043	383.2	1.756	-10
-5	0.1280	388.2	1.788	0.1201	387.9	1.783	0.1131	387.7	1.777	0.1068	387.4	1.772	-5
0	0.1309	392.3	1.804	0.1228	392.1	1.798	0.1156	391.9	1.793	0.1092	391.6	1.788	0
5	0.1337	396.6	1.819	0.1255	396.3	1.814	0.1182	396.1	1.808	0.1116	395.9	1.803	5
10	0.1365	400.8	1.834	0.1281	400.6	1.829	0.1207	400.4	1.823	0.1140	400.2	1.819	10
15	0.1392	405.0	1.849	0.1307	404.8	1.844	0.1232	404.6	1.838	0.1164	404.4	1.834	15
20	0.1420	409.3	1.864	0.1333	409.1	1.858	0.1257	409.0	1.853	0.1188	408.8	1.849	20
25	0.1447	413.7	1.878	0.1359	413.5	1.873	0.1281	413.3	1.868	0.1211	413.1	1.863	25
30	0.1474	418.0	1.893	0.1385	417.8	1.888	0.1305	417.7	1.883	0.1234	417.5	1.878	30
35	0.1501	422.4	1.907	0.1411	422.2	1.902	0.1330	422.1	1.897	0.1257	421.9	1.892	35
40	0.1528	426.8	1.921	0.1436	426.7	1.916	0.1354	426.5	1.911	0.1280	426.4	1.907	40
45	0.1555	431.3	1.936	0.1461	431.2	1.930	0.1378	431.0	1.925	0.1303	430.9	1.921	45
50	0.1582	435.8	1.950	0.1486	435.7	1.944	0.1402	435.5	1.940	0.1326	435.4	1.935	50
55	0.1608	440.3	1.964	0.1512	440.2	1.958	0.1426	440.1	1.954	0.1349	439.9	1.949	55
60	0.1635	444.9	1.977	0.1537	444.8	1.972	0.1449	444.7	1.967	0.1371	444.5	1.963	60
65	0.1661	449.5	1.991	0.1561	449.4	1.986	0.1473	449.3	1.981	0.1394	449.2	1.977	65
70	0.1688	454.2	2.005	0.1586	454.1	2.000	0.1496	454.0	1.995	0.1416	453.8	1.990	70
75	0.1714	458.9	2.018	0.1611	458.8	2.013	0.1520	458.7	2.008	0.1438	458.5	2.004	75
80	0.1740	463.6	2.032	0.1636	463.5	2.027	0.1543	463.4	2.022	0.1461	463.3	2.017	80
85	0.1766	468.4	2.045	0.1661	468.3	2.040	0.1567	468.2	2.035	0.1483	468.1	2.031	85
90	0.1792	473.2	2.059	0.1685	473.1	2.054	0.1590	473.0	2.049	0.1505	472.9	2.044	90
95	0.1818	478.0	2.072	0.1710	477.9	2.067	0.1613	477.8	2.062	0.1527	477.7	2.058	95
100	0.1844	482.9	2.085	0.1734	482.8	2.080	0.1636	482.7	2.075	0.1549	482.6	2.071	100
105	0.1870	487.8	2.098	0.1759	487.7	2.093	0.1660	487.6	2.088	0.1571	487.6	2.084	105
110	0.1896	492.8	2.111	0.1783	492.7	2.106	0.1683	492.6	2.101	0.1593	492.5	2.097	110
115	0.1922	497.8	2.124	0.1808	497.7	2.119	0.1706	497.6	2.114	0.1615	497.5	2.110	115
120	0.1948	502.8	2.137	0.1832	502.7	2.132	0.1729	502.7	2.127	0.1637	502.6	2.123	120
125	0.1974	507.9	2.150	0.1856	507.8	2.145	0.1752	507.7	2.140	0.1659	507.7	2.136	125
130	0.1999	513.0	2.163	0.1880	512.9	2.158	0.1775	512.9	2.153	0.1680	512.8	2.148	130

**ABSOLUTE PRESSURE, kPa**

TEMP. °C	200			210			220			230			TEMP. °C
	-13.24 °C			-12.02 °C			-10.84 °C			-9.70 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0971	380.1	1.741	0.0927	380.9	1.740	0.0887	381.6	1.739	0.0850	382.3	1.739	
-10	0.0987	382.9	1.752	0.0936	382.6	1.747	0.0890	382.3	1.742	-	-	-	-10
-5	0.1011	387.1	1.767	0.0959	386.9	1.763	0.0913	386.6	1.758	0.0870	386.3	1.754	-5
0	0.1034	391.4	1.783	0.0982	391.2	1.779	0.0934	390.9	1.774	0.0891	390.7	1.770	0
5	0.1058	395.7	1.799	0.1004	395.4	1.794	0.0956	395.2	1.790	0.0912	395.0	1.786	5
10	0.1081	399.9	1.814	0.1026	399.7	1.809	0.0977	399.5	1.805	0.0932	399.3	1.801	10
15	0.1103	404.2	1.829	0.1048	404.0	1.825	0.0998	403.8	1.820	0.0952	403.6	1.816	15
20	0.1126	408.6	1.844	0.1070	408.4	1.840	0.1019	408.2	1.835	0.0972	408.0	1.831	20
25	0.1148	412.9	1.859	0.1091	412.8	1.854	0.1039	412.6	1.850	0.0992	412.4	1.846	25
30	0.1170	417.3	1.873	0.1112	417.2	1.869	0.1060	417.0	1.865	0.1012	416.8	1.861	30
35	0.1192	421.8	1.888	0.1133	421.6	1.883	0.1080	421.4	1.879	0.1031	421.3	1.875	35
40	0.1214	426.2	1.902	0.1154	426.1	1.898	0.1100	425.9	1.894	0.1050	425.8	1.890	40
45	0.1236	430.7	1.916	0.1175	430.6	1.912	0.1120	430.4	1.908	0.1070	430.3	1.904	45
50	0.1258	435.2	1.930	0.1196	435.1	1.926	0.1140	435.0	1.922	0.1089	434.8	1.918	50
55	0.1279	439.8	1.945	0.1217	439.7	1.940	0.1160	439.5	1.936	0.1108	439.4	1.932	55
60	0.1301	444.4	1.958	0.1237	444.3	1.954	0.1179	444.2	1.950	0.1126	444.0	1.946	60
65	0.1322	449.0	1.972	0.1258	448.9	1.968	0.1199	448.8	1.964	0.1145	448.7	1.960	65
70	0.1344	453.7	1.986	0.1278	453.6	1.982	0.1218	453.5	1.978	0.1164	453.4	1.974	70
75	0.1365	458.4	2.000	0.1298	458.3	1.995	0.1238	458.2	1.991	0.1183	458.1	1.988	75
80	0.1386	463.2	2.013	0.1319	463.1	2.009	0.1257	463.0	2.005	0.1201	462.8	2.001	80
85	0.1407	468.0	2.027	0.1339	467.9	2.022	0.1277	467.7	2.018	0.1220	467.6	2.015	85
90	0.1428	472.8	2.040	0.1359	472.7	2.036	0.1296	472.6	2.032	0.1238	472.5	2.028	90
95	0.1449	477.6	2.053	0.1379	477.5	2.049	0.1315	477.4	2.045	0.1257	477.3	2.041	95
100	0.1470	482.5	2.066	0.1399	482.4	2.062	0.1334	482.3	2.058	0.1275	482.2	2.055	100
105	0.1491	487.5	2.080	0.1419	487.4	2.075	0.1353	487.3	2.072	0.1293	487.2	2.068	105
110	0.1512	492.4	2.093	0.1439	492.3	2.089	0.1372	492.3	2.085	0.1312	492.2	2.081	110
115	0.1533	497.4	2.106	0.1459	497.4	2.102	0.1391	497.3	2.098	0.1330	497.2	2.094	115
120	0.1554	502.5	2.119	0.1479	502.4	2.114	0.1410	502.3	2.111	0.1348	502.2	2.107	120
125	0.1575	507.6	2.131	0.1499	507.5	2.127	0.1429	507.4	2.123	0.1366	507.3	2.120	125
130	0.1595	512.7	2.144	0.1518	512.6	2.140	0.1448	512.5	2.136	0.1384	512.5	2.133	130
135	0.1616	517.9	2.157	0.1538	517.8	2.153	0.1467	517.7	2.149	0.1403	517.6	2.145	135

