



Thermodynamic
Properties
of

SUVA[®] HP81

Refrigerant

[R-402B (38/2/60)]

Thermodynamic Properties of SUVA® HP81 Refrigerant

SI Units

New tables of the thermodynamic properties of SUVA® HP81 refrigerant [ASHRAE designation: R-402B (38/2/60)], a near azeotropic blend of HFC-125/HC-290/HCFC-22, have been developed and are presented here. These tables are based on extensive experimental measurements. Equations have been developed, based on the Peng-Robinson-Stryjek-Vera (PRSV) equation of state, which represent the data with accuracy and consistency throughout the entire range of temperature, pressure, and density presented in these tables.

Physical Properties

Chemical Formula	CHF ₂ CF ₃ /CH ₃ CH ₂ CH ₃ /CHClF ₂ (38/2/60% by weight)	
Molecular Weight	94.71	
Boiling Point at One Atmosphere	-47.14°C	(-52.83°F)
Critical Temperature, T _c	82.61°C	(180.70°F)
	355.76 K	(640.37°R)
Critical Pressure, P _c	4445.4 kPa (abs)	(644.8 psia)
Critical Density, D _c	530.7 kg/m ³	(33.13 lb/ft ³)
Critical Volume, V _c	0.00188 m ³ /kg	(0.0302 ft ³ /lb)

Units and Factors

t	= temperature in °C
T	= temperature in K = °C + 273.15
p _f	= pressure of saturated liquid (bubble point) in kPa (abs)
p _g	= pressure of saturated vapor (dew point) in kPa (abs)
v _f	= volume of saturated liquid in m ³ /kg
v _g	= volume of saturated vapor in m ³ /kg
V	= volume of superheated vapor in m ³ /kg
d _f	= 1/v _f = density of saturated liquid in kg/m ³
d _g	= 1/v _g = density of saturated vapor in kg/m ³
h _f	= enthalpy of saturated liquid in kJ/kg
h _{fg}	= enthalpy of vaporization in kJ/kg
h _g	= enthalpy of saturated vapor in kJ/kg
H	= enthalpy of superheated vapor in kJ/kg
s _f	= entropy of saturated liquid in kJ/(kg) (K)
s _g	= entropy of saturated vapor in kJ/(kg) (K)
S	= entropy of superheated vapor in kJ/(kg) (K)
C _p	= heat capacity at constant pressure in kJ/(kg) (K)
C _v	= heat capacity at constant volume in kJ/(kg) (K)

The gas constant, R = 8.314 J/(mole) (K)
for SUVA® HP81, R = 0.0878 kJ/(kg) (K)
One atmosphere = 101.325 kPa

Reference point for enthalpy and entropy:

$$h_f = 200 \text{ kJ/kg at } 0^\circ\text{C}$$

$$s_f = 1 \text{ kJ/kg} \cdot \text{K at } 0^\circ\text{C}$$

Equations

The Peng-Robinson-Stryjek-Vera (PRSV) equation of state was used to calculate the tables of thermodynamic properties. It was chosen as the preferred equation of state because it provided an accurate fit of the thermodynamic data over the entire range of temperatures and pressures presented in these tables.

The constants for the PRSV equation of state were calculated in SI units. For conversion of thermodynamic properties to Engineering (I/P) units, conversion factors are provided for each property derived from the PRSV equation of state.

1. Equation of State (PRSV)

$$P = RT/(V-b) - a/(V^2 + 2bV - b^2)$$

where P is in kPa, T is in K, V is in m³/mole, and R = 0.008314 kJ/(mole) (K). The constants a and b are calculated as follows:

$$a = \sum_{i=1}^3 \sum_{j=1}^3 x_i x_j a_{ij} \quad b = \sum_{i=1}^3 x_i b_i$$

where

$$a_{ij} = (a_i a_j)^{0.5} (1 - k_{ij}) \quad b_i = 0.077796 RT_{ci}/P_{ci}$$

x_i = mole fraction of component i

x_j = mole fraction of component j

$$a_i = (0.457235 R^2 T_{ci}^2/P_{ci}) \alpha_i$$

$$a_j = (0.457235 R^2 T_{cj}^2/P_{cj}) \alpha_j$$

k_{ij} = binary interaction parameter for components i and j

$$\alpha_i = [1 + \kappa_i (1 - T_{ri}^{0.5})]^2$$

$$\kappa_i = \kappa_{0i} + \kappa_{1i} [(1 + T_{ri}^{0.5}) (0.7 - T_{ri})]$$

(Note: κ_i = κ_{0i} for T_r > 0.7)

$$\kappa_{0i} = 0.378893 + 1.4897153\omega_i - 0.17131848\omega_i^2 + 0.0196554\omega_i^3$$

κ_{1i} = adjustable parameter for component i

T_{ri} = T_i/T_{ci} for component i

Values for R , T_{c_i} , P_{c_i} , ω_i , κ_{1i} , x_i , and k_{ij} are needed to calculate constants a and b . $R = 0.008314$ kJ/(mole) (K). The remaining constants for SUVA[®] HP81 are summarized below:

Component	T_{c_i}	P_{c_i}	ω_i	κ_{1i}	x_i
HFC-125 (i = 1)	339.19	3595.0	0.3010	0.0390	0.29986
HC-290 (i = 2)	369.90	4257.0	0.1520	0.0320	0.04296
HCFC-22 (i = 3)	369.16	4977.0	0.2214	0.0360	0.65718

The binary interaction parameters, k_{ij} , for SUVA[®] HP81 are:

$k_{11} = 0.0000$	$k_{12} = 0.1478$	$k_{13} = 0.0158$
$k_{21} = 0.1478$	$k_{22} = 0.0000$	$k_{23} = 0.0839$
$k_{31} = 0.0158$	$k_{32} = 0.0839$	$k_{33} = 0.0000$

Ideal Gas Heat Capacity Equation (at constant pressure):

$$C_p^{\circ}(\text{mixture}) = \sum_{i=1}^3 x_i C_{p_i}^{\circ}$$

$$C_{p_i}^{\circ} = 4.184 (A_i + B_i T + C_i T^2 + D_i T^3 + E_i T^4 + F_i T^5)$$

where C_p° and $C_{p_i}^{\circ}$ are in J/(mole) (K) and T is in K. x_i is the mole fraction of component i in the mixture (use same values listed in PRSV constants for SUVA[®] HP81).

A_i , B_i , C_i , D_i , E_i , and F_i are constants:

$A_1 = 1.170140$ E+01	$B_1 = 0.216411$ E-01
$A_2 = -1.009000$ E+00	$B_2 = 0.731500$ E-01
$A_3 = 6.164370$ E+00	$B_3 = 0.173407$ E-01
$C_1 = 0.868526$ E-04	$D_1 = -0.112776$ E-06
$C_2 = -0.378900$ E-04	$D_2 = 0.767800$ E-08
$C_3 = 0.557618$ E-04	$D_3 = -0.140596$ E-06
$E_1 = 0.000000$ E+00	$F_1 = 0.000000$ E+00
$E_2 = 0.000000$ E+00	$F_2 = 0.000000$ E+00
$E_3 = 0.120557$ E-09	$F_3 = -0.368814$ E-13

Properties calculated in SI units from the equations and constants listed above can be converted to I/P units using the conversion factors shown below. Please note that in converting enthalpy and entropy from SI to I/P units, a change in reference states must be included (from $H = 200$ and $S = 1$ at 0°C for SI units to $H = 0$ and $S = 0$ at -40°F for I/P units). In the conversion equations below, $H(\text{ref})$ and $S(\text{ref})$ are the saturated liquid enthalpy and entropy at -40°C . For SUVA[®] HP81: $H(\text{ref}) = 151.4$ kJ/kg and $S(\text{ref}) = 0.8092$ kJ/kg \cdot K.

Conversion Factors (SI units to I/P units):

P (psia)	$= P$ (kPa) $\cdot 0.14504$
T ($^{\circ}\text{F}$)	$= (T[^{\circ}\text{C}] \cdot 1.8) + 32$
D (lb/ft ³)	$= D$ (kg/m ³) $\cdot 0.062428$
V (ft ³ /lb)	$= V$ (m ³ /kg) $\cdot 16.018$
H (Btu/lb)	$= [H$ (kJ/kg) $- H(\text{ref})] \cdot 0.43021$
S (Btu/lb \cdot $^{\circ}\text{R}$)	$= [S$ (kJ/kg \cdot K) $- S(\text{ref})] \cdot 0.23901$
C_p (Btu/lb \cdot $^{\circ}\text{F}$)	$= C_p$ (kJ/kg \cdot K) $\cdot 0.23901$
C_v (Btu/lb \cdot $^{\circ}\text{F}$)	$= C_v$ (kJ/kg \cdot K) $\cdot 0.23901$

2. Vapor Pressure

$$\log_n P = A + B/T + C \log_n T + D T^2$$

For SI units

T is in K and P is in kPa (abs)

A , B , C and D are constants.

Constants for vapor pressure of saturated liquid (bubble point), p_f :

$A = 5.11244$ E+01	$C = -5.85217$ E+00
$B = -3.47027$ E+03	$D = 1.11710$ E-05

Constants for vapor pressure of saturated vapor (dew point), p_g :

$A = 6.67012$ E+01	$C = -8.32834$ E+00
$B = -4.03132$ E+03	$D = 1.54397$ E-05

For I/P units

T is in $^{\circ}\text{R}$ and P is in psia

A , B , C and D are constants.

Constants for vapor pressure of saturated liquid (bubble point), p_f :

$A = 5.26337$ E+01	$C = -5.85217$ E+00
$B = -6.24656$ E+03	$D = 0.34475$ E-05

Constants for vapor pressure of saturated vapor (dew point), p_g :

$A = 6.96658$ E+01	$C = -8.32834$ E+00
$B = -7.25639$ E+03	$D = 0.47653$ E-05

3. Density of the Saturated Liquid

$$d_f/D_c = a_0 + a_1 z + a_2 z^2 + a_3 z^3 + a_4 z^4$$

$$\text{where } z = (1 - T/T_c)^{1/3} - t_0$$

Because both density and temperature appear in the reduced form in the equation, the same constants can be used for either SI or I/P units.

d_f and D_c are in kg/m^3 in SI units and lb/ft^3 in I/P units; T and T_c are in K in SI units and $^\circ\text{R}$ in I/P units; $a_0, a_1, a_2, a_3, a_4,$ and t_0 are constants:

$$a_0 = 2.338105$$

$$a_3 = -3.296387$$

$$a_1 = 2.891266$$

$$a_4 = -8.152344$$

$$a_2 = 2.094202$$

$$t_0 = 0.6032181$$

TABLE 1
SUVA® HP81 Saturation Properties—Temperature Table

TEMP. °C	PRESSURE kPa		VOLUME m ³ /kg		DENSITY kg/m ³		ENTHALPY kJ/kg			ENTROPY kJ/(kg)(K)		TEMP. °C
	LIQUID P _f	VAPOR P _g	LIQUID v _f	VAPOR v _g	LIQUID 1/v _f	VAPOR 1/v _g	LIQUID h _f	LATENT h _{fg}	VAPOR h _g	LIQUID s _f	VAPOR s _g	
-100	3.6	2.6	0.0006	5.7904	1567.39	0.173	88.3	235.5	323.8	0.4977	1.8667	-100
-99	3.9	2.9	0.0006	5.3191	1564.99	0.188	89.3	235.0	324.3	0.5034	1.8619	-99
-98	4.2	3.1	0.0006	4.8924	1562.58	0.204	90.3	234.6	324.9	0.5091	1.8572	-98
-97	4.6	3.4	0.0006	4.5045	1560.17	0.222	91.3	234.1	325.4	0.5148	1.8526	-97
-96	5.0	3.7	0.0006	4.1511	1557.73	0.241	92.3	233.7	326.0	0.5204	1.8480	-96
-95	5.4	4.1	0.0006	3.8300	1555.29	0.261	93.3	233.2	326.5	0.5260	1.8436	-95
-94	5.8	4.4	0.0006	3.5373	1552.83	0.283	94.3	232.8	327.1	0.5316	1.8392	-94
-93	6.3	4.8	0.0006	3.2712	1550.36	0.306	95.3	232.3	327.6	0.5372	1.8349	-93
-92	6.8	5.2	0.0006	3.0276	1547.87	0.330	96.3	231.9	328.2	0.5427	1.8308	-92
-91	7.3	5.7	0.0006	2.8050	1545.38	0.357	97.3	231.4	328.7	0.5483	1.8266	-91
-90	7.9	6.2	0.0006	2.6021	1542.87	0.384	98.3	231.0	329.3	0.5538	1.8226	-90
-89	8.5	6.7	0.0006	2.4155	1540.34	0.414	99.3	230.5	329.8	0.5593	1.8187	-89
-88	9.2	7.2	0.0007	2.2447	1537.81	0.446	100.3	230.0	330.4	0.5647	1.8148	-88
-87	9.8	7.8	0.0007	2.0877	1535.26	0.479	101.3	229.6	330.9	0.5702	1.8110	-87
-86	10.6	8.4	0.0007	1.9436	1532.70	0.515	102.3	229.1	331.5	0.5756	1.8073	-86
-85	11.4	9.1	0.0007	1.8109	1530.12	0.552	103.4	228.7	332.0	0.5810	1.8036	-85
-84	12.2	9.8	0.0007	1.6892	1527.53	0.592	104.4	228.2	332.6	0.5864	1.8000	-84
-83	13.1	10.5	0.0007	1.5768	1524.93	0.634	105.4	227.7	333.1	0.5918	1.7965	-83
-82	14.0	11.3	0.0007	1.4730	1522.31	0.679	106.4	227.3	333.7	0.5972	1.7931	-82
-81	15.0	12.2	0.0007	1.3774	1519.69	0.726	107.4	226.8	334.3	0.6025	1.7897	-81
-80	16.0	13.1	0.0007	1.2890	1517.04	0.776	108.5	226.3	334.8	0.6078	1.7864	-80
-79	17.1	14.0	0.0007	1.2073	1514.39	0.828	109.5	225.9	335.4	0.6131	1.7832	-79
-78	18.3	15.0	0.0007	1.1316	1511.72	0.884	110.5	225.4	335.9	0.6184	1.7800	-78
-77	19.5	16.1	0.0007	1.0615	1509.04	0.942	111.6	224.9	336.5	0.6237	1.7769	-77
-76	20.8	17.2	0.0007	0.9965	1506.34	1.004	112.6	224.5	337.1	0.6290	1.7738	-76
-75	22.1	18.4	0.0007	0.9362	1503.64	1.068	113.6	224.0	337.6	0.6342	1.7708	-75
-74	23.6	19.7	0.0007	0.8802	1500.91	1.136	114.7	223.5	338.2	0.6394	1.7679	-74
-73	25.1	21.0	0.0007	0.8282	1498.18	1.208	115.7	223.0	338.7	0.6446	1.7650	-73
-72	26.7	22.4	0.0007	0.7797	1495.43	1.283	116.8	222.6	339.3	0.6498	1.7622	-72
-71	28.3	23.9	0.0007	0.7346	1492.67	1.361	117.8	222.1	339.9	0.6550	1.7594	-71
-70	30.1	25.5	0.0007	0.6927	1489.89	1.444	118.8	221.6	340.4	0.6602	1.7567	-70
-69	31.9	27.1	0.0007	0.6536	1487.10	1.530	119.9	221.1	341.0	0.6653	1.7540	-69
-68	33.9	28.8	0.0007	0.6170	1484.30	1.621	120.9	220.6	341.6	0.6704	1.7514	-68
-67	35.9	30.7	0.0007	0.5829	1481.48	1.716	122.0	220.1	342.1	0.6756	1.7488	-67
-66	38.0	32.6	0.0007	0.5511	1478.65	1.815	123.1	219.6	342.7	0.6807	1.7463	-66
-65	40.2	34.6	0.0007	0.5212	1475.80	1.919	124.1	219.1	343.3	0.6858	1.7439	-65
-64	42.6	36.7	0.0007	0.4934	1472.95	2.027	125.2	218.6	343.8	0.6908	1.7415	-64
-63	45.0	38.9	0.0007	0.4673	1470.07	2.140	126.2	218.1	344.4	0.6959	1.7391	-63
-62	47.6	41.2	0.0007	0.4428	1467.19	2.258	127.3	217.6	344.9	0.7009	1.7368	-62
-61	50.2	43.6	0.0007	0.4199	1464.29	2.382	128.4	217.1	345.5	0.7060	1.7345	-61
-60	53.0	46.2	0.0007	0.3984	1461.37	2.510	129.4	216.6	346.1	0.7110	1.7323	-60
-59	55.9	48.8	0.0007	0.3782	1458.44	2.644	130.5	216.1	346.6	0.7160	1.7301	-59
-58	59.0	51.6	0.0007	0.3592	1455.50	2.784	131.6	215.6	347.2	0.7210	1.7279	-58
-57	62.1	54.5	0.0007	0.3414	1452.54	2.929	132.7	215.1	347.8	0.7260	1.7258	-57
-56	65.4	57.5	0.0007	0.3246	1449.57	3.081	133.8	214.6	348.3	0.7310	1.7238	-56
-55	68.9	60.7	0.0007	0.3088	1446.59	3.238	134.8	214.1	348.9	0.7360	1.7217	-55
-54	72.5	64.0	0.0007	0.2939	1443.59	3.402	135.9	213.5	349.5	0.7409	1.7198	-54
-53	76.2	67.5	0.0007	0.2799	1440.57	3.572	137.0	213.0	350.0	0.7459	1.7178	-53
-52	80.1	71.1	0.0007	0.2667	1437.55	3.749	138.1	212.5	350.6	0.7508	1.7159	-52
-51	84.1	74.8	0.0007	0.2543	1434.50	3.933	139.2	211.9	351.1	0.7557	1.7140	-51
-50	88.3	78.7	0.0007	0.2425	1431.45	4.124	140.3	211.4	351.7	0.7606	1.7122	-50
-49	92.7	82.8	0.0007	0.2314	1428.38	4.322	141.4	210.9	352.3	0.7655	1.7104	-49
-48	97.3	87.0	0.0007	0.2209	1425.29	4.527	142.5	210.3	352.8	0.7704	1.7086	-48
-47	102.0	91.4	0.0007	0.2110	1422.19	4.740	143.6	209.8	353.4	0.7753	1.7069	-47
-46	106.9	95.9	0.0007	0.2016	1419.08	4.961	144.7	209.2	353.9	0.7802	1.7052	-46
-45	111.9	100.7	0.0007	0.1927	1415.95	5.190	145.8	208.7	354.5	0.7850	1.7035	-45
-44	117.2	105.6	0.0007	0.1843	1412.80	5.427	146.9	208.1	355.0	0.7899	1.7019	-44
-43	122.7	110.7	0.0007	0.1763	1409.64	5.672	148.0	207.5	355.6	0.7947	1.7003	-43
-42	128.3	116.1	0.0007	0.1687	1406.47	5.926	149.2	207.0	356.1	0.7996	1.6987	-42
-41	134.2	121.6	0.0007	0.1616	1403.28	6.189	150.3	206.4	356.7	0.8044	1.6972	-41

