



**Suva**<sup>®</sup>  
refrigerants

**Thermodynamic  
Properties  
of  
Suva<sup>®</sup> MP39  
Refrigerant**

**[R-401A (53/13/34)]**

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# Thermodynamic Properties of SUVA<sup>®</sup> MP39 Refrigerant

## SI Units

New tables of the thermodynamic properties of SUVA<sup>®</sup> MP39 refrigerant [ASHRAE designation: R-401A (53/13/34)], a near azeotropic blend of HCFC-22/HFC-152a/HCFC-124, 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	CHClF <sub>2</sub> /CH <sub>3</sub> CHF <sub>2</sub> /CHClFCF <sub>3</sub> (53/13/34% by weight)	
Molecular Weight	94.44	
Boiling Point at One Atmosphere	-32.97°C	(-27.34°F)
Critical Temperature, T <sub>c</sub>	108.01°C	(226.42°F)
	381.16 K	(686.09°R)
Critical Pressure, P <sub>c</sub>	4603.8 kPa (abs)	(667.7 psia)
Critical Density, D <sub>c</sub>	510.6 kg/m <sup>3</sup>	(31.88 lb/ft <sup>3</sup> )
Critical Volume, V <sub>c</sub>	0.00196 m <sup>3</sup> /kg	(0.0314 ft <sup>3</sup> /lb)

### Units and Factors

t	= temperature in °C
T	= temperature in K = °C + 273.15
p <sub>f</sub>	= pressure of saturated liquid (bubble point) in kPa (abs)
p <sub>g</sub>	= pressure of saturated vapor (dew point) in kPa (abs)
v <sub>f</sub>	= volume of saturated liquid in m <sup>3</sup> /kg
v <sub>g</sub>	= volume of saturated vapor in m <sup>3</sup> /kg
V	= volume of superheated vapor in m <sup>3</sup> /kg
d <sub>f</sub>	= 1/v <sub>f</sub> = density of saturated liquid in kg/m <sup>3</sup>
d <sub>g</sub>	= 1/v <sub>g</sub> = density of saturated vapor in kg/m <sup>3</sup>
h <sub>f</sub>	= enthalpy of saturated liquid in kJ/kg
h <sub>fg</sub>	= enthalpy of vaporization in kJ/kg
h <sub>g</sub>	= enthalpy of saturated vapor in kJ/kg
H	= enthalpy of superheated vapor in kJ/kg
s <sub>f</sub>	= entropy of saturated liquid in kJ/(kg) (K)
s <sub>g</sub>	= entropy of saturated vapor in kJ/(kg) (K)
S	= entropy of superheated vapor in kJ/(kg) (K)
C <sub>p</sub>	= heat capacity at constant pressure in kJ/(kg) (K)
C <sub>v</sub>	= heat capacity at constant volume in kJ/(kg) (K)

The gas constant, R = 8.314 J/(mole) (K)  
for SUVA<sup>®</sup> MP39, R = 0.0880 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 m<sup>3</sup>/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<sub>i</sub> = mole fraction of component i

x<sub>j</sub> = 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<sub>ij</sub> = 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<sub>i</sub> = κ<sub>0i</sub> for T<sub>r</sub> > 0.7)

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

κ<sub>1i</sub> = adjustable parameter for component i

$$T_{ri} = T_i/T_{ci} \text{ for component } i$$

Values for  $R$ ,  $T_{ci}$ ,  $P_{ci}$ ,  $\omega_i$ ,  $\kappa_{1i}$ ,  $x_i$ , and  $k_{ij}$  are needed to calculate constants  $a$  and  $b$ .  $R = 0.008314$  kJ/(mole) (K). The remaining constants for SUVA<sup>®</sup> MP39 are summarized below:

Component	$T_{ci}$	$P_{ci}$	$\omega_i$	$\kappa_{1i}$	$x_i$
HCFC-22 (i = 1)	369.16	4977.0	0.2214	0.0360	0.57885
HFC-152a (i = 2)	386.44	4519.8	0.2752	-0.0400	0.18587
HCFC-124 (i = 3)	395.39	3616.0	0.2859	0.0490	0.23528

The binary interaction parameters,  $k_{ij}$ , for SUVA<sup>®</sup> MP39 are:

$$\begin{aligned}
 k_{11} &= 0.00000 & k_{12} &= -0.02652 & k_{13} &= 0.00052 \\
 k_{21} &= -0.02652 & k_{22} &= 0.00000 & k_{23} &= -0.01314 \\
 k_{31} &= 0.00052 & k_{32} &= -0.01314 & k_{33} &= 0.00000
 \end{aligned}$$

**Ideal Gas Heat Capacity Equation (at constant pressure):**

$$\begin{aligned}
 C_p^{\circ}(\text{mixture}) &= \sum_{i=1}^3 x_i C_{pi}^{\circ} \\
 C_{pi}^{\circ} &= 4.184 (A_i + B_i T + C_i T^2 + D_i T^3 \\
 &\quad + E_i T^4 + F_i T^5)
 \end{aligned}$$

where  $C_p^{\circ}$  and  $C_{pi}^{\circ}$  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<sup>®</sup> MP39).