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	240			250			260			270			TEMP. °C
	-8.60 °C			-7.54 °C			-6.51 °C			-5.51 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0816	382.9	1.738	0.0785	383.6	1.738	0.0756	384.2	1.737	0.0729	384.8	1.736	
-5	0.0831	386.1	1.750	0.0795	385.8	1.746	0.0761	385.5	1.742	0.0731	385.2	1.738	-5
0	0.0851	390.4	1.766	0.0814	390.2	1.762	0.0781	389.9	1.758	0.0749	389.6	1.754	0
5	0.0871	394.7	1.782	0.0834	394.5	1.778	0.0799	394.3	1.774	0.0767	394.0	1.770	5
10	0.0891	399.1	1.797	0.0853	398.9	1.793	0.0818	398.6	1.789	0.0785	398.4	1.786	10
15	0.0910	403.4	1.812	0.0872	403.2	1.809	0.0836	403.0	1.805	0.0803	402.8	1.801	15
20	0.0930	407.8	1.827	0.0890	407.6	1.824	0.0854	407.4	1.820	0.0820	407.2	1.816	20
25	0.0949	412.2	1.842	0.0909	412.0	1.839	0.0872	411.9	1.835	0.0838	411.7	1.831	25
30	0.0967	416.7	1.857	0.0927	416.5	1.853	0.0889	416.3	1.850	0.0855	416.1	1.846	30
35	0.0986	421.1	1.872	0.0945	421.0	1.868	0.0907	420.8	1.864	0.0872	420.6	1.861	35
40	0.1005	425.6	1.886	0.0963	425.5	1.882	0.0924	425.3	1.879	0.0888	425.1	1.876	40
45	0.1023	430.1	1.900	0.0981	430.0	1.897	0.0941	429.8	1.893	0.0905	429.7	1.890	45
50	0.1042	434.7	1.915	0.0998	434.5	1.911	0.0959	434.4	1.908	0.0922	434.3	1.904	50
55	0.1060	439.3	1.929	0.1016	439.1	1.925	0.0975	439.0	1.922	0.0938	438.9	1.918	55
60	0.1078	443.9	1.943	0.1034	443.8	1.939	0.0992	443.6	1.936	0.0954	443.5	1.932	60
65	0.1096	448.6	1.957	0.1051	448.4	1.953	0.1009	448.3	1.950	0.0971	448.2	1.946	65
70	0.1114	453.2	1.970	0.1068	453.1	1.967	0.1026	453.0	1.963	0.0987	452.9	1.960	70
75	0.1132	458.0	1.984	0.1086	457.9	1.980	0.1043	457.7	1.977	0.1003	457.6	1.974	75
80	0.1150	462.7	1.998	0.1103	462.6	1.994	0.1059	462.5	1.991	0.1019	462.4	1.987	80
85	0.1168	467.5	2.011	0.1120	467.4	2.008	0.1076	467.3	2.004	0.1035	467.2	2.001	85
90	0.1186	472.4	2.024	0.1137	472.3	2.021	0.1092	472.2	2.018	0.1051	472.1	2.014	90
95	0.1203	477.2	2.038	0.1154	477.1	2.034	0.1109	477.0	2.031	0.1067	477.0	2.028	95
100	0.1221	482.2	2.051	0.1171	482.1	2.048	0.1125	482.0	2.044	0.1082	481.9	2.041	100
105	0.1238	487.1	2.064	0.1188	487.0	2.061	0.1141	486.9	2.057	0.1098	486.8	2.054	105
110	0.1256	492.1	2.077	0.1205	492.0	2.074	0.1158	491.9	2.071	0.1114	491.8	2.067	110
115	0.1274	497.1	2.090	0.1222	497.0	2.087	0.1174	496.9	2.084	0.1129	496.8	2.080	115
120	0.1291	502.2	2.103	0.1238	502.1	2.100	0.1190	502.0	2.097	0.1145	501.9	2.093	120
125	0.1308	507.3	2.116	0.1255	507.2	2.113	0.1206	507.1	2.109	0.1161	507.0	2.106	125
130	0.1326	512.4	2.129	0.1272	512.3	2.126	0.1222	512.2	2.122	0.1176	512.2	2.119	130
135	0.1343	517.6	2.142	0.1289	517.5	2.138	0.1238	517.4	2.135	0.1192	517.3	2.132	135
140	0.1361	522.8	2.154	0.1305	522.7	2.151	0.1254	522.6	2.148	0.1207	522.5	2.145	140

ABSOLUTE PRESSURE, kPa													
TEMP. °C	280			290			300			310			TEMP. °C
	-4.53 °C			-3.58 °C			-2.66 °C			-1.76 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0704	385.4	1.736	0.0680	385.9	1.735	0.0658	386.5	1.735	0.0638	387.0	1.734	
0	0.0720	389.4	1.751	0.0693	389.1	1.747	0.0667	388.9	1.744	0.0644	388.6	1.740	0
5	0.0738	393.8	1.767	0.0710	393.6	1.763	0.0684	393.3	1.760	0.0660	393.1	1.757	5
10	0.0755	398.2	1.782	0.0727	398.0	1.779	0.0701	397.7	1.776	0.0676	397.5	1.772	10
15	0.0772	402.6	1.798	0.0744	402.4	1.794	0.0717	402.2	1.791	0.0692	402.0	1.788	15
20	0.0789	407.0	1.813	0.0760	406.8	1.810	0.0733	406.6	1.807	0.0708	406.4	1.803	20
25	0.0806	411.5	1.828	0.0776	411.3	1.825	0.0749	411.1	1.822	0.0723	410.9	1.819	25
30	0.0823	416.0	1.843	0.0793	415.8	1.840	0.0764	415.6	1.837	0.0738	415.4	1.834	30
35	0.0839	420.5	1.858	0.0808	420.3	1.854	0.0780	420.1	1.851	0.0753	420.0	1.848	35
40	0.0855	425.0	1.872	0.0824	424.8	1.869	0.0795	424.7	1.866	0.0768	424.5	1.863	40
45	0.0871	429.5	1.887	0.0840	429.4	1.884	0.0810	429.2	1.880	0.0783	429.1	1.877	45
50	0.0887	434.1	1.901	0.0855	434.0	1.898	0.0825	433.8	1.895	0.0798	433.7	1.892	50
55	0.0903	438.7	1.915	0.0871	438.6	1.912	0.0840	438.5	1.909	0.0812	438.3	1.906	55
60	0.0919	443.4	1.929	0.0886	443.2	1.926	0.0855	443.1	1.923	0.0827	443.0	1.920	60
65	0.0935	448.1	1.943	0.0901	447.9	1.940	0.0870	447.8	1.937	0.0841	447.7	1.934	65
70	0.0950	452.8	1.957	0.0916	452.6	1.954	0.0885	452.5	1.951	0.0855	452.4	1.948	70
75	0.0966	457.5	1.971	0.0931	457.4	1.968	0.0899	457.3	1.965	0.0869	457.2	1.962	75
80	0.0981	462.3	1.984	0.0946	462.2	1.981	0.0914	462.1	1.978	0.0883	462.0	1.975	80
85	0.0997	467.1	1.998	0.0961	467.0	1.995	0.0928	466.9	1.992	0.0897	466.8	1.989	85
90	0.1012	472.0	2.011	0.0976	471.9	2.008	0.0943	471.8	2.005	0.0911	471.7	2.003	90
95	0.1027	476.9	2.025	0.0991	476.8	2.022	0.0957	476.7	2.019	0.0925	476.6	2.016	95
100	0.1043	481.8	2.038	0.1006	481.7	2.035	0.0971	481.6	2.032	0.0939	481.5	2.029	100
105	0.1058	486.7	2.051	0.1021	486.6	2.048	0.0986	486.6	2.045	0.0953	486.5	2.042	105
110	0.1073	491.7	2.064	0.1035	491.6	2.061	0.1000	491.6	2.058	0.0967	491.5	2.056	110
115	0.1088	496.8	2.077	0.1050	496.7	2.074	0.1014	496.6	2.071	0.0981	496.5	2.069	115
120	0.1103	501.8	2.090	0.1065	501.7	2.087	0.1028	501.7	2.084	0.0994	501.6	2.082	120
125	0.1118	506.9	2.103	0.1079	506.9	2.100	0.1042	506.8	2.097	0.1008	506.7	2.095	125
130	0.1133	512.1	2.116	0.1094	512.0	2.113	0.1057	511.9	2.110	0.1022	511.8	2.107	130
135	0.1148	517.3	2.129	0.1108	517.2	2.126	0.1071	517.1	2.123	0.1035	517.0	2.120	135
140	0.1163	522.5	2.142	0.1123	522.4	2.139	0.1085	522.3	2.136	0.1049	522.3	2.133	140
145	0.1178	527.7	2.154	0.1137	527.7	2.151	0.1099	527.6	2.148	0.1063	527.5	2.146	145