TABLE 1 (continued)
SUVA® HP81 Saturation Properties—Temperature Table

TEMP. °C	PRESSURE kPa		VOLUME m ³ /kg		DENSITY kg/m ³		ENTHALPY kJ/kg			ENTROPY kJ/(kg)(K)		TEMP. °C
	LIQUID P _f	VAPOR P _g	LIQUID v _f	VAPOR v _g	LIQUID 1/v _f	VAPOR 1/v _g	LIQUID h _f	LATENT h _{fg}	VAPOR h _g	LIQUID s _f	VAPOR s _g	
-40	140.3	127.3	0.0007	0.1548	1400.08	6.461	151.4	205.8	357.2	0.8092	1.6957	-40
-39	146.6	133.2	0.0007	0.1483	1396.86	6.742	152.5	205.3	357.8	0.8140	1.6942	-39
-38	153.1	139.3	0.0007	0.1422	1393.63	7.032	153.7	204.7	358.3	0.8188	1.6927	-38
-37	159.8	145.7	0.0007	0.1364	1390.38	7.333	154.8	204.1	358.9	0.8236	1.6913	-37
-36	166.7	152.3	0.0007	0.1308	1387.11	7.643	155.9	203.5	359.4	0.8284	1.6899	-36
-35	173.9	159.1	0.0007	0.1256	1383.84	7.963	157.6	202.4	360.0	0.8354	1.6885	-35
-34	181.3	166.1	0.0007	0.1206	1380.54	8.293	158.7	201.8	360.5	0.8401	1.6872	-34
-33	189.0	173.4	0.0007	0.1158	1377.23	8.634	159.9	201.2	361.1	0.8448	1.6859	-33
-32	196.9	180.9	0.0007	0.1113	1373.91	8.986	161.0	200.6	361.6	0.8495	1.6846	-32
-31	205.0	188.7	0.0007	0.1070	1370.57	9.349	162.2	200.0	362.2	0.8542	1.6833	-31
-30	213.5	196.7	0.0007	0.1028	1367.21	9.723	163.3	199.4	362.7	0.8589	1.6820	-30
-29	222.1	205.0	0.0007	0.0989	1363.84	10.109	164.4	198.8	363.2	0.8636	1.6808	-29
-28	231.1	213.5	0.0007	0.0952	1360.45	10.507	165.6	198.2	363.8	0.8682	1.6796	-28
-27	240.3	222.4	0.0007	0.0916	1357.05	10.917	166.7	197.6	364.3	0.8729	1.6784	-27
-26	249.8	231.5	0.0007	0.0882	1353.63	11.340	167.9	196.9	364.8	0.8776	1.6773	-26
-25	259.6	240.9	0.0007	0.0849	1350.20	11.775	169.1	196.3	365.4	0.8822	1.6761	-25
-24	269.7	250.6	0.0007	0.0818	1346.75	12.224	170.2	195.7	365.9	0.8869	1.6750	-24
-23	280.1	260.5	0.0007	0.0788	1343.28	12.685	171.4	195.0	366.4	0.8915	1.6739	-23
-22	290.9	270.8	0.0007	0.0760	1339.80	13.161	172.6	194.4	366.9	0.8961	1.6728	-22
-21	301.9	281.4	0.0007	0.0733	1336.31	13.650	173.7	193.7	367.5	0.9008	1.6717	-21
-20	313.2	292.3	0.0008	0.0707	1332.79	14.154	174.9	193.1	368.0	0.9054	1.6706	-20
-19	324.9	303.6	0.0008	0.0682	1329.26	14.672	176.1	192.4	368.5	0.9100	1.6696	-19
-18	336.9	315.1	0.0008	0.0658	1325.71	15.205	177.3	191.7	369.0	0.9147	1.6686	-18
-17	349.2	327.0	0.0008	0.0635	1322.15	15.754	178.5	191.0	369.5	0.9193	1.6676	-17
-16	361.9	339.3	0.0008	0.0613	1318.57	16.318	179.7	190.4	370.0	0.9239	1.6666	-16
-15	374.9	351.8	0.0008	0.0592	1314.98	16.898	180.9	189.7	370.5	0.9285	1.6656	-15
-14	388.2	364.7	0.0008	0.0572	1311.36	17.491	183.1	188.0	371.0	0.9370	1.6647	-14
-13	401.9	377.9	0.0008	0.0552	1307.73	18.100	184.2	187.3	371.6	0.9415	1.6638	-13
-12	415.9	391.5	0.0008	0.0534	1304.09	18.726	185.4	186.6	372.0	0.9460	1.6629	-12
-11	430.4	405.5	0.0008	0.0516	1300.42	19.369	186.6	185.9	372.5	0.9505	1.6620	-11
-10	445.1	419.8	0.0008	0.0499	1296.74	20.030	187.8	185.2	373.0	0.9550	1.6611	-10
-9	460.3	434.5	0.0008	0.0483	1293.05	20.708	189.0	184.5	373.5	0.9595	1.6602	-9
-8	475.9	449.6	0.0008	0.0467	1289.33	21.405	190.2	183.8	374.0	0.9640	1.6594	-8
-7	491.8	465.1	0.0008	0.0452	1285.60	22.121	191.4	183.1	374.5	0.9685	1.6585	-7
-6	508.2	481.0	0.0008	0.0438	1281.85	22.857	192.6	182.4	375.0	0.9730	1.6576	-6
-5	525.0	497.3	0.0008	0.0424	1278.08	23.612	193.8	181.6	375.5	0.9775	1.6568	-5
-4	542.2	514.0	0.0008	0.0410	1274.30	24.387	195.1	180.9	375.9	0.9820	1.6560	-4
-3	559.8	531.2	0.0008	0.0397	1270.49	25.183	196.3	180.1	376.4	0.9865	1.6552	-3
-2	577.9	548.8	0.0008	0.0385	1266.67	26.000	197.5	179.4	376.9	0.9910	1.6544	-2
-1	596.4	566.8	0.0008	0.0373	1262.83	26.838	198.8	178.6	377.3	0.9955	1.6535	-1
0	615.3	585.2	0.0008	0.0361	1258.98	27.699	200.0	177.8	377.8	1.0000	1.6528	0
1	634.7	604.2	0.0008	0.0350	1255.10	28.582	201.2	177.0	378.3	1.0045	1.6520	1
2	654.5	623.5	0.0008	0.0339	1251.21	29.489	202.5	176.2	378.7	1.0090	1.6512	2
3	674.9	643.4	0.0008	0.0329	1247.29	30.419	203.8	175.4	379.2	1.0135	1.6504	3
4	695.6	663.7	0.0008	0.0319	1243.36	31.374	205.0	174.6	379.6	1.0180	1.6496	4
5	716.9	684.5	0.0008	0.0309	1239.41	32.353	206.3	173.8	380.0	1.0225	1.6489	5
6	738.7	705.7	0.0008	0.0300	1235.44	33.358	207.6	172.9	380.5	1.0270	1.6481	6
7	760.9	727.5	0.0008	0.0291	1231.45	34.389	208.8	172.1	380.9	1.0315	1.6473	7
8	783.7	749.8	0.0008	0.0282	1227.45	35.447	210.1	171.2	381.3	1.0360	1.6466	8
9	806.9	772.6	0.0008	0.0274	1223.42	36.533	211.4	170.3	381.8	1.0405	1.6458	9
10	830.7	795.9	0.0008	0.0266	1219.37	37.646	212.7	169.5	382.2	1.0450	1.6451	10
11	855.0	819.7	0.0008	0.0258	1215.30	38.788	214.0	168.6	382.6	1.0495	1.6443	11
12	879.8	844.1	0.0008	0.0250	1211.21	39.960	215.3	167.7	383.0	1.0541	1.6436	12
13	905.2	869.0	0.0008	0.0243	1207.11	41.162	216.6	166.8	383.4	1.0586	1.6429	13
14	931.1	894.4	0.0008	0.0236	1202.98	42.396	218.0	165.8	383.8	1.0631	1.6421	14
15	957.5	920.4	0.0008	0.0229	1198.83	43.661	219.3	164.9	384.2	1.0677	1.6414	15
16	984.6	947.0	0.0008	0.0222	1194.66	44.959	220.6	163.9	384.6	1.0722	1.6406	16
17	1012.2	974.1	0.0008	0.0216	1190.46	46.290	222.0	163.0	384.9	1.0768	1.6399	17
18	1040.3	1001.9	0.0008	0.0210	1186.25	47.657	223.3	162.0	385.3	1.0813	1.6391	18
19	1069.1	1030.2	0.0008	0.0204	1182.01	49.058	224.7	161.0	385.7	1.0859	1.6384	19

TABLE 1 (continued)
SUVA® HP81 Saturation Properties—Temperature Table

TEMP. °C	PRESSURE kPa		VOLUME m ³ /kg		DENSITY kg/m ³		ENTHALPY kJ/kg			ENTROPY kJ/(kg)(K)		TEMP. °C
	LIQUID P _f	VAPOR P _g	LIQUID v _f	VAPOR v _g	LIQUID 1/v _f	VAPOR 1/v _g	LIQUID h _f	LATENT h _{fg}	VAPOR h _g	LIQUID s _f	VAPOR s _g	
20	1098.4	1059.1	0.0008	0.0198	1177.75	50.496	226.0	160.0	386.0	1.0905	1.6376	20
21	1128.4	1088.6	0.0009	0.0192	1173.47	51.972	227.4	159.0	386.4	1.0950	1.6369	21
22	1158.9	1118.7	0.0009	0.0187	1169.17	53.486	228.8	158.0	386.7	1.0996	1.6361	22
23	1190.1	1149.4	0.0009	0.0182	1164.84	55.040	230.2	156.9	387.1	1.1042	1.6354	23
24	1221.9	1180.8	0.0009	0.0177	1160.49	56.635	231.6	155.9	387.4	1.1088	1.6346	24
25	1254.3	1212.8	0.0009	0.0172	1156.11	58.271	233.0	154.8	387.7	1.1134	1.6338	25
26	1287.3	1245.5	0.0009	0.0167	1151.71	59.951	234.4	153.7	388.1	1.1181	1.6331	26
27	1321.0	1278.8	0.0009	0.0162	1147.29	61.676	235.8	152.6	388.4	1.1227	1.6323	27
28	1355.4	1312.7	0.0009	0.0158	1142.84	63.446	237.2	151.5	388.7	1.1273	1.6315	28
29	1390.4	1347.3	0.0009	0.0153	1138.36	65.264	238.6	150.3	389.0	1.1320	1.6307	29
30	1426.1	1382.7	0.0009	0.0149	1133.86	67.130	240.1	149.2	389.3	1.1367	1.6299	30
31	1462.4	1418.7	0.0009	0.0145	1129.33	69.047	241.5	148.0	389.6	1.1414	1.6291	31
32	1499.5	1455.3	0.0009	0.0141	1124.78	71.017	243.0	146.8	389.8	1.1461	1.6282	32
33	1537.2	1492.7	0.0009	0.0137	1120.20	73.039	244.5	145.6	390.1	1.1508	1.6274	33
34	1575.7	1530.8	0.0009	0.0133	1115.58	75.118	246.0	144.4	390.3	1.1555	1.6265	34
35	1614.8	1569.7	0.0009	0.0129	1110.94	77.254	247.5	143.1	390.6	1.1602	1.6257	35
36	1654.7	1609.2	0.0009	0.0126	1106.27	79.450	249.0	141.9	390.8	1.1650	1.6248	36
37	1695.3	1649.5	0.0009	0.0122	1101.57	81.707	250.5	140.6	391.0	1.1698	1.6239	37
38	1736.6	1690.6	0.0009	0.0119	1096.83	84.028	252.0	139.2	391.3	1.1745	1.6230	38
39	1778.7	1732.4	0.0009	0.0116	1092.07	86.416	253.5	137.9	391.5	1.1794	1.6221	39
40	1821.6	1775.0	0.0009	0.0113	1087.27	88.872	255.1	136.5	391.6	1.1842	1.6211	40
41	1865.2	1818.3	0.0009	0.0109	1082.43	91.400	256.7	135.2	391.8	1.1890	1.6201	41
42	1909.5	1862.5	0.0009	0.0106	1077.56	94.001	258.2	133.8	392.0	1.1939	1.6192	42
43	1954.7	1907.4	0.0009	0.0103	1072.65	96.680	259.8	132.3	392.1	1.1988	1.6182	43
44	2000.6	1953.2	0.0009	0.0101	1067.71	99.440	261.4	130.9	392.3	1.2037	1.6171	44
45	2047.4	1999.7	0.0009	0.0098	1062.72	102.283	263.1	129.4	392.4	1.2087	1.6161	45
46	2094.9	2047.1	0.0009	0.0095	1057.70	105.213	264.7	127.8	392.5	1.2137	1.6150	46
47	2143.3	2095.3	0.0010	0.0092	1052.63	108.235	266.3	126.3	392.6	1.2187	1.6139	47
48	2192.4	2144.4	0.0010	0.0090	1047.51	111.352	268.0	124.7	392.7	1.2237	1.6128	48
49	2242.4	2194.3	0.0010	0.0087	1042.35	114.569	269.7	123.1	392.8	1.2288	1.6116	49
50	2293.3	2245.1	0.0010	0.0085	1037.14	117.891	271.4	121.5	392.8	1.2339	1.6104	50
51	2345.0	2296.8	0.0010	0.0082	1031.88	121.322	273.1	119.8	392.9	1.2390	1.6092	51
52	2397.6	2349.3	0.0010	0.0080	1026.57	124.868	274.8	118.1	392.9	1.2442	1.6079	52
53	2451.0	2402.7	0.0010	0.0078	1021.19	128.536	276.6	116.3	392.9	1.2494	1.6066	53
54	2505.3	2457.1	0.0010	0.0076	1015.76	132.331	278.4	114.5	392.9	1.2547	1.6053	54
55	2560.5	2512.4	0.0010	0.0073	1010.26	136.261	280.2	112.7	392.8	1.2600	1.6039	55
56	2616.6	2568.6	0.0010	0.0071	1004.70	140.334	282.0	110.8	392.7	1.2653	1.6024	56
57	2673.5	2625.7	0.0010	0.0069	999.06	144.558	283.8	108.8	392.7	1.2707	1.6009	57
58	2731.4	2683.8	0.0010	0.0067	993.34	148.943	285.7	106.8	392.5	1.2762	1.5994	58
59	2790.3	2742.8	0.0010	0.0065	987.54	153.498	287.6	104.8	392.4	1.2817	1.5978	59
60	2850.0	2802.9	0.0010	0.0063	981.65	158.236	289.5	102.7	392.2	1.2873	1.5961	60
61	2910.7	2863.9	0.0010	0.0061	975.65	163.168	291.5	100.6	392.0	1.2929	1.5944	61
62	2972.3	2925.9	0.0010	0.0059	969.55	168.310	293.5	98.3	391.8	1.2987	1.5926	62
63	3034.9	2988.9	0.0010	0.0058	963.33	173.677	295.5	96.1	391.5	1.3045	1.5907	63
64	3098.5	3052.9	0.0010	0.0056	956.99	179.287	297.5	93.7	391.2	1.3104	1.5887	64
65	3163.0	3118.0	0.0011	0.0054	950.49	185.161	299.6	91.3	390.9	1.3164	1.5866	65
66	3228.5	3184.2	0.0011	0.0052	943.84	191.323	301.8	88.7	390.5	1.3224	1.5845	66
67	3295.0	3251.4	0.0011	0.0051	937.00	197.799	304.0	86.1	390.1	1.3287	1.5822	67
68	3362.5	3319.6	0.0011	0.0049	929.96	204.622	306.2	83.4	389.6	1.3350	1.5798	68
69	3431.0	3389.0	0.0011	0.0047	922.68	211.829	308.5	80.5	389.0	1.3415	1.5772	69
70	3500.5	3459.5	0.0011	0.0046	915.12	219.465	310.9	77.6	388.4	1.3481	1.5745	70
71	3571.0	3531.1	0.0011	0.0044	907.25	227.583	313.3	74.5	387.8	1.3549	1.5716	71
72	3642.6	3603.8	0.0011	0.0042	899.01	236.250	315.8	71.2	387.0	1.3619	1.5685	72
73	3715.1	3677.8	0.0011	0.0041	890.31	245.549	318.4	67.7	386.2	1.3692	1.5652	73
74	3788.7	3752.9	0.0011	0.0039	881.05	255.585	321.2	64.1	385.2	1.3767	1.5615	74