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)**

ABSOLUTE PRESSURE, kPa													
TEMP. °C	320			330			340			350			TEMP. °C
	-0.89 °C			-0.03 °C			0.81 °C			1.63 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0618	387.5	1.734	0.0600	388.0	1.734	0.0583	388.5	1.733	0.0567	389.0	1.733	
0	0.0621	388.3	1.737	0.0600	388.0	1.734	—	—	—	—	—	—	0
5	0.0637	392.8	1.753	0.0616	392.6	1.750	0.0596	392.3	1.747	0.0577	392.1	1.744	5
10	0.0653	397.3	1.769	0.0632	397.1	1.766	0.0611	396.8	1.763	0.0592	396.6	1.760	10
15	0.0669	401.8	1.785	0.0647	401.6	1.782	0.0626	401.3	1.779	0.0606	401.1	1.776	15
20	0.0684	406.2	1.800	0.0662	406.0	1.797	0.0640	405.8	1.794	0.0621	405.6	1.792	20
25	0.0699	410.7	1.816	0.0676	410.6	1.813	0.0655	410.4	1.810	0.0635	410.2	1.807	25
30	0.0714	415.3	1.831	0.0691	415.1	1.828	0.0669	414.9	1.825	0.0648	414.7	1.822	30
35	0.0728	419.8	1.845	0.0705	419.6	1.842	0.0683	419.5	1.840	0.0662	419.3	1.837	35
40	0.0743	424.3	1.860	0.0719	424.2	1.857	0.0697	424.0	1.854	0.0675	423.9	1.852	40
45	0.0757	428.9	1.875	0.0733	428.8	1.872	0.0710	428.6	1.869	0.0689	428.5	1.866	45
50	0.0771	433.5	1.889	0.0747	433.4	1.886	0.0724	433.2	1.883	0.0702	433.1	1.881	50
55	0.0786	438.2	1.903	0.0761	438.0	1.900	0.0737	437.9	1.898	0.0715	437.8	1.895	55
60	0.0800	442.8	1.917	0.0774	442.7	1.915	0.0750	442.6	1.912	0.0728	442.5	1.909	60
65	0.0813	447.6	1.931	0.0788	447.4	1.929	0.0764	447.3	1.926	0.0741	447.2	1.923	65
70	0.0827	452.3	1.945	0.0801	452.2	1.942	0.0777	452.0	1.940	0.0754	451.9	1.937	70
75	0.0841	457.1	1.959	0.0815	456.9	1.956	0.0790	456.8	1.954	0.0766	456.7	1.951	75
80	0.0855	461.9	1.973	0.0828	461.7	1.970	0.0803	461.6	1.967	0.0779	461.5	1.965	80
85	0.0868	466.7	1.986	0.0841	466.6	1.984	0.0816	466.5	1.981	0.0792	466.4	1.978	85
90	0.0882	471.6	2.000	0.0854	471.4	1.997	0.0829	471.3	1.995	0.0804	471.2	1.992	90
95	0.0896	476.5	2.013	0.0868	476.4	2.011	0.0841	476.3	2.008	0.0817	476.2	2.005	95
100	0.0909	481.4	2.027	0.0881	481.3	2.024	0.0854	481.2	2.021	0.0829	481.1	2.019	100
105	0.0923	486.4	2.040	0.0894	486.3	2.037	0.0867	486.2	2.035	0.0841	486.1	2.032	105
110	0.0936	491.4	2.053	0.0907	491.3	2.050	0.0879	491.2	2.048	0.0854	491.1	2.045	110
115	0.0949	496.4	2.066	0.0920	496.3	2.063	0.0892	496.2	2.061	0.0866	496.2	2.058	115
120	0.0963	501.5	2.079	0.0933	501.4	2.076	0.0905	501.3	2.074	0.0878	501.2	2.071	120
125	0.0976	506.6	2.092	0.0946	506.5	2.089	0.0917	506.5	2.087	0.0890	506.4	2.084	125
130	0.0989	511.8	2.105	0.0959	511.7	2.102	0.0930	511.6	2.100	0.0903	511.5	2.097	130
135	0.1002	517.0	2.118	0.0971	516.9	2.115	0.0942	516.8	2.112	0.0915	516.7	2.110	135
140	0.1016	522.2	2.130	0.0984	522.1	2.128	0.0955	522.0	2.125	0.0927	522.0	2.123	140
145	0.1029	527.4	2.143	0.0997	527.4	2.140	0.0967	527.3	2.138	0.0939	527.2	2.135	145

ABSOLUTE PRESSURE, kPa													
TEMP. °C	360			370			380			390			TEMP. °C
	2.43 °C			3.21 °C			3.98 °C			4.73 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0552	389.4	1.733	0.0537	389.9	1.732	0.0523	390.3	1.732	0.0510	390.8	1.732	
5	0.0559	391.8	1.741	0.0542	391.5	1.738	0.0526	391.3	1.735	0.0511	391.0	1.732	5
10	0.0574	396.4	1.757	0.0557	396.1	1.754	0.0540	395.9	1.752	0.0525	395.6	1.749	10
15	0.0588	400.9	1.773	0.0570	400.7	1.770	0.0554	400.5	1.768	0.0538	400.2	1.765	15
20	0.0602	405.4	1.789	0.0584	405.2	1.786	0.0567	405.0	1.783	0.0551	404.8	1.781	20
25	0.0616	410.0	1.804	0.0597	409.8	1.801	0.0580	409.6	1.799	0.0564	409.4	1.796	25
30	0.0629	414.5	1.819	0.0611	414.4	1.817	0.0593	414.2	1.814	0.0577	414.0	1.812	30
35	0.0642	419.1	1.834	0.0624	418.9	1.832	0.0606	418.8	1.829	0.0589	418.6	1.827	35
40	0.0655	423.7	1.849	0.0636	423.5	1.846	0.0619	423.4	1.844	0.0602	423.2	1.841	40
45	0.0668	428.3	1.864	0.0649	428.2	1.861	0.0631	428.0	1.859	0.0614	427.9	1.856	45
50	0.0681	433.0	1.878	0.0662	432.8	1.876	0.0643	432.7	1.873	0.0626	432.5	1.871	50
55	0.0694	437.6	1.892	0.0674	437.5	1.890	0.0655	437.3	1.888	0.0638	437.2	1.885	55
60	0.0707	442.3	1.907	0.0687	442.2	1.904	0.0668	442.1	1.902	0.0649	441.9	1.899	60
65	0.0719	447.0	1.921	0.0699	446.9	1.918	0.0680	446.8	1.916	0.0661	446.7	1.914	65
70	0.0732	451.8	1.935	0.0711	451.7	1.932	0.0691	451.6	1.930	0.0673	451.4	1.928	70
75	0.0744	456.6	1.949	0.0723	456.5	1.946	0.0703	456.3	1.944	0.0684	456.2	1.941	75
80	0.0756	461.4	1.962	0.0735	461.3	1.960	0.0715	461.2	1.958	0.0696	461.1	1.955	80
85	0.0769	466.3	1.976	0.0747	466.1	1.974	0.0727	466.0	1.971	0.0707	465.9	1.969	85
90	0.0781	471.1	1.990	0.0759	471.0	1.987	0.0738	470.9	1.985	0.0719	470.8	1.982	90
95	0.0793	476.1	2.003	0.0771	476.0	2.001	0.0750	475.9	1.998	0.0730	475.8	1.996	95
100	0.0805	481.0	2.016	0.0783	480.9	2.014	0.0761	480.8	2.012	0.0741	480.7	2.009	100
105	0.0817	486.0	2.030	0.0794	485.9	2.027	0.0773	485.8	2.025	0.0752	485.7	2.023	105
110	0.0829	491.0	2.043	0.0806	490.9	2.040	0.0784	490.8	2.038	0.0764	490.7	2.036	110
115	0.0841	496.1	2.056	0.0818	496.0	2.054	0.0796	495.9	2.051	0.0775	495.8	2.049	115
120	0.0853	501.2	2.069	0.0829	501.1	2.067	0.0807	501.0	2.064	0.0786	500.9	2.062	120
125	0.0865	506.3	2.082	0.0841	506.2	2.080	0.0818	506.1	2.077	0.0797	506.0	2.075	125
130	0.0877	511.5	2.095	0.0853	511.4	2.092	0.0830	511.3	2.090	0.0808	511.2	2.088	130
135	0.0889	516.7	2.108	0.0864	516.6	2.105	0.0841	516.5	2.103	0.0819	516.4	2.101	135
140	0.0901	521.9	2.120	0.0876	521.8	2.118	0.0852	521.7	2.116	0.0830	521.7	2.114	140
145	0.0912	527.2	2.133	0.0887	527.1	2.131	0.0863	527.0	2.128	0.0841	526.9	2.126	145
150	0.0924	532.5	2.146	0.0899	532.4	2.143	0.0874	532.3	2.141	0.0852	532.2	2.139	150

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg·K    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	400			425			450			475			TEMP. °C
	5.47 °C			7.25 °C			8.96 °C			10.60 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0498	391.2	1.731	0.0469	392.2	1.731	0.0444	393.1	1.730	0.0421	394.1	1.729	
10	0.0510	395.4	1.746	0.0476	394.8	1.740	0.0446	394.1	1.733	—	—	—	10
15	0.0523	400.0	1.762	0.0489	399.4	1.756	0.0458	398.9	1.750	0.0431	398.3	1.744	15
20	0.0536	404.6	1.778	0.0501	404.1	1.772	0.0470	403.5	1.766	0.0442	403.0	1.760	20
25	0.0549	409.2	1.794	0.0513	408.7	1.788	0.0482	408.2	1.782	0.0454	407.7	1.776	25
30	0.0561	413.8	1.809	0.0525	413.3	1.803	0.0493	412.9	1.797	0.0465	412.4	1.792	30
35	0.0573	418.4	1.824	0.0537	418.0	1.818	0.0504	417.5	1.813	0.0475	417.1	1.807	35
40	0.0585	423.0	1.839	0.0548	422.6	1.833	0.0515	422.2	1.828	0.0486	421.8	1.822	40
45	0.0597	427.7	1.854	0.0560	427.3	1.848	0.0526	426.9	1.843	0.0496	426.5	1.837	45
50	0.0609	432.4	1.868	0.0571	432.0	1.863	0.0537	431.6	1.857	0.0506	431.2	1.852	50
55	0.0621	437.1	1.883	0.0582	436.7	1.877	0.0547	436.3	1.872	0.0517	436.0	1.867	55
60	0.0632	441.8	1.897	0.0593	441.4	1.891	0.0558	441.1	1.886	0.0527	440.8	1.881	60
65	0.0644	446.5	1.911	0.0604	446.2	1.906	0.0568	445.9	1.900	0.0537	445.6	1.895	65
70	0.0655	451.3	1.925	0.0615	451.0	1.920	0.0579	450.7	1.914	0.0546	450.4	1.909	70
75	0.0666	456.1	1.939	0.0625	455.8	1.934	0.0589	455.5	1.928	0.0556	455.2	1.923	75
80	0.0678	461.0	1.953	0.0636	460.7	1.947	0.0599	460.4	1.942	0.0566	460.1	1.937	80
85	0.0689	465.8	1.967	0.0647	465.5	1.961	0.0609	465.3	1.956	0.0575	465.0	1.951	85
90	0.0700	470.7	1.980	0.0657	470.5	1.975	0.0619	470.2	1.970	0.0585	469.9	1.965	90
95	0.0711	475.7	1.994	0.0668	475.4	1.988	0.0629	475.2	1.983	0.0594	474.9	1.978	95
100	0.0722	480.6	2.007	0.0678	480.4	2.002	0.0639	480.1	1.997	0.0604	479.9	1.992	100
105	0.0733	485.6	2.020	0.0688	485.4	2.015	0.0649	485.2	2.010	0.0613	484.9	2.005	105
110	0.0744	490.7	2.034	0.0699	490.4	2.028	0.0658	490.2	2.023	0.0623	490.0	2.019	110
115	0.0755	495.7	2.047	0.0709	495.5	2.042	0.0668	495.3	2.037	0.0632	495.1	2.032	115
120	0.0766	500.8	2.060	0.0719	500.6	2.055	0.0678	500.4	2.050	0.0641	500.2	2.045	120
125	0.0776	506.0	2.073	0.0729	505.8	2.068	0.0688	505.6	2.063	0.0650	505.4	2.058	125
130	0.0787	511.1	2.086	0.0740	510.9	2.081	0.0697	510.7	2.076	0.0659	510.5	2.071	130
135	0.0798	516.3	2.099	0.0750	516.2	2.093	0.0707	516.0	2.088	0.0669	515.8	2.084	135
140	0.0809	521.6	2.111	0.0760	521.4	2.106	0.0716	521.2	2.101	0.0678	521.0	2.097	140
145	0.0819	526.9	2.124	0.0770	526.7	2.119	0.0726	526.5	2.114	0.0687	526.3	2.109	145
150	0.0830	532.2	2.137	0.0780	532.0	2.132	0.0736	531.8	2.127	0.0696	531.7	2.122	150
155	0.0840	537.5	2.149	0.0790	537.4	2.144	0.0745	537.2	2.139	0.0705	537.0	2.135	155

ABSOLUTE PRESSURE, kPa													
TEMP. °C	500			525			550			575			TEMP. °C
	12.17 °C			13.68 °C			15.14 °C			16.55 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0400	394.9	1.729	0.0381	395.7	1.728	0.0364	396.5	1.728	0.0348	397.3	1.727	
15	0.0406	397.6	1.738	0.0384	397.0	1.733	—	—	—	—	—	—	15
20	0.0417	402.4	1.755	0.0395	401.9	1.749	0.0374	401.3	1.744	0.0355	400.7	1.739	20
25	0.0428	407.2	1.771	0.0405	406.7	1.765	0.0384	406.1	1.760	0.0365	405.6	1.755	25
30	0.0439	411.9	1.786	0.0415	411.4	1.781	0.0394	410.9	1.776	0.0375	410.4	1.772	30
35	0.0449	416.6	1.802	0.0425	416.2	1.797	0.0404	415.7	1.792	0.0384	415.2	1.787	35
40	0.0459	421.4	1.817	0.0435	420.9	1.812	0.0413	420.5	1.807	0.0393	420.1	1.803	40
45	0.0469	426.1	1.832	0.0445	425.7	1.827	0.0423	425.3	1.823	0.0402	424.9	1.818	45
50	0.0479	430.9	1.847	0.0454	430.5	1.842	0.0432	430.1	1.838	0.0411	429.7	1.833	50
55	0.0489	435.6	1.862	0.0464	435.3	1.857	0.0441	434.9	1.852	0.0420	434.5	1.848	55
60	0.0498	440.4	1.876	0.0473	440.1	1.871	0.0450	439.7	1.867	0.0428	439.4	1.863	60
65	0.0508	445.2	1.890	0.0482	444.9	1.886	0.0458	444.6	1.881	0.0437	444.2	1.877	65
70	0.0517	450.1	1.905	0.0491	449.7	1.900	0.0467	449.4	1.896	0.0445	449.1	1.891	70
75	0.0527	454.9	1.919	0.0500	454.6	1.914	0.0476	454.3	1.910	0.0454	454.0	1.906	75
80	0.0536	459.8	1.933	0.0509	459.5	1.928	0.0484	459.2	1.924	0.0462	458.9	1.920	80
85	0.0545	464.7	1.946	0.0518	464.4	1.942	0.0493	464.2	1.938	0.0470	463.9	1.934	85
90	0.0554	469.7	1.960	0.0526	469.4	1.956	0.0501	469.1	1.951	0.0478	468.9	1.947	90
95	0.0563	474.6	1.974	0.0535	474.4	1.969	0.0510	474.1	1.965	0.0486	473.9	1.961	95
100	0.0572	479.6	1.987	0.0544	479.4	1.983	0.0518	479.2	1.979	0.0494	478.9	1.975	100
105	0.0581	484.7	2.001	0.0552	484.4	1.996	0.0526	484.2	1.992	0.0502	484.0	1.988	105
110	0.0590	489.8	2.014	0.0561	489.5	2.010	0.0534	489.3	2.006	0.0510	489.1	2.002	110
115	0.0599	494.9	2.027	0.0569	494.6	2.023	0.0542	494.4	2.019	0.0518	494.2	2.015	115
120	0.0608	500.0	2.040	0.0578	499.8	2.036	0.0551	499.6	2.032	0.0526	499.3	2.028	120
125	0.0617	505.2	2.053	0.0586	504.9	2.049	0.0559	504.7	2.045	0.0533	504.5	2.041	125
130	0.0625	510.3	2.066	0.0595	510.2	2.062	0.0567	510.0	2.058	0.0541	509.8	2.054	130
135	0.0634	515.6	2.079	0.0603	515.4	2.075	0.0575	515.2	2.071	0.0549	515.0	2.067	135
140	0.0643	520.8	2.092	0.0611	520.7	2.088	0.0583	520.5	2.084	0.0556	520.3	2.080	140
145	0.0651	526.1	2.105	0.0620	526.0	2.101	0.0591	525.8	2.097	0.0564	525.6	2.093	145
150	0.0660	531.5	2.118	0.0628	531.3	2.113	0.0598	531.1	2.109	0.0572	531.0	2.105	150
155	0.0669	536.8	2.130	0.0636	536.7	2.126	0.0606	536.5	2.122	0.0579	536.3	2.118	155
160	0.0677	542.3	2.143	0.0644	542.1	2.139	0.0614	541.9	2.135	0.0587	541.8	2.131	160

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg·K    (Saturation Properties in parentheses)**