TABLE 2
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	10.0			20.0			30.0			40.0			TEMP. °C
	(-83.70°C)			(-73.76°C)			(-67.36°C)			(-62.52°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(1.6549)	(332.7)	(1.7990)	(0.8676)	(338.3)	(1.7672)	(0.5949)	(341.9)	(1.7498)	(0.4553)	(344.7)	(1.7380)	
-70	1.7760	340.7	1.8397	0.8843	340.5	1.7782	—	—	—	—	—	—	-70
-65	1.8202	343.7	1.8542	0.9066	343.5	1.7928	0.6020	343.3	1.7566	—	—	—	-65
-60	1.8644	346.7	1.8685	0.9288	346.5	1.8071	0.6169	346.4	1.7710	0.4609	346.2	1.7452	-60
-55	1.9085	349.8	1.8826	0.9510	349.6	1.8213	0.6318	349.4	1.7852	0.4722	349.3	1.7594	-55
-50	1.9527	352.9	1.8966	0.9732	352.7	1.8353	0.6467	352.5	1.7992	0.4834	352.4	1.7735	-50
-45	1.9968	356.0	1.9105	0.9953	355.8	1.8492	0.6615	355.7	1.8131	0.4946	355.5	1.7874	-45
-40	2.0409	359.1	1.9242	1.0175	359.0	1.8629	0.6764	358.8	1.8269	0.5058	358.7	1.8012	-40
-35	2.0850	362.3	1.9377	1.0397	362.2	1.8765	0.6912	362.0	1.8405	0.5170	361.9	1.8148	-35
-30	2.1291	365.6	1.9511	1.0618	365.4	1.8899	0.7060	365.3	1.8539	0.5282	365.1	1.8283	-30
-25	2.1732	368.8	1.9644	1.0839	368.7	1.9032	0.7209	368.6	1.8673	0.5393	368.4	1.8416	-25
-20	2.2172	372.1	1.9776	1.1061	372.0	1.9164	0.7357	371.9	1.8805	0.5505	371.7	1.8549	-20
-15	2.2613	375.5	1.9907	1.1282	375.3	1.9295	0.7505	375.2	1.8936	0.5616	375.1	1.8680	-15
-10	2.3054	378.9	2.0036	1.1503	378.7	1.9424	0.7653	378.6	1.9065	0.5728	378.5	1.8810	-10
-5	2.3494	382.3	2.0164	1.1724	382.1	1.9553	0.7801	382.0	1.9194	0.5839	381.9	1.8938	-5
0	2.3934	385.7	2.0292	1.1945	385.6	1.9680	0.7948	385.5	1.9321	0.5950	385.3	1.9066	0
5	2.4375	389.2	2.0418	1.2166	389.1	1.9807	0.8096	388.9	1.9448	0.6061	388.8	1.9193	5
10	2.4815	392.7	2.0543	1.2387	392.6	1.9932	0.8244	392.5	1.9573	0.6172	392.3	1.9318	10
15	2.5255	396.2	2.0667	1.2607	396.1	2.0056	0.8391	396.0	1.9698	0.6283	395.9	1.9443	15
20	2.5696	399.8	2.0791	1.2828	399.7	2.0180	0.8539	399.6	1.9821	0.6394	399.5	1.9566	20
25	2.6136	403.4	2.0913	1.3049	403.3	2.0302	0.8687	403.2	1.9944	0.6505	403.1	1.9689	25
30	2.6576	407.1	2.1035	1.3270	407.0	2.0424	0.8834	406.9	2.0066	0.6616	406.8	1.9811	30
35	2.7016	410.8	2.1155	1.3490	410.7	2.0544	0.8982	410.6	2.0186	0.6727	410.5	1.9932	35
40	2.7456	414.5	2.1275	1.3711	414.4	2.0664	0.9129	414.3	2.0306	0.6838	414.2	2.0052	40
45	2.7896	418.3	2.1394	1.3931	418.2	2.0783	0.9276	418.1	2.0425	0.6949	418.0	2.0171	45
50	2.8336	422.1	2.1512	1.4152	422.0	2.0902	0.9424	421.9	2.0544	0.7060	421.8	2.0289	50
55	2.8776	425.9	2.1629	1.4372	425.8	2.1019	0.9571	425.7	2.0661	0.7170	425.6	2.0407	55
60	2.9216	429.7	2.1746	1.4592	429.6	2.1136	0.9718	429.5	2.0778	0.7281	429.5	2.0524	60
65	2.9655	433.6	2.1862	1.4813	433.5	2.1252	0.9865	433.4	2.0894	0.7392	433.4	2.0640	65
70	3.0095	437.5	2.1977	1.5033	437.5	2.1367	1.0013	437.4	2.1009	0.7502	437.3	2.0755	70
75	3.0535	441.5	2.2091	1.5254	441.4	2.1481	1.0160	441.3	2.1124	0.7613	441.2	2.0869	75
80	3.0975	445.5	2.2205	1.5474	445.4	2.1595	1.0307	445.3	2.1238	0.7723	445.2	2.0983	80
85	—	—	—	—	—	—	1.0454	449.3	2.1351	0.7834	449.3	2.1097	85
90	—	—	—	—	—	—	—	—	—	0.7944	453.3	2.1209	90

TEMP. °C	50.0			60.0			70.0			80.0			TEMP. °C
	(-58.57°C)			(-55.22°C)			(-52.29°C)			(-49.68°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.3699)	(346.9)	(1.7292)	(0.3122)	(348.8)	(1.7222)	(0.2705)	(350.4)	(1.7165)	(0.2388)	(351.9)	(1.7116)	
-55	0.3764	349.1	1.7393	0.3125	348.9	1.7228	—	—	—	—	—	—	-55
-50	0.3854	352.2	1.7534	0.3201	352.0	1.7369	0.2735	351.8	1.7229	—	—	—	-50
-45	0.3944	355.3	1.7674	0.3277	355.2	1.7509	0.2800	355.0	1.7369	0.2442	354.8	1.7247	-45
-40	0.4034	358.5	1.7812	0.3352	358.4	1.7647	0.2865	358.2	1.7507	0.2499	358.0	1.7386	-40
-35	0.4124	361.7	1.7948	0.3427	361.6	1.7784	0.2929	361.4	1.7644	0.2556	361.3	1.7523	-35
-30	0.4214	365.0	1.8083	0.3503	364.8	1.7919	0.2994	364.7	1.7780	0.2613	364.5	1.7659	-30
-25	0.4304	368.3	1.8217	0.3578	368.1	1.8053	0.3059	368.0	1.7914	0.2670	367.8	1.7793	-25
-20	0.4393	371.6	1.8349	0.3653	371.4	1.8186	0.3123	371.3	1.8047	0.2726	371.2	1.7926	-20
-15	0.4483	374.9	1.8480	0.3727	374.8	1.8317	0.3188	374.7	1.8178	0.2783	374.5	1.8058	-15
-10	0.4572	378.3	1.8610	0.3802	378.2	1.8447	0.3252	378.1	1.8309	0.2840	377.9	1.8188	-10
-5	0.4662	381.7	1.8739	0.3877	381.6	1.8576	0.3317	381.5	1.8438	0.2896	381.4	1.8317	-5
0	0.4751	385.2	1.8867	0.3952	385.1	1.8704	0.3381	385.0	1.8566	0.2952	384.8	1.8446	0
5	0.4840	388.7	1.8994	0.4026	388.6	1.8831	0.3445	388.5	1.8693	0.3009	388.3	1.8573	5
10	0.4929	392.2	1.9119	0.4101	392.1	1.8957	0.3509	392.0	1.8819	0.3065	391.9	1.8699	10
15	0.5019	395.8	1.9244	0.4175	395.7	1.9081	0.3573	395.6	1.8944	0.3121	395.4	1.8824	15
20	0.5108	399.4	1.9368	0.4250	399.3	1.9205	0.3637	399.2	1.9067	0.3177	399.0	1.8948	20
25	0.5197	403.0	1.9491	0.4324	402.9	1.9328	0.3701	402.8	1.9190	0.3234	402.7	1.9071	25
30	0.5286	406.7	1.9612	0.4399	406.6	1.9450	0.3765	406.5	1.9312	0.3290	406.4	1.9193	30
35	0.5375	410.4	1.9733	0.4473	410.3	1.9571	0.3829	410.2	1.9434	0.3346	410.1	1.9314	35
40	0.5463	414.1	1.9854	0.4547	414.0	1.9691	0.3893	413.9	1.9554	0.3402	413.8	1.9435	40
45	0.5552	417.9	1.9973	0.4621	417.8	1.9811	0.3956	417.7	1.9673	0.3458	417.6	1.9554	45
50	0.5641	421.7	2.0091	0.4695	421.6	1.9929	0.4020	421.5	1.9792	0.3513	421.4	1.9673	50
55	0.5730	425.5	2.0209	0.4770	425.4	2.0047	0.4084	425.3	1.9910	0.3569	425.2	1.9791	55
60	0.5819	429.4	2.0326	0.4844	429.3	2.0164	0.4147	429.2	2.0027	0.3625	429.1	1.9908	60
65	0.5907	433.3	2.0442	0.4918	433.2	2.0280	0.4211	433.1	2.0143	0.3681	433.0	2.0024	65
70	0.5996	437.2	2.0557	0.4992	437.1	2.0396	0.4275	437.0	2.0258	0.3737	436.9	2.0140	70
75	0.6085	441.2	2.0672	0.5066	441.1	2.0510	0.4338	441.0	2.0373	0.3792	440.9	2.0254	75
80	0.6173	445.1	2.0786	0.5140	445.0	2.0624	0.4402	444.9	2.0487	0.3848	444.9	2.0368	80
85	0.6262	449.2	2.0899	0.5214	449.1	2.0737	0.4465	449.0	2.0601	0.3904	448.9	2.0482	85
90	0.6350	453.2	2.1012	0.5288	453.2	2.0850	0.4529	453.1	2.0713	0.3959	453.0	2.0594	90
95	0.6439	457.3	2.1123	0.5362	457.2	2.0962	0.4592	457.2	2.0825	0.4015	457.1	2.0706	95
100	—	—	—	—	—	—	0.4655	461.3	2.0936	0.4070	461.2	2.0818	100
105	—	—	—	—	—	—	—	—	—	0.4126	465.4	2.0928	105

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	90.0			100.0			101.325			110.0			
	(-47.31°C)			(-45.14°C)			(-44.87°C)			(-43.14°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.2140)	(353.2)	(1.7074)	(0.1939)	(354.4)	(1.7038)	(0.1916)	(354.6)	(1.7033)	(0.1774)	(355.5)	(1.7005)		
-45	0.2163	354.7	1.7139	0.1941	354.5	1.7042	—	—	—	—	—	—	-45
-40	0.2215	357.9	1.7278	0.1987	357.7	1.7181	0.1960	357.7	1.7169	0.1801	357.5	1.7093	-40
-35	0.2265	361.1	1.7415	0.2033	360.9	1.7319	0.2006	360.9	1.7307	0.1843	360.8	1.7231	-35
-30	0.2316	364.4	1.7551	0.2079	364.2	1.7455	0.2051	364.2	1.7443	0.1885	364.1	1.7367	-30
-25	0.2367	367.7	1.7686	0.2125	367.5	1.7589	0.2096	367.5	1.7577	0.1927	367.4	1.7502	-25
-20	0.2418	371.0	1.7819	0.2171	370.9	1.7723	0.2142	370.8	1.7711	0.1969	370.7	1.7635	-20
-15	0.2468	374.4	1.7951	0.2216	374.2	1.7855	0.2187	374.2	1.7843	0.2010	374.1	1.7768	-15
-10	0.2519	377.8	1.8081	0.2262	377.7	1.7986	0.2232	377.6	1.7974	0.2052	377.5	1.7899	-10
-5	0.2569	381.2	1.8211	0.2307	381.1	1.8115	0.2277	381.1	1.8103	0.2093	381.0	1.8028	-5
0	0.2619	384.7	1.8339	0.2353	384.6	1.8244	0.2322	384.6	1.8232	0.2135	384.4	1.8157	0
5	0.2670	388.2	1.8466	0.2398	388.1	1.8371	0.2366	388.1	1.8359	0.2176	388.0	1.8284	5
10	0.2720	391.7	1.8592	0.2444	391.6	1.8497	0.2411	391.6	1.8485	0.2218	391.5	1.8411	10
15	0.2770	395.3	1.8718	0.2489	395.2	1.8622	0.2456	395.2	1.8611	0.2259	395.1	1.8536	15
20	0.2820	398.9	1.8842	0.2534	398.8	1.8747	0.2500	398.8	1.8735	0.2300	398.7	1.8660	20
25	0.2870	402.6	1.8965	0.2579	402.5	1.8870	0.2545	402.4	1.8858	0.2341	402.3	1.8784	25
30	0.2920	406.2	1.9087	0.2624	406.1	1.8992	0.2589	406.1	1.8980	0.2382	406.0	1.8906	30
35	0.2970	410.0	1.9208	0.2669	409.8	1.9114	0.2634	409.8	1.9102	0.2423	409.7	1.9028	35
40	0.3020	413.7	1.9329	0.2714	413.6	1.9234	0.2678	413.6	1.9222	0.2464	413.5	1.9148	40
45	0.3070	417.5	1.9449	0.2759	417.4	1.9354	0.2723	417.4	1.9342	0.2505	417.3	1.9268	45
50	0.3119	421.3	1.9567	0.2804	421.2	1.9473	0.2767	421.2	1.9461	0.2546	421.1	1.9387	50
55	0.3169	425.1	1.9685	0.2849	425.0	1.9591	0.2811	425.0	1.9579	0.2587	424.9	1.9505	55
60	0.3219	429.0	1.9802	0.2894	428.9	1.9708	0.2856	428.9	1.9696	0.2628	428.8	1.9623	60
65	0.3269	432.9	1.9919	0.2939	432.8	1.9824	0.2900	432.8	1.9813	0.2669	432.7	1.9739	65
70	0.3318	436.8	2.0034	0.2983	436.7	1.9940	0.2944	436.7	1.9928	0.2710	436.6	1.9855	70
75	0.3368	440.8	2.0149	0.3028	440.7	2.0055	0.2988	440.7	2.0043	0.2750	440.6	1.9970	75
80	0.3417	444.8	2.0263	0.3073	444.7	2.0169	0.3032	444.7	2.0158	0.2791	444.6	2.0084	80
85	0.3467	448.8	2.0377	0.3118	448.8	2.0283	0.3077	448.8	2.0271	0.2832	448.7	2.0198	85
90	0.3517	452.9	2.0490	0.3162	452.8	2.0396	0.3121	452.8	2.0384	0.2872	452.7	2.0310	90
95	0.3566	457.0	2.0602	0.3207	456.9	2.0508	0.3165	456.9	2.0496	0.2913	456.8	2.0422	95
100	0.3616	461.1	2.0713	0.3252	461.1	2.0619	0.3209	461.0	2.0607	0.2954	461.0	2.0534	100
105	0.3665	465.3	2.0824	0.3296	465.2	2.0730	0.3253	465.2	2.0718	0.2994	465.1	2.0645	105
110	—	—	—	—	—	—	0.3297	469.4	2.0828	0.3035	469.3	2.0755	110

TEMP. °C	120.0			130.0			140.0			150.0			TEMP. °C
	(-41.28°C)			(-39.54°C)			(-37.89°C)			(-36.34°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.1636)	(356.5)	(1.6976)	(0.1518)	(357.5)	(1.6950)	(0.1416)	(358.4)	(1.6926)	(0.1327)	(359.3)	(1.6904)	
-40	0.1646	357.4	1.7012	—	—	—	—	—	—	—	—	—	-40
-35	0.1684	360.6	1.7150	0.1550	360.5	1.7075	0.1435	360.3	1.7006	0.1336	360.1	1.6941	-35
-30	0.1723	363.9	1.7287	0.1586	363.8	1.7212	0.1469	363.6	1.7143	0.1367	363.4	1.7078	-30
-25	0.1762	367.2	1.7422	0.1622	367.1	1.7347	0.1502	366.9	1.7278	0.1398	366.8	1.7214	-25
-20	0.1800	370.6	1.7555	0.1658	370.4	1.7481	0.1535	370.3	1.7412	0.1429	370.1	1.7348	-20
-15	0.1838	374.0	1.7688	0.1693	373.8	1.7614	0.1569	373.7	1.7545	0.1461	373.5	1.7481	-15
-10	0.1877	377.4	1.7819	0.1729	377.2	1.7745	0.1602	377.1	1.7677	0.1492	377.0	1.7613	-10
-5	0.1915	380.8	1.7949	0.1764	380.7	1.7875	0.1635	380.6	1.7807	0.1522	380.4	1.7743	-5
0	0.1953	384.3	1.8078	0.1799	384.2	1.8004	0.1668	384.1	1.7936	0.1553	383.9	1.7872	0
5	0.1991	387.8	1.8205	0.1835	387.7	1.8132	0.1700	387.6	1.8064	0.1584	387.5	1.8000	5
10	0.2029	391.4	1.8332	0.1870	391.3	1.8259	0.1733	391.1	1.8191	0.1615	391.0	1.8127	10
15	0.2067	395.0	1.8457	0.1905	394.9	1.8384	0.1766	394.7	1.8316	0.1645	394.6	1.8253	15
20	0.2105	398.6	1.8582	0.1940	398.5	1.8509	0.1799	398.4	1.8441	0.1676	398.2	1.8378	20
25	0.2143	402.2	1.8705	0.1975	402.1	1.8632	0.1831	402.0	1.8565	0.1706	401.9	1.8502	25
30	0.2181	405.9	1.8828	0.2010	405.8	1.8755	0.1864	405.7	1.8687	0.1737	405.6	1.8625	30
35	0.2218	409.6	1.8949	0.2045	409.5	1.8877	0.1896	409.4	1.8809	0.1767	409.3	1.8746	35
40	0.2256	413.4	1.9070	0.2080	413.3	1.8997	0.1929	413.2	1.8930	0.1798	413.1	1.8867	40
45	0.2294	417.2	1.9190	0.2115	417.1	1.9117	0.1961	417.0	1.9050	0.1828	416.9	1.8988	45
50	0.2331	421.0	1.9309	0.2149	420.9	1.9236	0.1994	420.8	1.9169	0.1858	420.7	1.9107	50
55	0.2369	424.8	1.9427	0.2184	424.7	1.9355	0.2026	424.6	1.9288	0.1889	424.5	1.9225	55
60	0.2406	428.7	1.9544	0.2219	428.6	1.9472	0.2058	428.5	1.9405	0.1919	428.4	1.9343	60
65	0.2444	432.6	1.9661	0.2254	432.5	1.9589	0.2090	432.4	1.9522	0.1949	432.4	1.9459	65
70	0.2481	436.6	1.9777	0.2288	436.5	1.9705	0.2123	436.4	1.9638	0.1979	436.3	1.9575	70
75	0.2519	440.5	1.9892	0.2323	440.5	1.9820	0.2155	440.4	1.9753	0.2009	440.3	1.9691	75
80	0.2556	444.6	2.0006	0.2357	444.5	1.9934	0.2187	444.4	1.9867	0.2039	444.3	1.9805	80
85	0.2594	448.6	2.0120	0.2392	448.5	2.0048	0.2219	448.4	1.9981	0.2070	448.3	1.9919	85
90	0.2631	452.7	2.0232	0.2427	452.6	2.0161	0.2251	452.5	2.0094	0.2100	452.4	2.0032	90
95	0.2668	456.8	2.0345	0.2461	456.7	2.0273	0.2283	456.6	2.0206	0.2130	456.5	2.0144	95
100	0.2706	460.9	2.0456	0.2496	460.8	2.0384	0.2316	460.7	2.0318	0.2160	460.7	2.0256	100
105	0.2743	465.1	2.0567	0.2530	465.0	2.0495	0.2348	464.9	2.0429	0.2190	464.8	2.0367	105
110	0.2780	469.3	2.0677	0.2564	469.2	2.0605	0.2380	469.1	2.0539	0.2219	469.0	2.0477	110
115	—	—	—	0.2599	473.4	2.0715	0.2412	473.3	2.0649	0.2249	473.3	2.0587	115