ABSOLUTE PRESSURE, kPa													
TEMP. °C	600			625			650			675			TEMP. °C
	17.92 °C			19.24 °C			20.52 °C			21.77 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0333	398.0	1.727	0.0320	398.7	1.726	0.0308	399.4	1.726	0.0296	400.0	1.726	
20	0.0338	400.1	1.734	0.0321	399.5	1.729	—	—	—	—	—	—	20
25	0.0347	405.0	1.751	0.0331	404.5	1.746	0.0316	403.9	1.741	0.0302	403.3	1.737	25
30	0.0357	409.9	1.767	0.0340	409.4	1.762	0.0325	408.9	1.758	0.0311	408.3	1.753	30
35	0.0366	414.8	1.783	0.0349	414.3	1.778	0.0334	413.8	1.774	0.0319	413.3	1.770	35
40	0.0375	419.6	1.798	0.0358	419.2	1.794	0.0342	418.7	1.790	0.0328	418.2	1.786	40
45	0.0384	424.5	1.814	0.0366	424.0	1.809	0.0350	423.6	1.805	0.0336	423.2	1.801	45
50	0.0392	429.3	1.829	0.0375	428.9	1.825	0.0359	428.5	1.821	0.0344	428.1	1.817	50
55	0.0401	434.1	1.844	0.0383	433.8	1.840	0.0367	433.4	1.836	0.0351	433.0	1.832	55
60	0.0409	439.0	1.858	0.0391	438.7	1.854	0.0374	438.3	1.850	0.0359	437.9	1.847	60
65	0.0417	443.9	1.873	0.0399	443.5	1.869	0.0382	443.2	1.865	0.0367	442.9	1.861	65
70	0.0425	448.8	1.887	0.0407	448.5	1.883	0.0390	448.1	1.879	0.0374	447.8	1.876	70
75	0.0433	453.7	1.902	0.0415	453.4	1.898	0.0397	453.1	1.894	0.0381	452.8	1.890	75
80	0.0441	458.6	1.916	0.0422	458.3	1.912	0.0405	458.0	1.908	0.0389	457.8	1.904	80
85	0.0449	463.6	1.930	0.0430	463.3	1.926	0.0412	463.0	1.922	0.0396	462.8	1.918	85
90	0.0457	468.6	1.943	0.0437	468.3	1.940	0.0420	468.1	1.936	0.0403	467.8	1.932	90
95	0.0465	473.6	1.957	0.0445	473.4	1.953	0.0427	473.1	1.950	0.0410	472.8	1.946	95
100	0.0472	478.7	1.971	0.0452	478.4	1.967	0.0434	478.2	1.963	0.0417	477.9	1.960	100
105	0.0480	483.7	1.984	0.0460	483.5	1.980	0.0441	483.2	1.977	0.0424	483.0	1.973	105
110	0.0488	488.8	1.998	0.0467	488.6	1.994	0.0448	488.4	1.990	0.0431	488.1	1.987	110
115	0.0495	494.0	2.011	0.0474	493.7	2.007	0.0455	493.5	2.004	0.0437	493.3	2.000	115
120	0.0503	499.1	2.024	0.0482	498.9	2.020	0.0462	498.7	2.017	0.0444	498.5	2.014	120
125	0.0510	504.3	2.037	0.0489	504.1	2.034	0.0469	503.9	2.030	0.0451	503.7	2.027	125
130	0.0518	509.6	2.050	0.0496	509.3	2.047	0.0476	509.1	2.043	0.0458	508.9	2.040	130
135	0.0525	514.8	2.063	0.0503	514.6	2.060	0.0483	514.4	2.056	0.0464	514.2	2.053	135
140	0.0532	520.1	2.076	0.0510	519.9	2.073	0.0490	519.7	2.069	0.0471	519.5	2.066	140
145	0.0540	525.4	2.089	0.0517	525.2	2.085	0.0497	525.1	2.082	0.0478	524.9	2.079	145
150	0.0547	530.8	2.102	0.0524	530.6	2.098	0.0503	530.4	2.095	0.0484	530.2	2.091	150
155	0.0554	536.2	2.114	0.0531	536.0	2.111	0.0510	535.8	2.107	0.0491	535.7	2.104	155
160	0.0562	541.6	2.127	0.0538	541.4	2.123	0.0517	541.3	2.120	0.0497	541.1	2.117	160
165	0.0569	547.0	2.140	0.0545	546.9	2.136	0.0524	546.7	2.133	0.0504	546.6	2.129	165

ABSOLUTE PRESSURE, kPa													
TEMP. °C	700			725			750			775			TEMP. °C
	22.98 °C			24.16 °C			25.31 °C			26.43 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0285	400.6	1.725	0.0275	401.2	1.725	0.0266	401.8	1.725	0.0257	402.4	1.724	
25	0.0289	402.7	1.732	0.0277	402.1	1.728	—	—	—	—	—	—	25
30	0.0298	407.8	1.749	0.0285	407.2	1.745	0.0274	406.7	1.741	0.0263	406.1	1.737	30
35	0.0306	412.8	1.766	0.0294	412.3	1.761	0.0282	411.8	1.757	0.0271	411.2	1.753	35
40	0.0314	417.8	1.782	0.0302	417.3	1.778	0.0290	416.8	1.774	0.0279	416.3	1.770	40
45	0.0322	422.7	1.797	0.0309	422.3	1.793	0.0297	421.8	1.790	0.0286	421.4	1.786	45
50	0.0330	427.7	1.813	0.0317	427.3	1.809	0.0305	426.8	1.805	0.0294	426.4	1.802	50
55	0.0337	432.6	1.828	0.0324	432.2	1.824	0.0312	431.8	1.820	0.0301	431.4	1.817	55
60	0.0345	437.6	1.843	0.0332	437.2	1.839	0.0319	436.8	1.836	0.0308	436.4	1.832	60
65	0.0352	442.5	1.858	0.0339	442.2	1.854	0.0326	441.8	1.850	0.0314	441.5	1.847	65
70	0.0359	447.5	1.872	0.0346	447.1	1.869	0.0333	446.8	1.865	0.0321	446.5	1.862	70
75	0.0367	452.5	1.887	0.0353	452.1	1.883	0.0340	451.8	1.880	0.0328	451.5	1.876	75
80	0.0374	457.5	1.901	0.0360	457.1	1.897	0.0346	456.8	1.894	0.0334	456.5	1.891	80
85	0.0381	462.5	1.915	0.0366	462.2	1.911	0.0353	461.9	1.908	0.0341	461.6	1.905	85
90	0.0387	467.5	1.929	0.0373	467.2	1.925	0.0360	467.0	1.922	0.0347	466.7	1.919	90
95	0.0394	472.6	1.943	0.0380	472.3	1.939	0.0366	472.0	1.936	0.0353	471.8	1.933	95
100	0.0401	477.7	1.956	0.0386	477.4	1.953	0.0372	477.1	1.950	0.0360	476.9	1.947	100
105	0.0408	482.8	1.970	0.0393	482.5	1.967	0.0379	482.3	1.964	0.0366	482.0	1.960	105
110	0.0414	487.9	1.983	0.0399	487.7	1.980	0.0385	487.4	1.977	0.0372	487.2	1.974	110
115	0.0421	493.1	1.997	0.0406	492.8	1.994	0.0391	492.6	1.990	0.0378	492.4	1.987	115
120	0.0428	498.3	2.010	0.0412	498.0	2.007	0.0397	497.8	2.004	0.0384	497.6	2.001	120
125	0.0434	503.5	2.023	0.0418	503.3	2.020	0.0404	503.1	2.017	0.0390	502.9	2.014	125
130	0.0441	508.7	2.037	0.0425	508.5	2.033	0.0410	508.3	2.030	0.0396	508.1	2.027	130
135	0.0447	514.0	2.050	0.0431	513.8	2.046	0.0416	513.6	2.043	0.0402	513.4	2.040	135
140	0.0453	519.3	2.062	0.0437	519.2	2.059	0.0422	519.0	2.056	0.0408	518.8	2.053	140
145	0.0460	524.7	2.075	0.0443	524.5	2.072	0.0428	524.3	2.069	0.0413	524.1	2.066	145
150	0.0466	530.1	2.088	0.0449	529.9	2.085	0.0434	529.7	2.082	0.0419	529.5	2.079	150
155	0.0473	535.5	2.101	0.0456	535.3	2.098	0.0440	535.1	2.095	0.0425	535.0	2.092	155
160	0.0479	540.9	2.113	0.0462	540.8	2.110	0.0446	540.6	2.107	0.0431	540.4	2.104	160
165	0.0485	546.4	2.126	0.0468	546.2	2.123	0.0452	546.1	2.120	0.0437	545.9	2.117	165
170	0.0491	551.9	2.139	0.0474	551.7	2.135	0.0458	551.6	2.132	0.0442	551.4	2.130	170