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	160.0			170.0			180.0			190.0			
	(-34.87°C)			(-33.46°C)			(-32.12°C)			(-30.83°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.1249)	(360.1)	(1.6884)	(0.1180)	(360.8)	(1.6865)	(0.1118)	(361.6)	(1.6847)	(0.1063)	(362.2)	(1.6831)		
-30	0.1278	363.3	1.7017	0.1199	363.1	1.6960	0.1129	363.0	1.6906	0.1067	362.8	1.6854	-30
-25	0.1307	366.6	1.7153	0.1227	366.5	1.7096	0.1156	366.3	1.7042	0.1092	366.2	1.6990	-25
-20	0.1337	370.0	1.7288	0.1255	369.8	1.7231	0.1182	369.7	1.7177	0.1117	369.5	1.7125	-20
-15	0.1366	373.4	1.7421	0.1283	373.2	1.7364	0.1208	373.1	1.7310	0.1142	373.0	1.7259	-15
-10	0.1395	376.8	1.7553	0.1310	376.7	1.7496	0.1235	376.6	1.7443	0.1167	376.4	1.7392	-10
-5	0.1424	380.3	1.7683	0.1338	380.2	1.7627	0.1261	380.0	1.7573	0.1192	379.9	1.7523	-5
0	0.1453	383.8	1.7813	0.1365	383.7	1.7756	0.1287	383.5	1.7703	0.1216	383.4	1.7652	0
5	0.1482	387.3	1.7941	0.1392	387.2	1.7885	0.1313	387.1	1.7831	0.1241	387.0	1.7781	5
10	0.1511	390.9	1.8068	0.1420	390.8	1.8012	0.1338	390.7	1.7959	0.1266	390.5	1.7908	10
15	0.1540	394.5	1.8194	0.1447	394.4	1.8138	0.1364	394.3	1.8085	0.1290	394.1	1.8035	15
20	0.1569	398.1	1.8319	0.1474	398.0	1.8263	0.1390	397.9	1.8210	0.1315	397.8	1.8160	20
25	0.1597	401.8	1.8443	0.1501	401.7	1.8387	0.1416	401.6	1.8334	0.1339	401.4	1.8284	25
30	0.1626	405.5	1.8566	0.1528	405.4	1.8510	0.1441	405.3	1.8457	0.1363	405.2	1.8407	30
35	0.1655	409.2	1.8687	0.1555	409.1	1.8632	0.1467	409.0	1.8579	0.1388	408.9	1.8530	35
40	0.1683	413.0	1.8809	0.1582	412.9	1.8753	0.1492	412.8	1.8701	0.1412	412.7	1.8651	40
45	0.1712	416.8	1.8929	0.1609	416.7	1.8873	0.1518	416.6	1.8821	0.1436	416.5	1.8771	45
50	0.1740	420.6	1.9048	0.1636	420.5	1.8993	0.1543	420.4	1.8941	0.1460	420.3	1.8891	50
55	0.1769	424.5	1.9167	0.1663	424.4	1.9111	0.1569	424.3	1.9059	0.1484	424.2	1.9010	55
60	0.1797	428.3	1.9284	0.1689	428.2	1.9229	0.1594	428.2	1.9177	0.1508	428.1	1.9128	60
65	0.1825	432.3	1.9401	0.1716	432.2	1.9346	0.1619	432.1	1.9294	0.1532	432.0	1.9245	65
70	0.1854	436.2	1.9517	0.1743	436.1	1.9462	0.1644	436.0	1.9410	0.1556	435.9	1.9361	70
75	0.1882	440.2	1.9632	0.1770	440.1	1.9577	0.1670	440.0	1.9526	0.1580	439.9	1.9476	75
80	0.1910	444.2	1.9747	0.1796	444.1	1.9692	0.1695	444.0	1.9640	0.1604	444.0	1.9591	80
85	0.1939	448.3	1.9861	0.1823	448.2	1.9806	0.1720	448.1	1.9754	0.1628	448.0	1.9705	85
90	0.1967	452.3	1.9974	0.1850	452.3	1.9919	0.1745	452.2	1.9867	0.1652	452.1	1.9818	90
95	0.1995	456.5	2.0086	0.1876	456.4	2.0031	0.1770	456.3	1.9980	0.1676	456.2	1.9931	95
100	0.2023	460.6	2.0198	0.1903	460.5	2.0143	0.1796	460.4	2.0092	0.1700	460.4	2.0043	100
105	0.2051	464.8	2.0309	0.1929	464.7	2.0254	0.1821	464.6	2.0203	0.1724	464.5	2.0154	105
110	0.2079	469.0	2.0419	0.1956	468.9	2.0365	0.1846	468.8	2.0313	0.1747	468.7	2.0264	110
115	0.2107	473.2	2.0529	0.1982	473.1	2.0474	0.1871	473.0	2.0423	0.1771	473.0	2.0374	115
120	0.2135	477.4	2.0638	0.2009	477.4	2.0583	0.1896	477.3	2.0532	0.1795	477.2	2.0483	120

TEMP. °C	200.0			210.0			220.0			230.0			TEMP. °C
	(-29.60°C)			(-28.41°C)			(-27.26°C)			(-26.16°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.1012)	(362.9)	(1.6816)	(0.0967)	(363.5)	(1.6801)	(0.0925)	(364.2)	(1.6787)	(0.0887)	(364.7)	(1.6774)	
-25	0.1035	366.0	1.6941	0.0983	365.8	1.6894	0.0935	365.7	1.6849	0.0892	365.5	1.6806	-25
-20	0.1059	369.4	1.7077	0.1005	369.2	1.7030	0.0957	369.1	1.6985	0.0913	368.9	1.6942	-20
-15	0.1082	372.8	1.7210	0.1028	372.7	1.7164	0.0979	372.5	1.7119	0.0934	372.4	1.7077	-15
-10	0.1106	376.3	1.7343	0.1051	376.1	1.7297	0.1001	376.0	1.7253	0.0955	375.9	1.7210	-10
-5	0.1130	379.8	1.7474	0.1074	379.6	1.7428	0.1023	379.5	1.7384	0.0976	379.4	1.7342	-5
0	0.1153	383.3	1.7604	0.1096	383.1	1.7558	0.1044	383.0	1.7514	0.0997	382.9	1.7472	0
5	0.1177	386.8	1.7733	0.1119	386.7	1.7687	0.1066	386.6	1.7643	0.1017	386.4	1.7601	5
10	0.1200	390.4	1.7861	0.1141	390.3	1.7815	0.1087	390.2	1.7771	0.1038	390.0	1.7729	10
15	0.1224	394.0	1.7987	0.1163	393.9	1.7941	0.1108	393.8	1.7898	0.1058	393.7	1.7856	15
20	0.1247	397.7	1.8112	0.1186	397.5	1.8067	0.1130	397.4	1.8023	0.1079	397.3	1.7982	20
25	0.1270	401.3	1.8237	0.1208	401.2	1.8191	0.1151	401.1	1.8148	0.1099	401.0	1.8106	25
30	0.1293	405.0	1.8360	0.1230	404.9	1.8315	0.1172	404.8	1.8271	0.1120	404.7	1.8230	30
35	0.1316	408.8	1.8482	0.1252	408.7	1.8437	0.1193	408.6	1.8394	0.1140	408.5	1.8353	35
40	0.1339	412.6	1.8604	0.1274	412.5	1.8559	0.1214	412.3	1.8516	0.1160	412.2	1.8474	40
45	0.1363	416.4	1.8724	0.1296	416.3	1.8679	0.1236	416.2	1.8636	0.1180	416.1	1.8595	45
50	0.1386	420.2	1.8844	0.1318	420.1	1.8799	0.1257	420.0	1.8756	0.1200	419.9	1.8715	50
55	0.1408	424.1	1.8963	0.1340	424.0	1.8918	0.1277	423.9	1.8875	0.1221	423.8	1.8834	55
60	0.1431	428.0	1.9081	0.1362	427.9	1.9036	0.1298	427.8	1.8993	0.1241	427.7	1.8952	60
65	0.1454	431.9	1.9198	0.1384	431.8	1.9153	0.1319	431.7	1.9110	0.1261	431.6	1.9070	65
70	0.1477	435.9	1.9314	0.1405	435.8	1.9270	0.1340	435.7	1.9227	0.1281	435.6	1.9186	70
75	0.1500	439.9	1.9430	0.1427	439.8	1.9385	0.1361	439.7	1.9343	0.1301	439.6	1.9302	75
80	0.1523	443.9	1.9544	0.1449	443.8	1.9500	0.1382	443.7	1.9457	0.1320	443.6	1.9417	80
85	0.1545	447.9	1.9658	0.1471	447.8	1.9614	0.1403	447.8	1.9572	0.1340	447.7	1.9531	85
90	0.1568	452.0	1.9772	0.1492	451.9	1.9727	0.1423	451.9	1.9685	0.1360	451.8	1.9644	90
95	0.1591	456.1	1.9884	0.1514	456.1	1.9840	0.1444	456.0	1.9798	0.1380	455.9	1.9757	95
100	0.1614	460.3	1.9996	0.1536	460.2	1.9952	0.1465	460.1	1.9910	0.1400	460.0	1.9869	100
105	0.1636	464.5	2.0107	0.1557	464.4	2.0063	0.1485	464.3	2.0021	0.1420	464.2	1.9981	105
110	0.1659	468.7	2.0218	0.1579	468.6	2.0174	0.1506	468.5	2.0132	0.1439	468.4	2.0091	110
115	0.1681	472.9	2.0328	0.1600	472.8	2.0284	0.1527	472.8	2.0241	0.1459	472.7	2.0201	115
120	0.1704	477.2	2.0437	0.1622	477.1	2.0393	0.1547	477.0	2.0351	0.1479	477.0	2.0310	120
125	0.1727	481.5	2.0545	0.1643	481.4	2.0501	0.1568	481.3	2.0459	0.1499	481.2	2.0419	125

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	240.0			250.0			260.0			270.0			
	(-25.09°C)			(-24.06°C)			(-23.05°C)			(-22.08°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0852)	(365.3)	(1.6762)	(0.0820)	(365.9)	(1.6750)	(0.0790)	(366.4)	(1.6739)	(0.0762)	(366.9)	(1.6729)		
-25	0.0853	365.4	1.6765	—	—	—	—	—	—	—	—	—	-25
-20	0.0873	368.8	1.6901	0.0836	368.6	1.6861	0.0801	368.5	1.6823	0.0770	368.3	1.6785	-20
-15	0.0893	372.2	1.7035	0.0855	372.1	1.6996	0.0820	371.9	1.6958	0.0788	371.8	1.6921	-15
-10	0.0913	375.7	1.7169	0.0875	375.6	1.7130	0.0839	375.4	1.7092	0.0806	375.3	1.7055	-10
-5	0.0933	379.2	1.7301	0.0894	379.1	1.7262	0.0858	378.9	1.7224	0.0824	378.8	1.7187	-5
0	0.0953	382.7	1.7431	0.0913	382.6	1.7392	0.0876	382.5	1.7355	0.0842	382.3	1.7318	0
5	0.0973	386.3	1.7561	0.0932	386.2	1.7522	0.0895	386.0	1.7484	0.0860	385.9	1.7448	5
10	0.0993	389.9	1.7689	0.0951	389.8	1.7650	0.0913	389.7	1.7613	0.0878	389.5	1.7577	10
15	0.1013	393.5	1.7816	0.0970	393.4	1.7777	0.0931	393.3	1.7740	0.0895	393.2	1.7704	15
20	0.1032	397.2	1.7942	0.0989	397.1	1.7903	0.0950	397.0	1.7866	0.0913	396.8	1.7830	20
25	0.1052	400.9	1.8066	0.1008	400.8	1.8028	0.0968	400.6	1.7991	0.0931	400.5	1.7955	25
30	0.1071	404.6	1.8190	0.1027	404.5	1.8152	0.0986	404.4	1.8115	0.0948	404.3	1.8079	30
35	0.1091	408.4	1.8313	0.1046	408.2	1.8275	0.1004	408.1	1.8238	0.0965	408.0	1.8203	35
40	0.1110	412.1	1.8435	0.1064	412.0	1.8397	0.1022	411.9	1.8360	0.0983	411.8	1.8325	40
45	0.1130	415.9	1.8556	0.1083	415.8	1.8518	0.1040	415.7	1.8481	0.1000	415.6	1.8446	45
50	0.1149	419.8	1.8676	0.1102	419.7	1.8638	0.1058	419.6	1.8601	0.1018	419.5	1.8566	50
55	0.1168	423.7	1.8795	0.1120	423.6	1.8757	0.1076	423.5	1.8720	0.1035	423.4	1.8685	55
60	0.1188	427.6	1.8913	0.1139	427.5	1.8875	0.1094	427.4	1.8839	0.1052	427.3	1.8804	60
65	0.1207	431.5	1.9030	0.1157	431.4	1.8993	0.1112	431.3	1.8956	0.1069	431.2	1.8921	65
70	0.1226	435.5	1.9147	0.1176	435.4	1.9109	0.1129	435.3	1.9073	0.1087	435.2	1.9038	70
75	0.1245	439.5	1.9263	0.1194	439.4	1.9225	0.1147	439.3	1.9189	0.1104	439.2	1.9154	75
80	0.1264	443.5	1.9378	0.1213	443.4	1.9340	0.1165	443.4	1.9304	0.1121	443.3	1.9269	80
85	0.1283	447.6	1.9492	0.1231	447.5	1.9455	0.1183	447.4	1.9419	0.1138	447.3	1.9384	85
90	0.1302	451.7	1.9606	0.1249	451.6	1.9568	0.1200	451.5	1.9532	0.1155	451.4	1.9497	90
95	0.1322	455.8	1.9718	0.1268	455.7	1.9681	0.1218	455.7	1.9645	0.1172	455.6	1.9610	95
100	0.1341	460.0	1.9830	0.1286	459.9	1.9793	0.1236	459.8	1.9757	0.1189	459.7	1.9723	100
105	0.1360	464.2	1.9942	0.1304	464.1	1.9905	0.1253	464.0	1.9869	0.1206	463.9	1.9834	105
110	0.1379	468.4	2.0052	0.1322	468.3	2.0015	0.1271	468.2	1.9980	0.1223	468.1	1.9945	110
115	0.1398	472.6	2.0163	0.1341	472.5	2.0125	0.1288	472.5	2.0090	0.1240	472.4	2.0055	115
120	0.1416	476.9	2.0272	0.1359	476.8	2.0235	0.1306	476.7	2.0199	0.1257	476.7	2.0165	120
125	0.1435	481.2	2.0381	0.1377	481.1	2.0343	0.1323	481.0	2.0308	0.1274	481.0	2.0273	125
130	—	—	—	0.1395	485.4	2.0452	0.1341	485.4	2.0416	0.1290	485.3	2.0382	130

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	280.0			290.0			300.0			310.0			
	(-21.13°C)			(-20.21°C)			(-19.31°C)			(-18.44°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0736)	(367.4)	(1.6718)	(0.0712)	(367.9)	(1.6709)	(0.0689)	(368.3)	(1.6699)	(0.0668)	(368.8)	(1.6690)		
-20	0.0740	368.2	1.6749	0.0713	368.0	1.6714	—	—	—	—	—	—	-20
-15	0.0758	371.6	1.6885	0.0730	371.5	1.6850	0.0704	371.3	1.6817	0.0679	371.2	1.6784	-15
-10	0.0775	375.1	1.7019	0.0747	375.0	1.6985	0.0720	374.8	1.6952	0.0695	374.7	1.6919	-10
-5	0.0793	378.7	1.7152	0.0764	378.5	1.7118	0.0737	378.4	1.7084	0.0711	378.2	1.7052	-5
0	0.0810	382.2	1.7283	0.0781	382.1	1.7249	0.0753	381.9	1.7216	0.0727	381.8	1.7184	0
5	0.0827	385.8	1.7413	0.0797	385.7	1.7379	0.0769	385.5	1.7346	0.0743	385.4	1.7314	5
10	0.0845	389.4	1.7542	0.0814	389.3	1.7508	0.0785	389.1	1.7475	0.0759	389.0	1.7443	10
15	0.0862	393.0	1.7669	0.0831	392.9	1.7636	0.0801	392.8	1.7603	0.0774	392.7	1.7571	15
20	0.0879	396.7	1.7796	0.0847	396.6	1.7762	0.0817	396.5	1.7730	0.0790	396.4	1.7698	20
25	0.0896	400.4	1.7921	0.0864	400.3	1.7887	0.0833	400.2	1.7855	0.0805	400.1	1.7824	25
30	0.0913	404.1	1.8045	0.0880	404.0	1.8012	0.0849	403.9	1.7979	0.0821	403.8	1.7948	30
35	0.0930	407.9	1.8168	0.0896	407.8	1.8135	0.0865	407.7	1.8103	0.0836	407.6	1.8072	35
40	0.0947	411.7	1.8290	0.0913	411.6	1.8257	0.0881	411.5	1.8225	0.0851	411.4	1.8194	40
45	0.0963	415.5	1.8412	0.0929	415.4	1.8379	0.0897	415.3	1.8347	0.0867	415.2	1.8316	45
50	0.0980	419.4	1.8532	0.0945	419.3	1.8499	0.0912	419.2	1.8467	0.0882	419.1	1.8436	50
55	0.0997	423.3	1.8651	0.0961	423.2	1.8619	0.0928	423.1	1.8587	0.0897	423.0	1.8556	55
60	0.1013	427.2	1.8770	0.0977	427.1	1.8737	0.0944	427.0	1.8705	0.0912	426.9	1.8675	60
65	0.1030	431.2	1.8888	0.0993	431.1	1.8855	0.0959	431.0	1.8823	0.0927	430.9	1.8793	65
70	0.1047	435.1	1.9004	0.1010	435.0	1.8972	0.0975	435.0	1.8940	0.0942	434.9	1.8910	70
75	0.1063	439.1	1.9121	0.1026	439.1	1.9088	0.0990	439.0	1.9056	0.0958	438.9	1.9026	75
80	0.1080	443.2	1.9236	0.1042	443.1	1.9203	0.1006	443.0	1.9172	0.0973	442.9	1.9141	80
85	0.1096	447.3	1.9350	0.1058	447.2	1.9318	0.1021	447.1	1.9286	0.0988	447.0	1.9256	85
90	0.1113	451.4	1.9464	0.1073	451.3	1.9432	0.1037	451.2	1.9400	0.1002	451.1	1.9370	90
95	0.1129	455.5	1.9577	0.1089	455.4	1.9545	0.1052	455.3	1.9513	0.1017	455.3	1.9483	95
100	0.1146	459.7	1.9689	0.1105	459.6	1.9657	0.1068	459.5	1.9626	0.1032	459.4	1.9596	100
105	0.1162	463.8	1.9801	0.1121	463.8	1.9769	0.1083	463.7	1.9737	0.1047	463.6	1.9707	105
110	0.1178	468.1	1.9912	0.1137	468.0	1.9880	0.1098	467.9	1.9848	0.1062	467.8	1.9818	110
115	0.1195	472.3	2.0022	0.1153	472.2	1.9990	0.1114	472.2	1.9959	0.1077	472.1	1.9929	115
120	0.1211	476.6	2.0131	0.1168	476.5	2.0099	0.1129	476.4	2.0068	0.1092	476.4	2.0038	120
125	0.1227	480.9	2.0240	0.1184	480.8	2.0208	0.1144	480.8	2.0177	0.1106	480.7	2.0147	125
130	0.1244	485.2	2.0348	0.1200	485.2	2.0316	0.1159	485.1	2.0286	0.1121	485.0	2.0256	130
135	—	—	—	—	—	—	0.1175	489.5	2.0393	0.1136	489.4	2.0363	135

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	320.0			330.0			340.0			350.0			TEMP. °C
	(-17.59°C)			(-16.75°C)			(-15.94°C)			(-15.14°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0648)	(369.2)	(1.6682)	(0.0629)	(369.6)	(1.6673)	(0.0612)	(370.0)	(1.6665)	(0.0595)	(370.5)	(1.6658)	
-15	0.0656	371.0	1.6752	0.0635	370.9	1.6721	0.0614	370.7	1.6691	0.0595	370.6	1.6661	-15
-10	0.0672	374.5	1.6888	0.0650	374.4	1.6857	0.0629	374.3	1.6827	0.0610	374.1	1.6798	-10
-5	0.0687	378.1	1.7021	0.0665	377.9	1.6990	0.0644	377.8	1.6961	0.0624	377.7	1.6932	-5
0	0.0703	381.7	1.7153	0.0680	381.5	1.7122	0.0659	381.4	1.7093	0.0638	381.2	1.7064	0
5	0.0718	385.3	1.7283	0.0695	385.1	1.7253	0.0673	385.0	1.7224	0.0653	384.9	1.7195	5
10	0.0733	388.9	1.7413	0.0710	388.8	1.7382	0.0688	388.6	1.7353	0.0667	388.5	1.7325	10
15	0.0749	392.5	1.7541	0.0725	392.4	1.7511	0.0702	392.3	1.7482	0.0681	392.2	1.7453	15
20	0.0764	396.2	1.7667	0.0739	396.1	1.7638	0.0716	396.0	1.7609	0.0695	395.9	1.7580	20
25	0.0779	399.9	1.7793	0.0754	399.8	1.7764	0.0731	399.7	1.7735	0.0709	399.6	1.7707	25
30	0.0794	403.7	1.7918	0.0769	403.6	1.7888	0.0745	403.5	1.7860	0.0722	403.4	1.7832	30
35	0.0809	407.5	1.8041	0.0783	407.4	1.8012	0.0759	407.3	1.7983	0.0736	407.1	1.7956	35
40	0.0824	411.3	1.8164	0.0798	411.2	1.8135	0.0773	411.1	1.8106	0.0750	411.0	1.8078	40
45	0.0839	415.1	1.8286	0.0812	415.0	1.8256	0.0787	414.9	1.8228	0.0764	414.8	1.8200	45
50	0.0853	419.0	1.8406	0.0826	418.9	1.8377	0.0801	418.8	1.8349	0.0777	418.7	1.8321	50
55	0.0868	422.9	1.8526	0.0841	422.8	1.8497	0.0815	422.7	1.8469	0.0791	422.6	1.8441	55
60	0.0883	426.8	1.8645	0.0855	426.7	1.8616	0.0829	426.6	1.8588	0.0804	426.5	1.8560	60
65	0.0897	430.8	1.8763	0.0869	430.7	1.8734	0.0843	430.6	1.8706	0.0818	430.5	1.8679	65
70	0.0912	434.8	1.8880	0.0884	434.7	1.8851	0.0857	434.6	1.8823	0.0831	434.5	1.8796	70
75	0.0927	438.8	1.8996	0.0898	438.7	1.8968	0.0871	438.6	1.8940	0.0845	438.5	1.8912	75
80	0.0941	442.8	1.9112	0.0912	442.8	1.9083	0.0884	442.7	1.9055	0.0858	442.6	1.9028	80
85	0.0956	446.9	1.9227	0.0926	446.8	1.9198	0.0898	446.8	1.9170	0.0872	446.7	1.9143	85
90	0.0970	451.0	1.9341	0.0940	450.9	1.9312	0.0912	450.9	1.9284	0.0885	450.8	1.9257	90
95	0.0985	455.2	1.9454	0.0954	455.1	1.9425	0.0925	455.0	1.9398	0.0898	454.9	1.9371	95
100	0.0999	459.3	1.9566	0.0968	459.3	1.9538	0.0939	459.2	1.9510	0.0912	459.1	1.9483	100
105	0.1014	463.5	1.9678	0.0982	463.5	1.9650	0.0953	463.4	1.9622	0.0925	463.3	1.9595	105
110	0.1028	467.8	1.9789	0.0996	467.7	1.9761	0.0966	467.6	1.9733	0.0938	467.5	1.9706	110
115	0.1043	472.0	1.9899	0.1010	471.9	1.9871	0.0980	471.9	1.9844	0.0951	471.8	1.9817	115
120	0.1057	476.3	2.0009	0.1024	476.2	1.9981	0.0993	476.2	1.9953	0.0964	476.1	1.9927	120
125	0.1071	480.6	2.0118	0.1038	480.5	2.0090	0.1007	480.5	2.0062	0.0978	480.4	2.0036	125
130	0.1086	485.0	2.0226	0.1052	484.9	2.0198	0.1020	484.8	2.0171	0.0991	484.8	2.0144	130
135	0.1100	489.3	2.0334	0.1066	489.3	2.0306	0.1034	489.2	2.0279	0.1004	489.1	2.0252	135

TEMP. °C	360.0			370.0			380.0			390.0			TEMP. °C
	(-14.36°C)			(-13.60°C)			(-12.85°C)			(-12.11°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0579)	(370.9)	(1.6651)	(0.0564)	(371.3)	(1.6644)	(0.0550)	(371.6)	(1.6637)	(0.0536)	(372.0)	(1.6630)	
-10	0.0591	374.0	1.6769	0.0574	373.8	1.6741	0.0557	373.6	1.6714	0.0542	373.5	1.6687	-10
-5	0.0605	377.5	1.6903	0.0588	377.4	1.6876	0.0571	377.2	1.6848	0.0555	377.1	1.6822	-5
0	0.0619	381.1	1.7036	0.0601	381.0	1.7008	0.0584	380.8	1.6982	0.0568	380.7	1.6955	0
5	0.0633	384.7	1.7167	0.0615	384.6	1.7140	0.0597	384.4	1.7113	0.0581	384.3	1.7087	5
10	0.0647	388.4	1.7297	0.0628	388.2	1.7270	0.0610	388.1	1.7243	0.0594	388.0	1.7217	10
15	0.0661	392.0	1.7426	0.0642	391.9	1.7399	0.0624	391.8	1.7372	0.0606	391.7	1.7346	15
20	0.0674	395.7	1.7553	0.0655	395.6	1.7526	0.0637	395.5	1.7500	0.0619	395.4	1.7474	20
25	0.0688	399.5	1.7679	0.0668	399.4	1.7652	0.0649	399.2	1.7626	0.0632	399.1	1.7601	25
30	0.0701	403.2	1.7804	0.0681	403.1	1.7778	0.0662	403.0	1.7752	0.0644	402.9	1.7726	30
35	0.0715	407.0	1.7928	0.0694	406.9	1.7902	0.0675	406.8	1.7876	0.0657	406.7	1.7851	35
40	0.0728	410.8	1.8051	0.0707	410.7	1.8025	0.0688	410.6	1.7999	0.0669	410.5	1.7974	40
45	0.0741	414.7	1.8173	0.0720	414.6	1.8147	0.0701	414.5	1.8121	0.0682	414.4	1.8096	45
50	0.0755	418.6	1.8294	0.0733	418.5	1.8268	0.0713	418.4	1.8243	0.0694	418.3	1.8218	50
55	0.0768	422.5	1.8414	0.0746	422.4	1.8388	0.0726	422.3	1.8363	0.0706	422.2	1.8338	55
60	0.0781	426.4	1.8534	0.0759	426.3	1.8508	0.0738	426.2	1.8482	0.0719	426.1	1.8457	60
65	0.0794	430.4	1.8652	0.0772	430.3	1.8626	0.0751	430.2	1.8601	0.0731	430.1	1.8576	65
70	0.0807	434.4	1.8769	0.0785	434.3	1.8743	0.0763	434.2	1.8718	0.0743	434.1	1.8694	70
75	0.0821	438.4	1.8886	0.0798	438.3	1.8860	0.0776	438.3	1.8835	0.0755	438.2	1.8810	75
80	0.0834	442.5	1.9002	0.0810	442.4	1.8976	0.0788	442.3	1.8951	0.0767	442.2	1.8926	80
85	0.0847	446.6	1.9117	0.0823	446.5	1.9091	0.0801	446.4	1.9066	0.0779	446.3	1.9041	85
90	0.0860	450.7	1.9231	0.0836	450.6	1.9205	0.0813	450.5	1.9180	0.0791	450.4	1.9156	90
95	0.0873	454.8	1.9344	0.0848	454.8	1.9319	0.0825	454.7	1.9294	0.0803	454.6	1.9269	95
100	0.0886	459.0	1.9457	0.0861	458.9	1.9431	0.0838	458.9	1.9407	0.0815	458.8	1.9382	100
105	0.0898	463.2	1.9569	0.0874	463.2	1.9543	0.0850	463.1	1.9519	0.0827	463.0	1.9494	105
110	0.0911	467.5	1.9680	0.0886	467.4	1.9655	0.0862	467.3	1.9630	0.0839	467.2	1.9606	110
115	0.0924	471.7	1.9791	0.0899	471.7	1.9765	0.0874	471.6	1.9741	0.0851	471.5	1.9716	115
120	0.0937	476.0	1.9901	0.0911	475.9	1.9875	0.0887	475.9	1.9851	0.0863	475.8	1.9826	120
125	0.0950	480.3	2.0010	0.0924	480.3	1.9984	0.0899	480.2	1.9960	0.0875	480.1	1.9936	125
130	0.0963	484.7	2.0118	0.0936	484.6	2.0093	0.0911	484.5	2.0068	0.0887	484.5	2.0044	130
135	0.0975	489.1	2.0226	0.0949	489.0	2.0201	0.0923	488.9	2.0176	0.0899	488.9	2.0152	135
140	0.0988	493.5	2.0333	0.0961	493.4	2.0308	0.0935	493.3	2.0284	0.0911	493.3	2.0260	140

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	400.0			425.0			450.0			475.0			TEMP. °C
	(-11.39°C)			(-9.64°C)			(-7.97°C)			(-6.37°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0523)	(372.4)	(1.6623)	(0.0493)	(373.2)	(1.6608)	(0.0467)	(374.0)	(1.6593)	(0.0443)	(374.8)	(1.6580)	
-10	0.0527	373.3	1.6661	—	—	—	—	—	—	—	—	—	-10
-5	0.0540	376.9	1.6796	0.0505	376.6	1.6734	0.0474	376.2	1.6674	0.0446	375.8	1.6617	-5
0	0.0552	380.5	1.6930	0.0517	380.2	1.6868	0.0485	379.8	1.6809	0.0457	379.5	1.6752	0
5	0.0565	384.2	1.7061	0.0529	383.8	1.7000	0.0497	383.5	1.6941	0.0468	383.1	1.6885	5
10	0.0578	387.8	1.7192	0.0541	387.5	1.7131	0.0508	387.2	1.7073	0.0479	386.8	1.7017	10
15	0.0590	391.5	1.7321	0.0553	391.2	1.7261	0.0520	390.9	1.7203	0.0490	390.6	1.7148	15
20	0.0603	395.2	1.7449	0.0565	394.9	1.7389	0.0531	394.6	1.7331	0.0501	394.3	1.7277	20
25	0.0615	399.0	1.7576	0.0576	398.7	1.7516	0.0542	398.4	1.7459	0.0511	398.1	1.7405	25
30	0.0627	402.8	1.7702	0.0588	402.5	1.7642	0.0553	402.2	1.7585	0.0522	401.9	1.7531	30
35	0.0639	406.6	1.7826	0.0600	406.3	1.7767	0.0564	406.0	1.7710	0.0532	405.7	1.7656	35
40	0.0652	410.4	1.7949	0.0611	410.1	1.7890	0.0575	409.9	1.7834	0.0543	409.6	1.7781	40
45	0.0664	414.3	1.8072	0.0623	414.0	1.8013	0.0586	413.7	1.7957	0.0553	413.5	1.7904	45
50	0.0676	418.2	1.8193	0.0634	417.9	1.8135	0.0597	417.6	1.8079	0.0564	417.4	1.8026	50
55	0.0688	422.1	1.8314	0.0645	421.8	1.8255	0.0608	421.6	1.8200	0.0574	421.3	1.8147	55
60	0.0700	426.0	1.8433	0.0657	425.8	1.8375	0.0619	425.6	1.8320	0.0584	425.3	1.8267	60
65	0.0712	430.0	1.8552	0.0668	429.8	1.8494	0.0629	429.5	1.8439	0.0594	429.3	1.8386	65
70	0.0724	434.0	1.8670	0.0679	433.8	1.8612	0.0640	433.6	1.8557	0.0605	433.3	1.8505	70
75	0.0736	438.1	1.8786	0.0691	437.8	1.8729	0.0651	437.6	1.8674	0.0615	437.4	1.8622	75
80	0.0747	442.1	1.8902	0.0702	441.9	1.8845	0.0661	441.7	1.8790	0.0625	441.5	1.8739	80
85	0.0759	446.2	1.9018	0.0713	446.0	1.8960	0.0672	445.8	1.8906	0.0635	445.6	1.8854	85
90	0.0771	450.4	1.9132	0.0724	450.2	1.9075	0.0682	449.9	1.9021	0.0645	449.7	1.8969	90
95	0.0783	454.5	1.9246	0.0735	454.3	1.9189	0.0693	454.1	1.9135	0.0655	453.9	1.9083	95
100	0.0794	458.7	1.9359	0.0746	458.5	1.9302	0.0703	458.3	1.9248	0.0665	458.1	1.9197	100
105	0.0806	462.9	1.9471	0.0757	462.7	1.9414	0.0714	462.5	1.9360	0.0675	462.3	1.9309	105
110	0.0818	467.2	1.9582	0.0768	467.0	1.9526	0.0724	466.8	1.9472	0.0685	466.6	1.9421	110
115	0.0830	471.4	1.9693	0.0779	471.2	1.9636	0.0735	471.1	1.9583	0.0695	470.9	1.9532	115
120	0.0841	475.7	1.9803	0.0790	475.5	1.9747	0.0745	475.4	1.9693	0.0705	475.2	1.9642	120
125	0.0853	480.1	1.9912	0.0801	479.9	1.9856	0.0756	479.7	1.9803	0.0715	479.5	1.9752	125
130	0.0864	484.4	2.0021	0.0812	484.2	1.9965	0.0766	484.1	1.9912	0.0725	483.9	1.9861	130
135	0.0876	488.8	2.0129	0.0823	488.6	2.0073	0.0776	488.5	2.0020	0.0734	488.3	1.9969	135
140	0.0887	493.2	2.0236	0.0834	493.0	2.0180	0.0787	492.9	2.0127	0.0744	492.7	2.0077	140
145	—	—	—	0.0845	497.5	2.0287	0.0797	497.3	2.0234	0.0754	497.1	2.0184	145