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg·K    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	800			850			900			950			TEMP. °C
	27.52 °C			29.63 °C			31.66 °C			33.59 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0249	402.9	1.724	0.0234	403.9	1.723	0.0220	404.9	1.723	0.0208	405.7	1.722	
30	0.0253	405.5	1.733	0.0234	404.3	1.725	—	—	—	—	—	—	30
35	0.0261	410.7	1.750	0.0242	409.6	1.742	0.0225	408.5	1.734	0.0210	407.3	1.727	35
40	0.0269	415.8	1.766	0.0250	414.8	1.759	0.0233	413.8	1.752	0.0217	412.7	1.745	40
45	0.0276	420.9	1.782	0.0257	420.0	1.775	0.0240	419.0	1.768	0.0224	418.1	1.761	45
50	0.0283	426.0	1.798	0.0264	425.1	1.791	0.0246	424.2	1.784	0.0231	423.3	1.778	50
55	0.0290	431.0	1.813	0.0270	430.2	1.807	0.0253	429.4	1.800	0.0237	428.5	1.794	55
60	0.0297	436.1	1.829	0.0277	435.3	1.822	0.0259	434.5	1.816	0.0243	433.7	1.810	60
65	0.0303	441.1	1.844	0.0283	440.4	1.837	0.0265	439.6	1.831	0.0249	438.9	1.825	65
70	0.0310	446.1	1.858	0.0290	445.4	1.852	0.0271	444.8	1.846	0.0255	444.0	1.840	70
75	0.0316	451.2	1.873	0.0296	450.5	1.867	0.0277	449.9	1.861	0.0261	449.2	1.855	75
80	0.0323	456.2	1.887	0.0302	455.6	1.881	0.0283	455.0	1.875	0.0266	454.4	1.870	80
85	0.0329	461.3	1.902	0.0308	460.7	1.896	0.0289	460.1	1.890	0.0272	459.5	1.884	85
90	0.0335	466.4	1.916	0.0314	465.8	1.910	0.0295	465.3	1.904	0.0277	464.7	1.899	90
95	0.0341	471.5	1.930	0.0320	471.0	1.924	0.0300	470.4	1.918	0.0283	469.9	1.913	95
100	0.0347	476.6	1.944	0.0325	476.1	1.938	0.0306	475.6	1.932	0.0288	475.1	1.927	100
105	0.0353	481.8	1.957	0.0331	481.3	1.952	0.0311	480.8	1.946	0.0293	480.3	1.941	105
110	0.0359	487.0	1.971	0.0337	486.5	1.965	0.0317	486.0	1.960	0.0299	485.5	1.954	110
115	0.0365	492.2	1.984	0.0342	491.7	1.979	0.0322	491.2	1.973	0.0304	490.8	1.968	115
120	0.0371	497.4	1.998	0.0348	496.9	1.992	0.0327	496.5	1.987	0.0309	496.1	1.982	120
125	0.0377	502.6	2.011	0.0353	502.2	2.005	0.0333	501.8	2.000	0.0314	501.4	1.995	125
130	0.0383	507.9	2.024	0.0359	507.5	2.019	0.0338	507.1	2.013	0.0319	506.7	2.008	130
135	0.0389	513.2	2.037	0.0364	512.8	2.032	0.0343	512.4	2.027	0.0324	512.0	2.021	135
140	0.0394	518.6	2.050	0.0370	518.2	2.045	0.0348	517.8	2.040	0.0329	517.4	2.035	140
145	0.0400	524.0	2.063	0.0375	523.6	2.058	0.0353	523.2	2.053	0.0334	522.8	2.048	145
150	0.0406	529.4	2.076	0.0381	529.0	2.071	0.0358	528.6	2.065	0.0339	528.3	2.060	150
155	0.0411	534.8	2.089	0.0386	534.4	2.083	0.0363	534.1	2.078	0.0343	533.7	2.073	155
160	0.0417	540.3	2.102	0.0391	539.9	2.096	0.0369	539.6	2.091	0.0348	539.2	2.086	160
165	0.0422	545.7	2.114	0.0397	545.4	2.109	0.0374	545.1	2.104	0.0353	544.8	2.099	165
170	0.0428	551.3	2.127	0.0402	551.0	2.121	0.0379	550.6	2.116	0.0358	550.3	2.111	170
175	0.0433	556.8	2.139	0.0407	556.5	2.134	0.0384	556.2	2.129	0.0363	555.9	2.124	175

ABSOLUTE PRESSURE, kPa													
TEMP. °C	1000			1100			1200			1300			TEMP. °C
	35.46 °C			38.98 °C			42.28 °C			45.37 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0197	406.6	1.721	0.0178	408.1	1.720	0.0162	409.5	1.719	0.0149	410.6	1.718	
40	0.0204	411.6	1.738	0.0180	409.3	1.724	—	—	—	—	—	—	40
45	0.0210	417.1	1.755	0.0186	414.9	1.742	0.0166	412.7	1.729	—	—	—	45
50	0.0217	422.4	1.772	0.0192	420.5	1.759	0.0172	418.4	1.747	0.0154	416.2	1.735	50
55	0.0223	427.7	1.788	0.0198	425.9	1.776	0.0178	424.0	1.764	0.0160	422.0	1.753	55
60	0.0229	432.9	1.804	0.0204	431.2	1.792	0.0183	429.5	1.781	0.0165	427.7	1.770	60
65	0.0235	438.1	1.819	0.0210	436.6	1.808	0.0189	435.0	1.797	0.0171	433.3	1.787	65
70	0.0240	443.3	1.834	0.0215	441.9	1.824	0.0194	440.3	1.813	0.0176	438.8	1.803	70
75	0.0246	448.5	1.849	0.0220	447.1	1.839	0.0199	445.7	1.829	0.0180	444.2	1.819	75
80	0.0251	453.7	1.864	0.0225	452.4	1.854	0.0204	451.1	1.844	0.0185	449.7	1.834	80
85	0.0257	458.9	1.879	0.0230	457.7	1.869	0.0208	456.4	1.859	0.0190	455.1	1.850	85
90	0.0262	464.1	1.893	0.0235	462.9	1.883	0.0213	461.7	1.874	0.0194	460.5	1.865	90
95	0.0267	469.3	1.907	0.0240	468.2	1.898	0.0218	467.0	1.888	0.0198	465.9	1.879	95
100	0.0272	474.5	1.922	0.0245	473.5	1.912	0.0222	472.4	1.903	0.0203	471.2	1.894	100
105	0.0277	479.8	1.936	0.0250	478.7	1.926	0.0226	477.7	1.917	0.0207	476.6	1.908	105
110	0.0282	485.0	1.949	0.0254	484.0	1.940	0.0231	483.0	1.931	0.0211	482.0	1.922	110
115	0.0287	490.3	1.963	0.0259	489.4	1.954	0.0235	488.4	1.945	0.0215	487.4	1.936	115
120	0.0292	495.6	1.977	0.0263	494.7	1.967	0.0239	493.8	1.958	0.0219	492.8	1.950	120
125	0.0297	500.9	1.990	0.0268	500.0	1.981	0.0244	499.2	1.972	0.0223	498.3	1.964	125
130	0.0302	506.3	2.003	0.0272	505.4	1.994	0.0248	504.6	1.986	0.0227	503.7	1.978	130
135	0.0307	511.6	2.017	0.0277	510.8	2.007	0.0252	510.0	1.999	0.0231	509.2	1.991	135
140	0.0311	517.0	2.030	0.0281	516.3	2.021	0.0256	515.5	2.012	0.0235	514.7	2.004	140
145	0.0316	522.5	2.043	0.0285	521.7	2.034	0.0260	520.9	2.025	0.0238	520.2	2.018	145
150	0.0321	527.9	2.056	0.0290	527.2	2.047	0.0264	526.4	2.039	0.0242	525.7	2.031	150
155	0.0325	533.4	2.069	0.0294	532.7	2.060	0.0268	532.0	2.052	0.0246	531.2	2.044	155
160	0.0330	538.9	2.081	0.0298	538.2	2.073	0.0272	537.5	2.064	0.0250	536.8	2.057	160
165	0.0334	544.4	2.094	0.0303	543.8	2.085	0.0276	543.1	2.077	0.0253	542.4	2.070	165
170	0.0339	550.0	2.107	0.0307	549.3	2.098	0.0280	548.7	2.090	0.0257	548.0	2.082	170
175	0.0344	555.6	2.119	0.0311	555.0	2.111	0.0284	554.3	2.103	0.0261	553.7	2.095	175
180	0.0348	561.2	2.132	0.0315	560.6	2.123	0.0288	560.0	2.115	0.0264	559.4	2.108	180
185	0.0353	566.9	2.144	0.0319	566.3	2.136	0.0291	565.7	2.128	0.0268	565.1	2.120	185

**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

**V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg-K    (Saturation Properties in parentheses)**

TEMP. °C	ABSOLUTE PRESSURE, kPa												TEMP. °C
	1400			1500			1600			1700			
	48.29 °C			51.05 °C			53.68 °C			56.19 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
0.0137	411.7	1.717	0.0127	412.6	1.716	0.0118	413.4	1.714	0.0110	414.1	1.713		
50	0.0139	413.8	1.724	—	—	—	—	—	—	—	—	—	50
55	0.0145	419.9	1.742	0.0131	417.6	1.731	0.0119	415.2	1.720	—	—	—	55
60	0.0150	425.8	1.760	0.0137	423.7	1.749	0.0125	421.6	1.739	0.0114	419.2	1.729	60
65	0.0155	431.5	1.777	0.0142	429.7	1.767	0.0130	427.7	1.757	0.0119	425.6	1.748	65
70	0.0160	437.1	1.794	0.0146	435.4	1.784	0.0134	433.7	1.775	0.0124	431.8	1.766	70
75	0.0165	442.7	1.810	0.0151	441.1	1.801	0.0139	439.5	1.792	0.0128	437.8	1.783	75
80	0.0169	448.2	1.825	0.0155	446.8	1.817	0.0143	445.3	1.808	0.0132	443.7	1.800	80
85	0.0174	453.7	1.841	0.0160	452.4	1.832	0.0147	450.9	1.824	0.0136	449.5	1.816	85
90	0.0178	459.2	1.856	0.0164	457.9	1.848	0.0151	456.6	1.840	0.0140	455.2	1.832	90
95	0.0182	464.7	1.871	0.0168	463.4	1.863	0.0155	462.2	1.855	0.0144	460.9	1.848	95
100	0.0186	470.1	1.886	0.0172	468.9	1.878	0.0159	467.8	1.870	0.0148	466.5	1.863	100
105	0.0190	475.5	1.900	0.0175	474.4	1.892	0.0163	473.3	1.885	0.0151	472.2	1.878	105
110	0.0194	481.0	1.914	0.0179	479.9	1.907	0.0166	478.9	1.900	0.0155	477.8	1.892	110
115	0.0198	486.4	1.929	0.0183	485.4	1.921	0.0170	484.4	1.914	0.0158	483.4	1.907	115
120	0.0202	491.9	1.943	0.0187	490.9	1.935	0.0173	490.0	1.928	0.0162	489.0	1.921	120
125	0.0205	497.4	1.956	0.0190	496.4	1.949	0.0177	495.5	1.942	0.0165	494.6	1.935	125
130	0.0209	502.8	1.970	0.0194	502.0	1.963	0.0180	501.1	1.956	0.0168	500.2	1.949	130
135	0.0213	508.3	1.984	0.0197	507.5	1.976	0.0183	506.6	1.970	0.0171	505.8	1.963	135
140	0.0216	513.8	1.997	0.0201	513.0	1.990	0.0187	512.2	1.983	0.0174	511.4	1.977	140
145	0.0220	519.4	2.010	0.0204	518.6	2.003	0.0190	517.8	1.997	0.0178	517.0	1.990	145
150	0.0224	524.9	2.024	0.0207	524.2	2.017	0.0193	523.4	2.010	0.0181	522.6	2.004	150
155	0.0227	530.5	2.037	0.0211	529.8	2.030	0.0196	529.0	2.023	0.0184	528.3	2.017	155
160	0.0231	536.1	2.050	0.0214	535.4	2.043	0.0199	534.7	2.036	0.0187	534.0	2.030	160
165	0.0234	541.7	2.063	0.0217	541.1	2.056	0.0203	540.4	2.049	0.0190	539.7	2.043	165
170	0.0237	547.4	2.075	0.0220	546.7	2.069	0.0206	546.1	2.062	0.0193	545.4	2.056	170
175	0.0241	553.1	2.088	0.0224	552.4	2.081	0.0209	551.8	2.075	0.0196	551.1	2.069	175
180	0.0244	558.8	2.101	0.0227	558.1	2.094	0.0212	557.5	2.088	0.0198	556.9	2.082	180
185	0.0248	564.5	2.113	0.0230	563.9	2.107	0.0215	563.3	2.101	0.0201	562.7	2.095	185
190	0.0251	570.2	2.126	0.0233	569.7	2.119	0.0218	569.1	2.113	0.0204	568.5	2.107	190
195	0.0254	576.0	2.138	0.0236	575.5	2.132	0.0221	574.9	2.126	0.0207	574.3	2.120	195

TEMP. °C	ABSOLUTE PRESSURE, kPa												TEMP. °C
	1800			1900			2000			2200			
	58.58 °C			60.88 °C			63.09 °C			67.26 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
0.0102	414.7	1.712	0.0096	415.2	1.710	0.0090	415.6	1.709	0.0080	416.1	1.705		
60	0.0104	416.7	1.718	—	—	—	—	—	—	—	—	—	60
65	0.0109	423.4	1.738	0.0100	421.1	1.728	0.0092	418.5	1.717	—	—	—	65
70	0.0114	429.8	1.757	0.0105	427.8	1.747	0.0097	425.5	1.738	0.0083	420.5	1.718	70
75	0.0118	436.0	1.774	0.0110	434.2	1.766	0.0102	432.2	1.757	0.0088	427.9	1.739	75
80	0.0123	442.1	1.792	0.0114	440.4	1.783	0.0106	438.6	1.775	0.0092	434.7	1.759	80
85	0.0127	448.0	1.808	0.0118	446.4	1.800	0.0110	444.8	1.793	0.0096	441.3	1.777	85
90	0.0130	453.8	1.824	0.0122	452.4	1.817	0.0114	450.9	1.810	0.0100	447.7	1.795	90
95	0.0134	459.6	1.840	0.0125	458.2	1.833	0.0117	456.8	1.826	0.0103	453.9	1.812	95
100	0.0138	465.3	1.856	0.0129	464.0	1.849	0.0121	462.7	1.842	0.0107	460.0	1.829	100
105	0.0141	471.0	1.871	0.0132	469.8	1.864	0.0124	468.6	1.857	0.0110	466.0	1.845	105
110	0.0145	476.7	1.886	0.0135	475.5	1.879	0.0127	474.4	1.873	0.0113	472.0	1.860	110
115	0.0148	482.3	1.900	0.0139	481.2	1.894	0.0130	480.2	1.888	0.0116	477.9	1.875	115
120	0.0151	488.0	1.915	0.0142	486.9	1.908	0.0133	485.9	1.902	0.0119	483.8	1.891	120
125	0.0154	493.6	1.929	0.0145	492.6	1.923	0.0136	491.6	1.917	0.0122	489.6	1.905	125
130	0.0157	499.2	1.943	0.0148	498.3	1.937	0.0139	497.4	1.931	0.0124	495.4	1.920	130
135	0.0161	504.9	1.957	0.0151	504.0	1.951	0.0142	503.1	1.945	0.0127	501.3	1.934	135
140	0.0164	510.5	1.971	0.0154	509.7	1.965	0.0145	508.8	1.959	0.0130	507.1	1.948	140
145	0.0167	516.2	1.984	0.0157	515.4	1.979	0.0148	514.5	1.973	0.0132	512.9	1.962	145
150	0.0169	521.9	1.998	0.0160	521.1	1.992	0.0151	520.3	1.987	0.0135	518.7	1.976	150
155	0.0172	527.6	2.011	0.0162	526.8	2.006	0.0153	526.0	2.000	0.0138	524.5	1.990	155
160	0.0175	533.3	2.024	0.0165	532.5	2.019	0.0156	531.8	2.013	0.0140	530.3	2.003	160
165	0.0178	539.0	2.038	0.0168	538.3	2.032	0.0159	537.6	2.027	0.0143	536.1	2.017	165
170	0.0181	544.7	2.051	0.0171	544.0	2.045	0.0161	543.4	2.040	0.0145	542.0	2.030	170
175	0.0184	550.5	2.064	0.0173	549.8	2.058	0.0164	549.2	2.053	0.0147	547.8	2.043	175
180	0.0187	556.3	2.076	0.0176	555.6	2.071	0.0166	555.0	2.066	0.0150	553.7	2.056	180
185	0.0189	562.1	2.089	0.0179	561.4	2.084	0.0169	560.8	2.079	0.0152	559.6	2.069	185
190	0.0192	567.9	2.102	0.0181	567.3	2.096	0.0171	566.7	2.091	0.0154	565.5	2.082	190
195	0.0195	573.7	2.114	0.0184	573.2	2.109	0.0174	572.6	2.104	0.0157	571.4	2.094	195
200	0.0197	579.6	2.127	0.0186	579.1	2.122	0.0176	578.5	2.117	0.0159	577.4	2.107	200
205	0.0200	585.5	2.139	0.0189	585.0	2.134	0.0179	584.4	2.129	0.0161	583.3	2.120	205