TEMP. °C	500.0			525.0			550.0			575.0			TEMP. °C
	(-4.84°C)			(-3.36°C)			(-1.93°C)			(-0.55°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0421)	(375.5)	(1.6567)	(0.0402)	(376.2)	(1.6555)	(0.0384)	(376.9)	(1.6543)	(0.0367)	(377.5)	(1.6532)	
0	0.0432	379.1	1.6698	0.0409	378.7	1.6646	0.0388	378.3	1.6596	0.0368	378.0	1.6547	0
5	0.0442	382.8	1.6832	0.0419	382.4	1.6780	0.0397	382.1	1.6731	0.0378	381.7	1.6683	5
10	0.0453	386.5	1.6964	0.0429	386.1	1.6913	0.0407	385.8	1.6864	0.0387	385.4	1.6816	10
15	0.0463	390.2	1.7095	0.0439	389.9	1.7044	0.0417	389.6	1.6996	0.0397	389.2	1.6949	15
20	0.0473	394.0	1.7224	0.0449	393.7	1.7174	0.0426	393.3	1.7126	0.0406	393.0	1.7079	20
25	0.0484	397.8	1.7353	0.0459	397.5	1.7303	0.0436	397.2	1.7255	0.0415	396.8	1.7208	25
30	0.0494	401.6	1.7479	0.0468	401.3	1.7430	0.0445	401.0	1.7382	0.0424	400.7	1.7336	30
35	0.0504	405.4	1.7605	0.0478	405.1	1.7556	0.0454	404.9	1.7509	0.0433	404.6	1.7463	35
40	0.0514	409.3	1.7730	0.0488	409.0	1.7681	0.0464	408.7	1.7634	0.0442	408.5	1.7589	40
45	0.0524	413.2	1.7853	0.0497	412.9	1.7804	0.0473	412.7	1.7758	0.0451	412.4	1.7713	45
50	0.0534	417.1	1.7975	0.0507	416.9	1.7927	0.0482	416.6	1.7881	0.0460	416.3	1.7836	50
55	0.0544	421.1	1.8097	0.0516	420.8	1.8049	0.0491	420.6	1.8002	0.0468	420.3	1.7958	55
60	0.0553	425.1	1.8217	0.0526	424.8	1.8169	0.0500	424.6	1.8123	0.0477	424.3	1.8079	60
65	0.0563	429.1	1.8337	0.0535	428.8	1.8289	0.0509	428.6	1.8243	0.0486	428.3	1.8199	65
70	0.0573	433.1	1.8455	0.0544	432.9	1.8407	0.0518	432.6	1.8362	0.0494	432.4	1.8318	70
75	0.0583	437.2	1.8573	0.0553	436.9	1.8525	0.0527	436.7	1.8480	0.0503	436.5	1.8436	75
80	0.0592	441.3	1.8689	0.0563	441.0	1.8642	0.0536	440.8	1.8597	0.0511	440.6	1.8553	80
85	0.0602	445.4	1.8805	0.0572	445.2	1.8758	0.0545	444.9	1.8713	0.0520	444.7	1.8670	85
90	0.0612	449.5	1.8920	0.0581	449.3	1.8873	0.0554	449.1	1.8828	0.0528	448.9	1.8785	90
95	0.0621	453.7	1.9034	0.0590	453.5	1.8988	0.0562	453.3	1.8943	0.0537	453.1	1.8900	95
100	0.0631	457.9	1.9148	0.0599	457.7	1.9101	0.0571	457.5	1.9057	0.0545	457.3	1.9014	100
105	0.0640	462.1	1.9261	0.0609	461.9	1.9214	0.0580	461.7	1.9170	0.0553	461.5	1.9127	105
110	0.0650	466.4	1.9372	0.0618	466.2	1.9326	0.0588	466.0	1.9282	0.0562	465.8	1.9239	110
115	0.0659	470.7	1.9484	0.0627	470.5	1.9437	0.0597	470.3	1.9393	0.0570	470.1	1.9351	115
120	0.0669	475.0	1.9594	0.0636	474.8	1.9548	0.0606	474.6	1.9504	0.0578	474.5	1.9462	120
125	0.0678	479.3	1.9704	0.0645	479.2	1.9658	0.0614	479.0	1.9614	0.0587	478.8	1.9572	125
130	0.0687	483.7	1.9813	0.0654	483.5	1.9767	0.0623	483.4	1.9723	0.0595	483.2	1.9681	130
135	0.0697	488.1	1.9921	0.0663	487.9	1.9876	0.0632	487.8	1.9832	0.0603	487.6	1.9790	135
140	0.0706	492.5	2.0029	0.0672	492.4	1.9983	0.0640	492.2	1.9940	0.0611	492.0	1.9898	140
145	0.0715	497.0	2.0136	0.0680	496.8	2.0091	0.0649	496.7	2.0047	0.0620	496.5	2.0005	145
150	0.0725	501.5	2.0243	0.0689	501.3	2.0197	0.0657	501.1	2.0153	0.0628	501.0	2.0112	150

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	600.0			625.0			650.0			675.0			TEMP. °C
	(0.78°C)			(2.08°C)			(3.33°C)			(4.55°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0352)	(378.2)	(1.6521)	(0.0338)	(378.7)	(1.6511)	(0.0325)	(379.3)	(1.6502)	(0.0313)	(379.8)	(1.6492)	
5	0.0360	381.3	1.6636	0.0344	380.9	1.6591	0.0328	380.6	1.6547	0.0314	380.2	1.6505	5
10	0.0369	385.1	1.6770	0.0352	384.7	1.6726	0.0337	384.4	1.6683	0.0323	384.0	1.6641	10
15	0.0378	388.9	1.6903	0.0361	388.5	1.6859	0.0345	388.2	1.6816	0.0331	387.8	1.6775	15
20	0.0387	392.7	1.7034	0.0370	392.4	1.6991	0.0354	392.0	1.6948	0.0339	391.7	1.6907	20
25	0.0396	396.5	1.7164	0.0378	396.2	1.7121	0.0362	395.9	1.7079	0.0347	395.6	1.7038	25
30	0.0405	400.4	1.7292	0.0387	400.1	1.7249	0.0370	399.8	1.7208	0.0355	399.4	1.7168	30
35	0.0413	404.3	1.7419	0.0395	404.0	1.7377	0.0378	403.7	1.7336	0.0363	403.4	1.7296	35
40	0.0422	408.2	1.7545	0.0403	407.9	1.7503	0.0386	407.6	1.7462	0.0371	407.3	1.7422	40
45	0.0430	412.1	1.7669	0.0412	411.8	1.7628	0.0394	411.5	1.7587	0.0378	411.3	1.7548	45
50	0.0439	416.1	1.7793	0.0420	415.8	1.7751	0.0402	415.5	1.7711	0.0386	415.2	1.7672	50
55	0.0447	420.0	1.7915	0.0428	419.8	1.7874	0.0410	419.5	1.7834	0.0394	419.3	1.7795	55
60	0.0456	424.1	1.8036	0.0436	423.8	1.7995	0.0418	423.5	1.7956	0.0401	423.3	1.7917	60
65	0.0464	428.1	1.8157	0.0444	427.8	1.8116	0.0426	427.6	1.8076	0.0409	427.3	1.8038	65
70	0.0472	432.1	1.8276	0.0452	431.9	1.8235	0.0434	431.7	1.8196	0.0416	431.4	1.8158	70
75	0.0481	436.2	1.8394	0.0460	436.0	1.8354	0.0441	435.8	1.8315	0.0424	435.5	1.8277	75
80	0.0489	440.4	1.8512	0.0468	440.1	1.8471	0.0449	439.9	1.8433	0.0431	439.7	1.8395	80
85	0.0497	444.5	1.8628	0.0476	444.3	1.8588	0.0457	444.1	1.8549	0.0439	443.8	1.8512	85
90	0.0505	448.7	1.8744	0.0484	448.5	1.8704	0.0464	448.2	1.8665	0.0446	448.0	1.8628	90
95	0.0513	452.9	1.8859	0.0492	452.7	1.8819	0.0472	452.5	1.8781	0.0453	452.2	1.8743	95
100	0.0521	457.1	1.8973	0.0500	456.9	1.8933	0.0479	456.7	1.8895	0.0461	456.5	1.8858	100
105	0.0529	461.3	1.9086	0.0507	461.2	1.9046	0.0487	461.0	1.9008	0.0468	460.8	1.8972	105
110	0.0537	465.6	1.9198	0.0515	465.4	1.9159	0.0494	465.2	1.9121	0.0475	465.0	1.9084	110
115	0.0545	469.9	1.9310	0.0523	469.7	1.9271	0.0502	469.6	1.9233	0.0482	469.4	1.9196	115
120	0.0553	474.3	1.9421	0.0530	474.1	1.9382	0.0509	473.9	1.9344	0.0490	473.7	1.9308	120
125	0.0561	478.6	1.9531	0.0538	478.4	1.9492	0.0517	478.3	1.9455	0.0497	478.1	1.9418	125
130	0.0569	483.0	1.9641	0.0546	482.8	1.9602	0.0524	482.7	1.9564	0.0504	482.5	1.9528	130
135	0.0577	487.4	1.9749	0.0553	487.3	1.9711	0.0531	487.1	1.9673	0.0511	486.9	1.9637	135
140	0.0585	491.9	1.9858	0.0561	491.7	1.9819	0.0539	491.5	1.9781	0.0518	491.4	1.9745	140
145	0.0593	496.3	1.9965	0.0569	496.2	1.9926	0.0546	496.0	1.9889	0.0525	495.8	1.9853	145
150	0.0601	500.8	2.0072	0.0576	500.7	2.0033	0.0553	500.5	1.9996	0.0532	500.3	1.9960	150
155	0.0609	505.3	2.0178	0.0584	505.2	2.0139	0.0561	505.0	2.0102	0.0539	504.9	2.0066	155

TEMP. °C	700.0			725.0			750.0			800.0			TEMP. °C
	(5.73°C)			(6.89°C)			(8.01°C)			(10.17°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0302)	(380.4)	(1.6483)	(0.0292)	(380.9)	(1.6474)	(0.0282)	(381.3)	(1.6466)	(0.0264)	(382.2)	(1.6450)	
10	0.0309	383.6	1.6600	0.0297	383.3	1.6560	0.0285	382.9	1.6521	—	—	—	10
15	0.0317	387.5	1.6734	0.0305	387.1	1.6695	0.0293	386.8	1.6656	0.0271	386.0	1.6582	15
20	0.0325	391.3	1.6867	0.0312	391.0	1.6828	0.0300	390.7	1.6790	0.0279	389.9	1.6717	20
25	0.0333	395.2	1.6999	0.0320	394.9	1.6960	0.0308	394.6	1.6923	0.0286	393.9	1.6850	25
30	0.0341	399.1	1.7129	0.0328	398.8	1.7091	0.0315	398.5	1.7053	0.0293	397.8	1.6982	30
35	0.0348	403.1	1.7257	0.0335	402.8	1.7219	0.0322	402.4	1.7183	0.0300	401.8	1.7112	35
40	0.0356	407.0	1.7384	0.0342	406.7	1.7347	0.0330	406.4	1.7310	0.0307	405.8	1.7240	40
45	0.0364	411.0	1.7510	0.0350	410.7	1.7473	0.0337	410.4	1.7437	0.0313	409.8	1.7368	45
50	0.0371	415.0	1.7634	0.0357	414.7	1.7598	0.0344	414.4	1.7562	0.0320	413.9	1.7493	50
55	0.0378	419.0	1.7758	0.0364	418.7	1.7721	0.0351	418.4	1.7686	0.0327	417.9	1.7618	55
60	0.0386	423.0	1.7880	0.0371	422.8	1.7844	0.0358	422.5	1.7809	0.0333	422.0	1.7741	60
65	0.0393	427.1	1.8001	0.0379	426.8	1.7965	0.0365	426.6	1.7930	0.0340	426.1	1.7863	65
70	0.0400	431.2	1.8121	0.0386	430.9	1.8086	0.0372	430.7	1.8051	0.0346	430.2	1.7984	70
75	0.0408	435.3	1.8240	0.0393	435.1	1.8205	0.0378	434.8	1.8170	0.0353	434.4	1.8104	75
80	0.0415	439.4	1.8359	0.0400	439.2	1.8323	0.0385	439.0	1.8289	0.0359	438.5	1.8223	80
85	0.0422	443.6	1.8476	0.0407	443.4	1.8441	0.0392	443.2	1.8406	0.0366	442.7	1.8341	85
90	0.0429	447.8	1.8592	0.0413	447.6	1.8557	0.0399	447.4	1.8523	0.0372	446.9	1.8458	90
95	0.0436	452.0	1.8708	0.0420	451.8	1.8673	0.0405	451.6	1.8639	0.0378	451.2	1.8574	95
100	0.0443	456.3	1.8822	0.0427	456.1	1.8787	0.0412	455.9	1.8754	0.0385	455.5	1.8689	100
105	0.0450	460.6	1.8936	0.0434	460.4	1.8901	0.0419	460.2	1.8868	0.0391	459.7	1.8804	105
110	0.0457	464.9	1.9049	0.0441	464.7	1.9014	0.0425	464.5	1.8981	0.0397	464.1	1.8917	110
115	0.0464	469.2	1.9161	0.0447	469.0	1.9127	0.0432	468.8	1.9094	0.0403	468.4	1.9030	115
120	0.0471	473.5	1.9272	0.0454	473.3	1.9238	0.0438	473.2	1.9205	0.0410	472.8	1.9142	120
125	0.0478	477.9	1.9383	0.0461	477.7	1.9349	0.0445	477.5	1.9316	0.0416	477.2	1.9253	125
130	0.0485	482.3	1.9493	0.0468	482.1	1.9459	0.0451	482.0	1.9426	0.0422	481.6	1.9363	130
135	0.0492	486.7	1.9602	0.0474	486.6	1.9568	0.0458	486.4	1.9536	0.0428	486.0	1.9473	135
140	0.0499	491.2	1.9711	0.0481	491.0	1.9677	0.0464	490.9	1.9644	0.0434	490.5	1.9582	140
145	0.0506	495.7	1.9818	0.0488	495.5	1.9785	0.0471	495.3	1.9752	0.0440	495.0	1.9690	145
150	0.0512	500.2	1.9926	0.0494	500.0	1.9892	0.0477	499.9	1.9859	0.0446	499.5	1.9797	150
155	0.0519	504.7	2.0032	0.0501	504.6	1.9998	0.0483	504.4	1.9966	0.0452	504.1	1.9904	155
160	0.0526	509.3	2.0138	0.0507	509.1	2.0104	0.0490	509.0	2.0072	0.0458	508.6	2.0010	160
165	—	—	—	—	—	—	—	—	—	0.0464	513.2	2.0116	165

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													
TEMP. °C	850.0			900.0			950.0			1000.0			TEMP. °C
	(12.24°C)			(14.22°C)			(16.11°C)			(17.93°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0249)	(383.1)	(1.6434)	(0.0234)	(383.9)	(1.6420)	(0.0222)	(384.6)	(1.6405)	(0.0210)	(385.3)	(1.6392)	
15	0.0252	385.3	1.6510	0.0235	384.5	1.6441	—	—	—	—	—	—	15
20	0.0259	389.2	1.6647	0.0242	388.5	1.6579	0.0227	387.7	1.6513	0.0213	387.0	1.6450	20
25	0.0266	393.2	1.6781	0.0249	392.5	1.6714	0.0233	391.8	1.6650	0.0219	391.1	1.6588	25
30	0.0273	397.2	1.6914	0.0255	396.5	1.6848	0.0239	395.8	1.6785	0.0225	395.1	1.6723	30
35	0.0280	401.2	1.7044	0.0262	400.5	1.6980	0.0246	399.9	1.6917	0.0231	399.2	1.6857	35
40	0.0286	405.2	1.7174	0.0268	404.6	1.7110	0.0252	404.0	1.7048	0.0237	403.3	1.6989	40
45	0.0293	409.2	1.7301	0.0274	408.6	1.7238	0.0258	408.0	1.7177	0.0243	407.4	1.7119	45
50	0.0299	413.3	1.7428	0.0280	412.7	1.7365	0.0264	412.1	1.7305	0.0249	411.5	1.7247	50
55	0.0305	417.4	1.7553	0.0287	416.8	1.7491	0.0270	416.2	1.7432	0.0254	415.7	1.7374	55
60	0.0312	421.5	1.7677	0.0293	420.9	1.7615	0.0275	420.4	1.7557	0.0260	419.8	1.7500	60
65	0.0318	425.6	1.7799	0.0299	425.1	1.7739	0.0281	424.5	1.7680	0.0265	424.0	1.7624	65
70	0.0324	429.7	1.7921	0.0304	429.2	1.7861	0.0287	428.7	1.7803	0.0271	428.2	1.7747	70
75	0.0330	433.9	1.8041	0.0310	433.4	1.7981	0.0292	432.9	1.7924	0.0276	432.4	1.7869	75
80	0.0337	438.1	1.8161	0.0316	437.6	1.8101	0.0298	437.1	1.8044	0.0282	436.6	1.7990	80
85	0.0343	442.3	1.8279	0.0322	441.8	1.8220	0.0304	441.3	1.8163	0.0287	440.9	1.8109	85
90	0.0349	446.5	1.8396	0.0328	446.1	1.8338	0.0309	445.6	1.8282	0.0292	445.2	1.8228	90
95	0.0355	450.8	1.8513	0.0333	450.3	1.8454	0.0314	449.9	1.8399	0.0297	449.5	1.8345	95
100	0.0361	455.0	1.8628	0.0339	454.6	1.8570	0.0320	454.2	1.8515	0.0303	453.8	1.8462	100
105	0.0367	459.3	1.8743	0.0345	458.9	1.8685	0.0325	458.5	1.8630	0.0308	458.1	1.8577	105
110	0.0372	463.7	1.8857	0.0350	463.3	1.8799	0.0331	462.9	1.8744	0.0313	462.5	1.8692	110
115	0.0378	468.0	1.8970	0.0356	467.6	1.8912	0.0336	467.3	1.8858	0.0318	466.9	1.8806	115
120	0.0384	472.4	1.9082	0.0362	472.0	1.9025	0.0341	471.7	1.8971	0.0323	471.3	1.8919	120
125	0.0390	476.8	1.9193	0.0367	476.4	1.9136	0.0347	476.1	1.9082	0.0328	475.7	1.9031	125
130	0.0396	481.2	1.9304	0.0373	480.9	1.9247	0.0352	480.5	1.9193	0.0333	480.2	1.9142	130
135	0.0402	485.7	1.9414	0.0378	485.4	1.9357	0.0357	485.0	1.9304	0.0338	484.6	1.9252	135
140	0.0407	490.2	1.9523	0.0384	489.8	1.9467	0.0362	489.5	1.9413	0.0343	489.2	1.9362	140
145	0.0413	494.7	1.9631	0.0389	494.4	1.9575	0.0368	494.0	1.9522	0.0348	493.7	1.9471	145
150	0.0419	499.2	1.9739	0.0395	498.9	1.9683	0.0373	498.6	1.9630	0.0353	498.2	1.9579	150
155	0.0425	503.8	1.9846	0.0400	503.4	1.9790	0.0378	503.1	1.9737	0.0358	502.8	1.9687	155
160	0.0430	508.3	1.9952	0.0405	508.0	1.9896	0.0383	507.7	1.9844	0.0363	507.4	1.9794	160
165	0.0436	512.9	2.0057	0.0411	512.6	2.0002	0.0388	512.3	1.9950	0.0368	512.0	1.9900	165
170	—	—	—	—	—	—	0.0393	517.0	2.0055	0.0373	516.7	2.0005	170

TEMP. °C	1100.0			1200.0			1300.0			1400.0			TEMP. °C
	(21.38°C)			(24.60°C)			(27.63°C)			(30.48°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0190)	(386.5)	(1.6366)	(0.0174)	(387.6)	(1.6341)	(0.0159)	(388.6)	(1.6318)	(0.0147)	(389.4)	(1.6295)	
25	0.0195	389.5	1.6468	0.0174	388.0	1.6353	—	—	—	—	—	—	25
30	0.0200	393.7	1.6606	0.0180	392.2	1.6494	0.0162	390.6	1.6386	—	—	—	30
35	0.0206	397.8	1.6742	0.0185	396.4	1.6632	0.0167	394.9	1.6527	0.0152	393.4	1.6425	35
40	0.0212	402.0	1.6876	0.0190	400.7	1.6768	0.0172	399.2	1.6666	0.0157	397.8	1.6567	40
45	0.0217	406.2	1.7007	0.0196	404.9	1.6902	0.0177	403.5	1.6802	0.0161	402.2	1.6705	45
50	0.0222	410.3	1.7137	0.0201	409.1	1.7034	0.0182	407.8	1.6935	0.0166	406.5	1.6841	50
55	0.0228	414.5	1.7266	0.0206	413.3	1.7164	0.0187	412.1	1.7067	0.0171	410.9	1.6974	55
60	0.0233	418.7	1.7393	0.0211	417.6	1.7292	0.0192	416.4	1.7197	0.0175	415.2	1.7106	60
65	0.0238	422.9	1.7518	0.0215	421.8	1.7419	0.0196	420.7	1.7325	0.0180	419.6	1.7236	65
70	0.0243	427.2	1.7642	0.0220	426.1	1.7544	0.0201	425.0	1.7451	0.0184	423.9	1.7363	70
75	0.0248	431.4	1.7765	0.0225	430.4	1.7668	0.0205	429.3	1.7576	0.0188	428.3	1.7490	75
80	0.0253	435.7	1.7887	0.0230	434.7	1.7791	0.0210	433.7	1.7700	0.0192	432.7	1.7614	80
85	0.0258	439.9	1.8007	0.0234	439.0	1.7912	0.0214	438.0	1.7822	0.0197	437.0	1.7738	85
90	0.0263	444.2	1.8126	0.0239	443.3	1.8032	0.0218	442.4	1.7943	0.0201	441.4	1.7860	90
95	0.0268	448.6	1.8245	0.0243	447.7	1.8151	0.0223	446.8	1.8063	0.0205	445.9	1.7980	95
100	0.0273	452.9	1.8362	0.0248	452.0	1.8269	0.0227	451.2	1.8182	0.0209	450.3	1.8100	100
105	0.0278	457.3	1.8478	0.0252	456.4	1.8386	0.0231	455.6	1.8300	0.0213	454.7	1.8218	105
110	0.0282	461.7	1.8593	0.0257	460.9	1.8502	0.0235	460.0	1.8416	0.0217	459.2	1.8335	110
115	0.0287	466.1	1.8708	0.0261	465.3	1.8617	0.0239	464.5	1.8532	0.0221	463.7	1.8452	115
120	0.0292	470.5	1.8821	0.0266	469.7	1.8731	0.0243	469.0	1.8646	0.0224	468.2	1.8567	120
125	0.0296	475.0	1.8934	0.0270	474.2	1.8844	0.0247	473.5	1.8760	0.0228	472.7	1.8681	125
130	0.0301	479.4	1.9045	0.0274	478.7	1.8956	0.0252	478.0	1.8873	0.0232	477.2	1.8794	130
135	0.0306	483.9	1.9156	0.0279	483.2	1.9068	0.0256	482.5	1.8985	0.0236	481.8	1.8907	135
140	0.0310	488.5	1.9267	0.0283	487.8	1.9178	0.0260	487.1	1.9096	0.0240	486.4	1.9018	140
145	0.0315	493.0	1.9376	0.0287	492.3	1.9288	0.0264	491.7	1.9206	0.0243	491.0	1.9129	145
150	0.0319	497.6	1.9485	0.0291	496.9	1.9397	0.0267	496.3	1.9315	0.0247	495.6	1.9239	150
155	0.0324	502.2	1.9592	0.0296	501.5	1.9505	0.0271	500.9	1.9424	0.0251	500.2	1.9348	155
160	0.0329	506.8	1.9699	0.0300	506.2	1.9613	0.0275	505.5	1.9532	0.0254	504.9	1.9456	160
165	0.0333	511.4	1.9806	0.0304	510.8	1.9719	0.0279	510.2	1.9639	0.0258	509.6	1.9563	165
170	0.0338	516.1	1.9912	0.0308	515.5	1.9825	0.0283	514.9	1.9745	0.0262	514.3	1.9670	170
175	0.0342	520.8	2.0017	0.0312	520.2	1.9931	0.0287	519.6	1.9851	0.0265	519.0	1.9776	175
180	—	—	—	—	—	—	0.0291	524.3	1.9956	0.0269	523.7	1.9881	180
185	—	—	—	—	—	—	—	—	—	0.0273	528.5	1.9986	185

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	1500.0			1600.0			1700.0			1800.0			
	(33.19°C)			(35.77°C)			(38.23°C)			(40.58°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0136)	(390.1)	(1.6272)	(0.0127)	(390.8)	(1.6250)	(0.0118)	(391.3)	(1.6228)	(0.0111)	(391.8)	(1.6206)		
35	0.0138	391.8	1.6325	—	—	—	—	—	—	—	—	—	35
40	0.0143	396.3	1.6470	0.0131	394.7	1.6375	0.0120	393.0	1.6281	—	—	—	40
45	0.0148	400.7	1.6611	0.0135	399.2	1.6520	0.0125	397.7	1.6430	0.0115	396.0	1.6340	45
50	0.0152	405.2	1.6750	0.0140	403.7	1.6661	0.0129	402.3	1.6574	0.0119	400.7	1.6488	50
55	0.0157	409.6	1.6885	0.0144	408.2	1.6799	0.0133	406.9	1.6714	0.0123	405.4	1.6632	55
60	0.0161	414.0	1.7019	0.0148	412.7	1.6934	0.0137	411.4	1.6852	0.0127	410.1	1.6772	60
65	0.0165	418.4	1.7150	0.0153	417.2	1.7067	0.0141	415.9	1.6987	0.0131	414.7	1.6909	65
70	0.0169	422.8	1.7279	0.0157	421.6	1.7198	0.0145	420.5	1.7120	0.0135	419.2	1.7044	70
75	0.0173	427.2	1.7407	0.0160	426.1	1.7327	0.0149	425.0	1.7250	0.0139	423.8	1.7176	75
80	0.0177	431.6	1.7533	0.0164	430.6	1.7454	0.0153	429.5	1.7379	0.0142	428.4	1.7306	80
85	0.0181	436.0	1.7657	0.0168	435.0	1.7580	0.0156	434.0	1.7506	0.0146	432.9	1.7434	85
90	0.0185	440.5	1.7780	0.0172	439.5	1.7704	0.0160	438.5	1.7631	0.0150	437.5	1.7560	90
95	0.0189	444.9	1.7902	0.0176	444.0	1.7826	0.0164	443.0	1.7754	0.0153	442.0	1.7685	95
100	0.0193	449.4	1.8022	0.0179	448.5	1.7948	0.0167	447.5	1.7877	0.0156	446.6	1.7808	100
105	0.0197	453.9	1.8141	0.0183	453.0	1.8068	0.0171	452.1	1.7997	0.0160	451.2	1.7930	105
110	0.0201	458.3	1.8259	0.0186	457.5	1.8186	0.0174	456.6	1.8117	0.0163	455.8	1.8050	110
115	0.0204	462.9	1.8376	0.0190	462.0	1.8304	0.0177	461.2	1.8235	0.0166	460.4	1.8169	115
120	0.0208	467.4	1.8492	0.0193	466.6	1.8420	0.0181	465.8	1.8352	0.0169	465.0	1.8287	120
125	0.0212	471.9	1.8607	0.0197	471.1	1.8536	0.0184	470.4	1.8468	0.0173	469.6	1.8404	125
130	0.0215	476.5	1.8720	0.0200	475.7	1.8650	0.0187	475.0	1.8583	0.0176	474.2	1.8519	130
135	0.0219	481.1	1.8833	0.0204	480.3	1.8764	0.0191	479.6	1.8697	0.0179	478.8	1.8634	135
140	0.0222	485.7	1.8945	0.0207	484.9	1.8876	0.0194	484.2	1.8810	0.0182	483.5	1.8747	140
145	0.0226	490.3	1.9056	0.0211	489.6	1.8988	0.0197	488.9	1.8922	0.0185	488.2	1.8860	145
150	0.0229	494.9	1.9167	0.0214	494.2	1.9098	0.0200	493.6	1.9033	0.0188	492.9	1.8972	150
155	0.0233	499.6	1.9276	0.0217	498.9	1.9208	0.0203	498.3	1.9144	0.0191	497.6	1.9082	155
160	0.0236	504.3	1.9385	0.0220	503.6	1.9317	0.0207	503.0	1.9253	0.0194	502.3	1.9192	160
165	0.0240	508.9	1.9493	0.0224	508.3	1.9425	0.0210	507.7	1.9362	0.0197	507.1	1.9301	165
170	0.0243	513.7	1.9600	0.0227	513.1	1.9533	0.0213	512.4	1.9469	0.0200	511.8	1.9409	170
175	0.0247	518.4	1.9706	0.0230	517.8	1.9639	0.0216	517.2	1.9576	0.0203	516.6	1.9516	175
180	0.0250	523.2	1.9811	0.0233	522.6	1.9745	0.0219	522.0	1.9683	0.0206	521.4	1.9623	180
185	0.0253	527.9	1.9916	0.0237	527.4	1.9850	0.0222	526.8	1.9788	0.0209	526.2	1.9729	185
190	—	—	—	0.0240	532.2	1.9955	0.0225	531.6	1.9893	0.0212	531.1	1.9834	190
195	—	—	—	—	—	—	—	—	—	0.0215	535.9	1.9938	195