**Table 2 (continued)**  
**DuPont™ ISCEON® MO49Plus™ Superheated Vapor—Constant Pressure Tables**

V = Volume in m<sup>3</sup>/kg    H = Enthalpy in kJ/kg    S = Entropy in kJ/kg·K    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	2400			2600			2800			3000			TEMP. °C
	71.14 °C			74.78 °C			78.20 °C			81.42 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0071	416.3	1.701	0.0063	416.1	1.697	0.0057	415.5	1.692	0.0051	414.4	1.685	
75	0.0075	422.8	1.720	0.0064	416.5	1.698	—	—	—	—	—	—	75
80	0.0080	430.4	1.742	0.0069	425.4	1.723	0.0059	419.3	1.702	—	—	—	80
85	0.0084	437.5	1.762	0.0074	433.3	1.745	0.0064	428.4	1.728	0.0055	422.4	1.708	85
90	0.0088	444.3	1.780	0.0077	440.6	1.766	0.0068	436.4	1.750	0.0060	431.7	1.734	90
95	0.0091	450.8	1.798	0.0081	447.5	1.785	0.0072	443.8	1.770	0.0064	439.8	1.756	95
100	0.0095	457.2	1.815	0.0084	454.1	1.802	0.0076	450.8	1.789	0.0068	447.3	1.776	100
105	0.0098	463.4	1.832	0.0088	460.6	1.820	0.0079	457.6	1.807	0.0071	454.4	1.795	105
110	0.0101	469.5	1.848	0.0091	466.9	1.836	0.0082	464.2	1.825	0.0074	461.3	1.813	110
115	0.0104	475.6	1.864	0.0093	473.1	1.853	0.0085	470.6	1.841	0.0077	468.0	1.830	115
120	0.0107	481.6	1.879	0.0096	479.3	1.868	0.0087	476.9	1.858	0.0079	474.5	1.847	120
125	0.0109	487.5	1.894	0.0099	485.4	1.884	0.0090	483.2	1.873	0.0082	480.9	1.863	125
130	0.0112	493.5	1.909	0.0101	491.4	1.899	0.0092	489.3	1.889	0.0084	487.2	1.879	130
135	0.0115	499.4	1.924	0.0104	497.5	1.914	0.0095	495.5	1.904	0.0087	493.4	1.894	135
140	0.0117	505.3	1.938	0.0106	503.4	1.928	0.0097	501.6	1.919	0.0089	499.6	1.909	140
145	0.0120	511.2	1.952	0.0109	509.4	1.942	0.0099	507.6	1.933	0.0091	505.8	1.924	145
150	0.0122	517.0	1.966	0.0111	515.4	1.957	0.0102	513.6	1.948	0.0093	511.9	1.939	150
155	0.0124	522.9	1.980	0.0113	521.3	1.971	0.0104	519.7	1.962	0.0096	518.0	1.953	155
160	0.0127	528.8	1.994	0.0116	527.2	1.984	0.0106	525.7	1.976	0.0098	524.1	1.967	160
165	0.0129	534.7	2.007	0.0118	533.2	1.998	0.0108	531.7	1.990	0.0100	530.2	1.981	165
170	0.0131	540.6	2.020	0.0120	539.1	2.012	0.0110	537.7	2.003	0.0102	536.2	1.995	170
175	0.0134	546.5	2.034	0.0122	545.1	2.025	0.0112	543.7	2.017	0.0104	542.3	2.009	175
180	0.0136	552.4	2.047	0.0124	551.1	2.038	0.0114	549.7	2.030	0.0106	548.4	2.022	180
185	0.0138	558.3	2.060	0.0126	557.0	2.051	0.0116	555.8	2.043	0.0107	554.4	2.035	185
190	0.0140	564.3	2.073	0.0128	563.0	2.064	0.0118	561.8	2.056	0.0109	560.5	2.049	190
195	0.0143	570.2	2.086	0.0130	569.0	2.077	0.0120	567.8	2.069	0.0111	566.6	2.062	195
200	0.0145	576.2	2.098	0.0133	575.1	2.090	0.0122	573.9	2.082	0.0113	572.7	2.075	200
205	0.0147	582.2	2.111	0.0135	581.1	2.103	0.0124	580.0	2.095	0.0115	578.8	2.088	205
210	0.0149	588.2	2.123	0.0136	587.1	2.115	0.0126	586.1	2.108	0.0117	585.0	2.100	210
215	0.0151	594.3	2.136	0.0138	593.2	2.128	0.0128	592.2	2.120	0.0118	591.1	2.113	215
220	0.0153	600.3	2.148	0.0140	599.3	2.140	0.0130	598.3	2.133	0.0120	597.3	2.126	220

ABSOLUTE PRESSURE, kPa													
TEMP. °C	3200			3400			3600			3800			TEMP. °C
	84.46 °C			87.34 °C			90.06 °C			92.61 °C			
	V	H	S	V	H	S	V	H	S	V	H	S	
	0.0045	412.7	1.678	0.0040	410.3	1.669	0.0035	406.8	1.657	0.0030	401.1	1.640	
85	0.0046	414.3	1.683	—	—	—	—	—	—	—	—	—	85
90	0.0052	426.0	1.715	0.0044	418.7	1.692	—	—	—	—	—	—	90
95	0.0057	435.2	1.740	0.0050	429.9	1.723	0.0043	423.4	1.703	0.0036	414.2	1.675	95
100	0.0061	443.4	1.762	0.0054	439.1	1.748	0.0048	434.2	1.732	0.0042	428.3	1.714	100
105	0.0064	451.0	1.783	0.0058	447.3	1.770	0.0052	443.2	1.756	0.0046	438.7	1.741	105
110	0.0067	458.2	1.801	0.0061	455.0	1.790	0.0055	451.4	1.777	0.0050	447.6	1.765	110
115	0.0070	465.2	1.819	0.0064	462.2	1.808	0.0058	459.1	1.797	0.0053	455.7	1.786	115
120	0.0072	471.9	1.837	0.0066	469.2	1.826	0.0061	466.4	1.816	0.0056	463.4	1.805	120
125	0.0075	478.5	1.853	0.0069	476.0	1.843	0.0063	473.4	1.834	0.0058	470.7	1.824	125
130	0.0077	484.9	1.869	0.0071	482.6	1.860	0.0066	480.2	1.851	0.0061	477.8	1.841	130
135	0.0080	491.3	1.885	0.0074	489.2	1.876	0.0068	486.9	1.867	0.0063	484.6	1.858	135
140	0.0082	497.6	1.901	0.0076	495.6	1.892	0.0070	493.5	1.883	0.0065	491.4	1.875	140
145	0.0084	503.9	1.916	0.0078	502.0	1.907	0.0072	500.0	1.899	0.0067	498.0	1.891	145
150	0.0086	510.1	1.930	0.0080	508.3	1.922	0.0074	506.5	1.914	0.0069	504.6	1.906	150
155	0.0088	516.3	1.945	0.0082	514.6	1.937	0.0076	512.8	1.929	0.0071	511.0	1.922	155
160	0.0090	522.5	1.959	0.0084	520.8	1.951	0.0078	519.2	1.944	0.0073	517.5	1.936	160
165	0.0092	528.6	1.973	0.0086	527.1	1.966	0.0080	525.5	1.958	0.0075	523.8	1.951	165
170	0.0094	534.8	1.987	0.0088	533.3	1.980	0.0082	531.7	1.973	0.0077	530.2	1.965	170
175	0.0096	540.9	2.001	0.0089	539.4	1.994	0.0084	538.0	1.987	0.0078	536.5	1.980	175
180	0.0098	547.0	2.015	0.0091	545.6	2.007	0.0085	544.2	2.000	0.0080	542.8	1.994	180
185	0.0100	553.1	2.028	0.0093	551.8	2.021	0.0087	550.5	2.014	0.0082	549.1	2.007	185
190	0.0102	559.3	2.041	0.0095	558.0	2.034	0.0089	556.7	2.028	0.0083	555.4	2.021	190
195	0.0103	565.4	2.055	0.0096	564.2	2.048	0.0090	562.9	2.041	0.0085	561.7	2.035	195
200	0.0105	571.5	2.068	0.0098	570.3	2.061	0.0092	569.1	2.054	0.0086	567.9	2.048	200
205	0.0107	577.7	2.081	0.0100	576.5	2.074	0.0094	575.4	2.067	0.0088	574.2	2.061	205
210	0.0109	583.8	2.093	0.0101	582.7	2.087	0.0095	581.6	2.080	0.0089	580.5	2.074	210
215	0.0110	590.0	2.106	0.0103	588.9	2.099	0.0097	587.9	2.093	0.0091	586.8	2.087	215
220	0.0112	596.2	2.119	0.0105	595.2	2.112	0.0098	594.1	2.106	0.0092	593.1	2.100	220
225	0.0114	602.4	2.131	0.0106	601.4	2.125	0.0100	600.4	2.119	0.0094	599.4	2.113	225
230	0.0115	608.7	2.144	0.0108	607.7	2.137	0.0101	606.7	2.131	0.0095	605.7	2.125	230

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