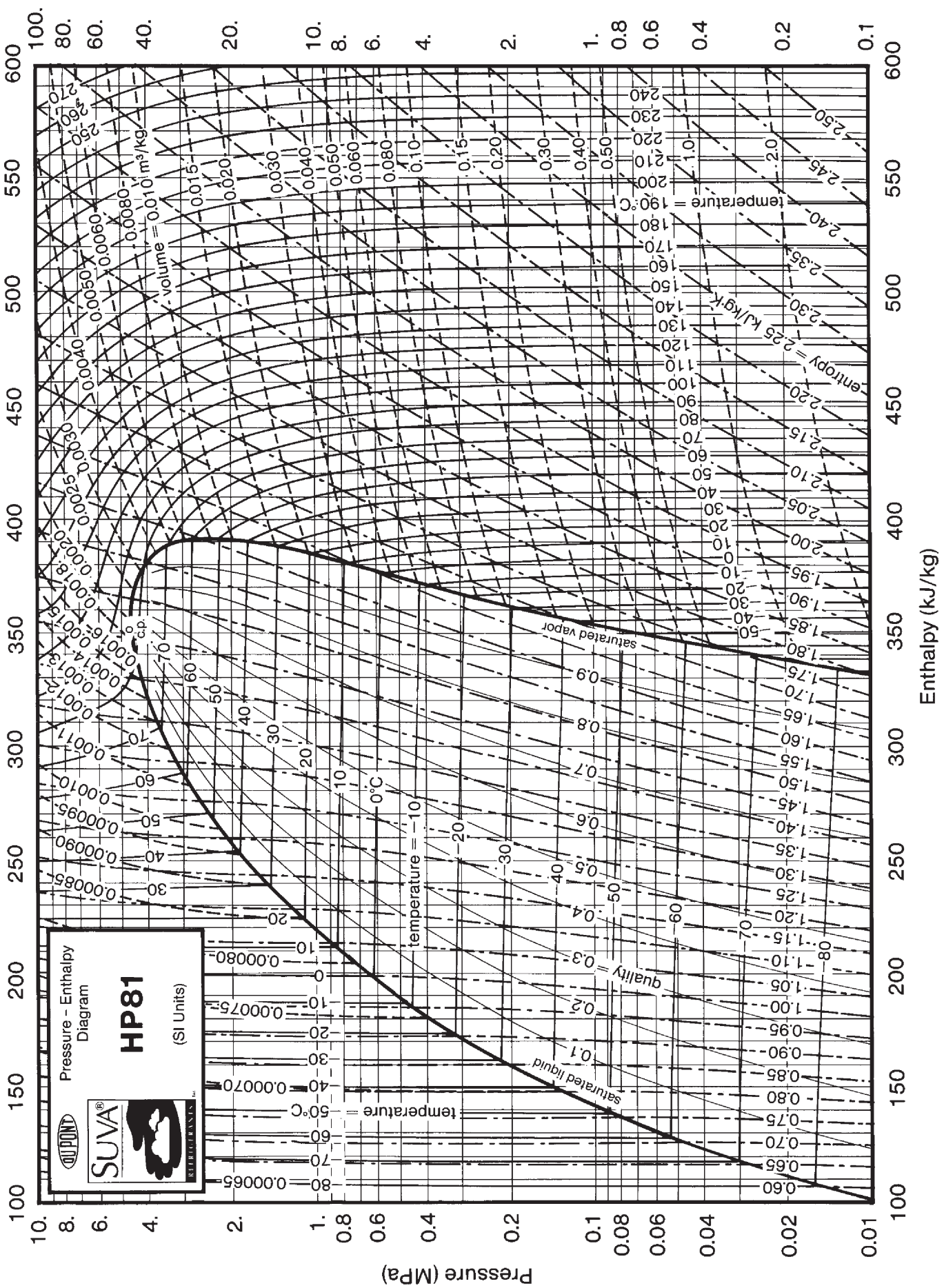
TEMP. °C	1900.0			2000.0			2200.0			2400.0			TEMP. °C
	(42.84°C)			(45.01°C)			(49.11°C)			(52.95°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0104)	(392.1)	(1.6183)	(0.0098)	(392.4)	(1.6161)	(0.0087)	(392.8)	(1.6115)	(0.0078)	(392.9)	(1.6067)	
45	0.0106	394.3	1.6251	—	—	—	—	—	—	—	—	—	45
50	0.0110	399.1	1.6403	0.0102	397.4	1.6318	0.0088	393.7	1.6144	—	—	—	50
55	0.0114	403.9	1.6550	0.0106	402.4	1.6469	0.0092	399.0	1.6306	0.0080	395.2	1.6138	55
60	0.0118	408.7	1.6693	0.0110	407.2	1.6615	0.0096	404.1	1.6461	0.0084	400.7	1.6304	60
65	0.0122	413.3	1.6833	0.0114	412.0	1.6758	0.0100	409.1	1.6609	0.0088	406.0	1.6462	65
70	0.0126	418.0	1.6969	0.0118	416.7	1.6896	0.0103	414.0	1.6754	0.0091	411.1	1.6613	70
75	0.0130	422.6	1.7103	0.0121	421.4	1.7032	0.0107	418.9	1.6894	0.0095	416.2	1.6759	75
80	0.0133	427.2	1.7235	0.0125	426.1	1.7166	0.0110	423.7	1.7032	0.0098	421.2	1.6901	80
85	0.0137	431.9	1.7365	0.0128	430.8	1.7297	0.0114	428.5	1.7166	0.0101	426.1	1.7040	85
90	0.0140	436.5	1.7492	0.0132	435.4	1.7426	0.0117	433.2	1.7298	0.0104	431.0	1.7175	90
95	0.0143	441.1	1.7618	0.0135	440.0	1.7553	0.0120	438.0	1.7428	0.0107	435.8	1.7308	95
100	0.0147	445.7	1.7742	0.0138	444.7	1.7678	0.0123	442.7	1.7555	0.0110	440.7	1.7438	100
105	0.0150	450.3	1.7865	0.0141	449.3	1.7802	0.0126	447.4	1.7681	0.0113	445.5	1.7566	105
110	0.0153	454.9	1.7986	0.0144	454.0	1.7924	0.0129	452.2	1.7805	0.0116	450.3	1.7693	110
115	0.0156	459.5	1.8106	0.0147	458.6	1.8044	0.0132	456.9	1.7928	0.0119	455.1	1.7817	115
120	0.0159	464.1	1.8224	0.0150	463.3	1.8164	0.0134	461.6	1.8049	0.0121	459.9	1.7940	120
125	0.0162	468.8	1.8342	0.0153	468.0	1.8282	0.0137	466.3	1.8168	0.0124	464.7	1.8061	125
130	0.0165	473.4	1.8458	0.0156	472.6	1.8399	0.0140	471.1	1.8286	0.0126	469.5	1.8180	130
135	0.0168	478.1	1.8573	0.0159	477.3	1.8514	0.0143	475.8	1.8403	0.0129	474.3	1.8299	135
140	0.0171	482.8	1.8687	0.0162	482.1	1.8629	0.0145	480.6	1.8519	0.0131	479.1	1.8416	140
145	0.0174	487.5	1.8800	0.0165	486.8	1.8743	0.0148	485.3	1.8634	0.0134	483.9	1.8532	145
150	0.0177	492.2	1.8912	0.0167	491.5	1.8855	0.0151	490.1	1.8747	0.0136	488.7	1.8646	150
155	0.0180	496.9	1.9023	0.0170	496.3	1.8967	0.0153	494.9	1.8860	0.0139	493.5	1.8760	155
160	0.0183	501.7	1.9134	0.0173	501.0	1.9077	0.0156	499.7	1.8971	0.0141	498.4	1.8872	160
165	0.0186	506.4	1.9243	0.0176	505.8	1.9187	0.0158	504.5	1.9082	0.0144	503.2	1.8984	165
170	0.0189	511.2	1.9351	0.0178	510.6	1.9296	0.0161	509.4	1.9192	0.0146	508.1	1.9094	170
175	0.0191	516.0	1.9459	0.0181	515.4	1.9404	0.0163	514.2	1.9300	0.0148	513.0	1.9204	175
180	0.0194	520.8	1.9566	0.0184	520.2	1.9511	0.0166	519.1	1.9408	0.0151	517.9	1.9312	180
185	0.0197	525.7	1.9672	0.0186	525.1	1.9618	0.0168	523.9	1.9515	0.0153	522.8	1.9420	185
190	0.0200	530.5	1.9777	0.0189	530.0	1.9723	0.0171	528.8	1.9622	0.0155	527.7	1.9527	190
195	0.0203	535.4	1.9882	0.0192	534.8	1.9828	0.0173	533.7	1.9727	0.0158	532.6	1.9633	195
200	—	—	—	0.0194	539.7	1.9932	0.0176	538.7	1.9832	0.0160	537.6	1.9738	200
205	—	—	—	—	—	—	—	—	—	0.0162	542.6	1.9843	205

TABLE 2 (continued)
SUVA® HP81 Superheated Vapor—Constant Pressure Tables

V = Volume in m³/kg H = Enthalpy in kJ/kg S = Entropy in kJ/(kg)(K) (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	2600.0			2800.0			3000.0			3200.0			
	(56.55°C)			(59.95°C)			(63.17°C)			(66.24°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0070)	(392.7)	(1.6016)	(0.0063)	(392.2)	(1.5962)	(0.0057)	(391.5)	(1.5904)	(0.0052)	(390.4)	(1.5839)		
60	0.0073	396.8	1.6141	0.0063	392.3	1.5964	—	—	—	—	—	—	60
65	0.0077	402.5	1.6311	0.0068	398.7	1.6154	0.0059	394.1	1.5981	—	—	—	65
70	0.0081	408.0	1.6472	0.0072	404.6	1.6327	0.0063	400.7	1.6175	0.0056	396.2	1.6009	70
75	0.0084	413.3	1.6625	0.0075	410.2	1.6490	0.0067	406.8	1.6351	0.0060	403.0	1.6205	75
80	0.0088	418.5	1.6773	0.0078	415.7	1.6646	0.0070	412.6	1.6516	0.0063	409.2	1.6383	80
85	0.0091	423.6	1.6917	0.0082	421.0	1.6795	0.0074	418.1	1.6673	0.0066	415.1	1.6549	85
90	0.0094	428.6	1.7056	0.0085	426.2	1.6939	0.0077	423.6	1.6823	0.0069	420.8	1.6707	90
95	0.0097	433.6	1.7192	0.0087	431.3	1.7079	0.0079	428.9	1.6968	0.0072	426.3	1.6858	95
100	0.0099	438.6	1.7326	0.0090	436.4	1.7216	0.0082	434.1	1.7109	0.0075	431.7	1.7003	100
105	0.0102	443.5	1.7456	0.0093	441.4	1.7350	0.0085	439.2	1.7246	0.0078	437.0	1.7144	105
110	0.0105	448.4	1.7585	0.0095	446.4	1.7481	0.0087	444.3	1.7380	0.0080	442.2	1.7282	110
115	0.0107	453.2	1.7711	0.0098	451.4	1.7610	0.0090	449.4	1.7512	0.0082	447.4	1.7416	115
120	0.0110	458.1	1.7836	0.0100	456.3	1.7737	0.0092	454.4	1.7641	0.0085	452.5	1.7547	120
125	0.0113	463.0	1.7959	0.0103	461.2	1.7861	0.0094	459.5	1.7767	0.0087	457.7	1.7676	125
130	0.0115	467.8	1.8080	0.0105	466.2	1.7984	0.0097	464.5	1.7892	0.0089	462.7	1.7803	130
135	0.0117	472.7	1.8200	0.0108	471.1	1.8106	0.0099	469.4	1.8015	0.0091	467.8	1.7928	135
140	0.0120	477.5	1.8318	0.0110	476.0	1.8225	0.0101	474.4	1.8136	0.0094	472.8	1.8051	140
145	0.0122	482.4	1.8435	0.0112	480.9	1.8344	0.0103	479.4	1.8256	0.0096	477.9	1.8172	145
150	0.0125	487.3	1.8551	0.0114	485.8	1.8461	0.0105	484.4	1.8374	0.0098	482.9	1.8291	150
155	0.0127	492.2	1.8666	0.0116	490.8	1.8576	0.0108	489.3	1.8491	0.0100	487.9	1.8409	155
160	0.0129	497.0	1.8779	0.0119	495.7	1.8691	0.0110	494.3	1.8607	0.0102	492.9	1.8526	160
165	0.0131	501.9	1.8891	0.0121	500.6	1.8804	0.0112	499.3	1.8721	0.0104	498.0	1.8641	165
170	0.0134	506.8	1.9003	0.0123	505.6	1.8916	0.0114	504.3	1.8834	0.0106	503.0	1.8755	170
175	0.0136	511.8	1.9113	0.0125	510.5	1.9027	0.0116	509.3	1.8946	0.0108	508.0	1.8868	175
180	0.0138	516.7	1.9222	0.0127	515.5	1.9137	0.0118	514.3	1.9057	0.0109	513.1	1.8980	180
185	0.0140	521.6	1.9331	0.0129	520.5	1.9247	0.0120	519.3	1.9167	0.0111	518.1	1.9091	185
190	0.0142	526.6	1.9438	0.0131	525.4	1.9355	0.0122	524.3	1.9276	0.0113	523.2	1.9200	190
195	0.0144	531.5	1.9545	0.0133	530.4	1.9462	0.0123	529.3	1.9384	0.0115	528.2	1.9309	195
200	0.0147	536.5	1.9651	0.0135	535.4	1.9569	0.0125	534.4	1.9491	0.0117	533.3	1.9417	200
205	0.0149	541.5	1.9756	0.0137	540.5	1.9674	0.0127	539.4	1.9597	0.0119	538.4	1.9523	205
210	0.0151	546.5	1.9860	0.0139	545.5	1.9779	0.0129	544.5	1.9702	0.0120	543.4	1.9629	210
215	—	—	—	—	—	—	0.0131	549.5	1.9807	0.0122	548.5	1.9734	215
220	—	—	—	—	—	—	—	—	—	0.0124	553.7	1.9838	220

TEMP. °C	3400.0			3600.0			3800.0			4000.0			TEMP. °C
	(69.16°C)			(71.95°C)			(74.62°C)			(77.18°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0047)	(389.0)	(1.5768)	(0.0042)	(387.1)	(1.5687)	(0.0038)	(384.6)	(1.5591)	(0.0034)	(381.2)	(1.5474)	
70	0.0048	390.5	1.5813	—	—	—	—	—	—	—	—	—	70
75	0.0053	398.6	1.6046	0.0046	393.1	1.5863	0.0039	385.6	1.5622	—	—	—	75
80	0.0057	405.5	1.6244	0.0050	401.2	1.6093	0.0044	396.2	1.5923	0.0038	389.6	1.5714	80
85	0.0060	411.8	1.6423	0.0054	408.2	1.6290	0.0049	404.2	1.6148	0.0043	399.5	1.5992	85
90	0.0063	417.8	1.6589	0.0057	414.7	1.6469	0.0052	411.2	1.6343	0.0047	407.4	1.6211	90
95	0.0066	423.6	1.6747	0.0060	420.8	1.6635	0.0055	417.7	1.6521	0.0050	414.4	1.6403	95
100	0.0069	429.2	1.6898	0.0063	426.6	1.6793	0.0058	423.8	1.6686	0.0053	420.9	1.6578	100
105	0.0071	434.7	1.7044	0.0066	432.3	1.6943	0.0060	429.7	1.6843	0.0056	427.1	1.6743	105
110	0.0074	440.1	1.7185	0.0068	437.8	1.7089	0.0063	435.5	1.6994	0.0058	433.0	1.6899	110
115	0.0076	445.4	1.7322	0.0070	443.2	1.7230	0.0065	441.1	1.7139	0.0061	438.8	1.7048	115
120	0.0078	450.6	1.7456	0.0073	448.6	1.7367	0.0067	446.5	1.7279	0.0063	444.4	1.7193	120
125	0.0081	455.8	1.7588	0.0075	453.9	1.7501	0.0070	452.0	1.7416	0.0065	450.0	1.7333	125
130	0.0083	461.0	1.7717	0.0077	459.2	1.7632	0.0072	457.3	1.7550	0.0067	455.4	1.7469	130
135	0.0085	466.1	1.7843	0.0079	464.4	1.7761	0.0074	462.6	1.7681	0.0069	460.8	1.7602	135
140	0.0087	471.2	1.7968	0.0081	469.6	1.7887	0.0076	467.9	1.7809	0.0071	466.2	1.7733	140
145	0.0089	476.3	1.8090	0.0083	474.7	1.8012	0.0077	473.1	1.7935	0.0073	471.5	1.7861	145
150	0.0091	481.4	1.8211	0.0085	479.9	1.8134	0.0079	478.3	1.8059	0.0074	476.8	1.7986	150
155	0.0093	486.5	1.8331	0.0087	485.0	1.8255	0.0081	483.5	1.8181	0.0076	482.1	1.8110	155
160	0.0095	491.6	1.8449	0.0089	490.1	1.8374	0.0083	488.7	1.8302	0.0078	487.3	1.8231	160
165	0.0097	496.6	1.8565	0.0090	495.3	1.8491	0.0085	493.9	1.8420	0.0080	492.5	1.8351	165
170	0.0098	501.7	1.8680	0.0092	500.4	1.8607	0.0086	499.1	1.8537	0.0081	497.7	1.8470	170
175	0.0100	506.8	1.8794	0.0094	505.5	1.8722	0.0088	504.2	1.8653	0.0083	502.9	1.8586	175
180	0.0102	511.8	1.8906	0.0096	510.6	1.8836	0.0090	509.4	1.8768	0.0085	508.1	1.8702	180
185	0.0104	516.9	1.9018	0.0097	515.7	1.8948	0.0092	514.5	1.8881	0.0086	513.3	1.8816	185
190	0.0106	522.0	1.9128	0.0099	520.8	1.9059	0.0093	519.7	1.8993	0.0088	518.5	1.8929	190
195	0.0107	527.1	1.9238	0.0101	526.0	1.9169	0.0095	524.8	1.9103	0.0089	523.7	1.9040	195
200	0.0109	532.2	1.9346	0.0102	531.1	1.9278	0.0096	530.0	1.9213	0.0091	528.9	1.9150	200
205	0.0111	537.3	1.9453	0.0104	536.2	1.9386	0.0098	535.2	1.9322	0.0093	534.1	1.9260	205
210	0.0113	542.4	1.9560	0.0106	541.4	1.9493	0.0100	540.4	1.9429	0.0094	539.3	1.9368	210
215	0.0114	547.5	1.9665	0.0107	546.5	1.9599	0.0101	545.5	1.9536	0.0096	544.5	1.9475	215
220	0.0116	552.7	1.9770	0.0109	551.7	1.9705	0.0103	550.7	1.9642	0.0097	549.7	1.9582	220
225	—	—	—	0.0111	556.9	1.9809	0.0104	555.9	1.9747	0.0099	555.0	1.9687	225
230	—	—	—	—	—	—	—	—	—	0.0100	560.2	1.9791	230



For Sales Information:

DuPont Fluorochemicals
Customer Service Center, B-15305
Wilmington, DE 19898/U.S.A.
(302) 774-2099
1-800-441-9442

For Technical Information:

Fluorochemicals Laboratory
Wilmington, DE/U.S.A.
(302) 999-3129
1-800-582-5606

Europe

DuPont de Nemours
International S.A.
2 Chemin du Pavillon
P.O. Box 50
CH-1218 Le Grand-Saconnex
Geneva, Switzerland
41-22-717-5111

Canada

DuPont Canada, Inc.
P.O. Box 2200, Streetsville
Mississauga, Ontario
L5M 2H3
(905) 821-3300

Mexico

DuPont, S.A. de C.V.
Homero 206
Col. Chapultepec Morales
C.P. 11570 Mexico, D.F.
52-5-250-8000

South America

DuPont do Brasil S.A.
Alameda Itapicuru, 506
Alphaville 06400 Barueri
Sao Paulo, Brazil
55-11-421-8509

DuPont Argentina S.A.
Casilla Correo 1888
Correo Central
1000 Buenos Aires, Argentina
54-1-311-8167

Pacific

DuPont Australia
P.O. Box 930
North Sydney, NSW 2060
Australia
61-2-923-6165

Japan

Mitsui DuPont Fluorochemicals
Company, Ltd.
Mitsui Seimei Building
2-3, 1-Chome Ohtemachi
Chiyoda-Ku, Tokyo 100 Japan
81-3-3216-8451

Asia

DuPont Taiwan
P.O. Box 81-777
Taipei, Taiwan
886-2-514-4400

DuPont Asia Pacific Limited
P.O. Box TST 98851
Tsim Sha Tsui
Kowloon, Hong Kong
852-734-5345

DuPont Thailand
P.O. Box 2398
Bangkok 10501, Thailand
66-2-238-4361

DuPont China Ltd.
Room 1704, Union Bldg.
100 Yanan Rd. East
Shanghai, PR China 200 002
Phone: 86-21-328-3738
Telex: 33448 DCLSH CN
Fax: 86-21-320-2304

DuPont Far East Inc.
P.O. Box 12396
50776 Kuala Lumpur, Malaysia
Phone: 60-3-232-3522
Telex: (784) 30391 DUFE M
Fax: 60-3-238-7250

DuPont Korea Ltd.
C.P.O. Box 5972
Seoul, Korea
82-2-721-5114

DuPont Singapore Pte. Ltd.
1 Maritime Square #07 01
World Trade Centre
Singapore 0409
65-273-2244

DuPont Far East, Philippines
5th Floor, Solid Bank Building
777 Paseo de Roxas
Makati, Metro Manila
Philippines
63-2-818-9911

DuPont Far East Inc.
7A Murray's Gate Road
Alwarpet
Madras, 600 018 India
91-44-454-029

DuPont Far East Inc. -
Pakistan
9 Khayaban-E-Shaheen
Defence Phase 5
Karachi, Pakistan
92-21-533-350

DuPont Far East Inc.
P.O. Box 2553/Jkt
Jakarta 10001
Indonesia
62-21-517-800

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