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

$A_1 = 6.164370$ E+00	$B_1 = 0.173407$ E-01
$A_2 = 2.072000$ E+00	$B_2 = 0.572200$ E-01
$A_3 = -4.130590$ E+01	$B_3 = 0.587312$ E+00
$C_1 = 0.557618$ E-04	$D_1 = -0.140596$ E-06
$C_2 = -0.348000$ E-04	$D_2 = 0.810700$ E-08
$C_3 = -0.233021$ E-02	$D_3 = 0.517788$ E-05
$E_1 = 0.120557$ E-09	$F_1 = -0.368814$ E-13
$E_2 = 0.000000$ E+00	$F_2 = 0.000000$ E+00
$E_3 = -0.599647$ E-08	$F_3 = 0.287937$ E-11

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  $0^{\circ}\text{C}$  for SI units to  $H = 0$  and  $S = 0$  at  $-40^{\circ}\text{F}$  for I/P units). In the conversion equations below,  $H(\text{ref})$  and  $S(\text{ref})$  are the saturated liquid enthalpy and entropy at  $-40^{\circ}\text{C}$ . For SUVA<sup>®</sup> MP39:  $H(\text{ref}) = 154.0$  kJ/kg and  $S(\text{ref}) = 0.8188$  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 <sup>3</sup> )	$= D$ (kg/m <sup>3</sup> ) $\cdot$ 0.062428
$V$ (ft <sup>3</sup> /lb)	$= V$ (m <sup>3</sup> /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),  $p_f$ :

$$\begin{aligned}
 A &= 5.62796 \text{ E}+01 & C &= -6.60554 \text{ E}+00 \\
 B &= -3.86068 \text{ E}+03 & D &= 1.07509 \text{ E}-05
 \end{aligned}$$

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

$$\begin{aligned}
 A &= 7.52641 \text{ E}+01 & C &= -9.58694 \text{ E}+00 \\
 B &= -4.63581 \text{ E}+03 & D &= 1.58459 \text{ E}-05
 \end{aligned}$$

**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),  $p_f$ :

$$\begin{aligned}
 A &= 5.82318 \text{ E}+01 & C &= -6.60554 \text{ E}+00 \\
 B &= -6.94931 \text{ E}+03 & D &= 0.33177 \text{ E}-05
 \end{aligned}$$

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

$$\begin{aligned}
 A &= 7.89685 \text{ E}+01 & C &= -9.58694 \text{ E}+00 \\
 B &= -8.34448 \text{ E}+03 & D &= 0.48906 \text{ E}-05
 \end{aligned}$$

### 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  $\text{kg/m}^3$  in SI units and  $\text{lb/ft}^3$  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:

$$a_0 = 2.301857$$

$$a_3 = -1.362305$$

$$a_1 = 2.833603$$

$$a_4 = -4.522461$$

$$a_2 = 1.826214$$

$$t_0 = 0.5891813$$

**TABLE 1**  
**SUVA® MP39 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/(kg)(K)		TEMP. °C
	LIQUID P <sub>f</sub>	VAPOR P <sub>g</sub>	LIQUID v <sub>f</sub>	VAPOR v <sub>g</sub>	LIQUID 1/v <sub>f</sub>	VAPOR 1/v <sub>g</sub>	LIQUID h <sub>f</sub>	LATENT h <sub>fg</sub>	VAPOR h <sub>g</sub>	LIQUID s <sub>f</sub>	VAPOR s <sub>g</sub>	
-100	1.3	0.6	0.0006	23.6967	1566.0	0.042	94.1	258.9	353.0	0.5233	2.0535	-100
-99	1.4	0.7	0.0006	21.5054	1563.5	0.047	95.0	258.4	353.5	0.5286	2.0471	-99
-98	1.6	0.8	0.0006	19.4932	1561.0	0.051	95.9	258.0	353.9	0.5339	2.0409	-98
-97	1.7	0.9	0.0006	17.7305	1558.5	0.056	96.9	257.6	354.4	0.5392	2.0347	-97
-96	1.9	1.0	0.0006	16.1290	1556.0	0.062	97.8	257.1	354.9	0.5444	2.0287	-96
-95	2.1	1.1	0.0006	14.7059	1553.5	0.068	98.7	256.7	355.4	0.5497	2.0228	-95
-94	2.2	1.2	0.0006	13.4228	1551.0	0.075	99.7	256.2	355.9	0.5549	2.0171	-94
-93	2.4	1.3	0.0006	12.2699	1548.5	0.082	100.6	255.8	356.4	0.5601	2.0114	-93
-92	2.7	1.4	0.0006	11.2233	1545.9	0.089	101.5	255.4	356.9	0.5653	2.0058	-92
-91	2.9	1.6	0.0006	10.2775	1543.4	0.097	102.5	254.9	357.4	0.5705	2.0004	-91
-90	3.1	1.7	0.0006	9.4251	1540.9	0.106	103.4	254.5	357.9	0.5757	1.9950	-90
-89	3.4	1.9	0.0007	8.6505	1538.3	0.116	104.4	254.0	358.4	0.5808	1.9898	-89
-88	3.7	2.0	0.0007	7.9491	1535.8	0.126	105.3	253.6	358.9	0.5860	1.9846	-88
-87	4.0	2.2	0.0007	7.3153	1533.2	0.137	106.3	253.1	359.4	0.5911	1.9796	-87
-86	4.3	2.4	0.0007	6.7340	1530.6	0.149	107.2	252.7	359.9	0.5962	1.9746	-86
-85	4.7	2.7	0.0007	6.2112	1528.1	0.161	108.2	252.2	360.4	0.6013	1.9697	-85
-84	5.1	2.9	0.0007	5.7307	1525.5	0.175	109.1	251.8	360.9	0.6064	1.9649	-84
-83	5.5	3.2	0.0007	5.2966	1522.9	0.189	110.1	251.4	361.5	0.6115	1.9603	-83
-82	5.9	3.4	0.0007	4.8996	1520.3	0.204	111.1	250.9	362.0	0.6165	1.9557	-82
-81	6.4	3.7	0.0007	4.5351	1517.7	0.221	112.0	250.5	362.5	0.6216	1.9512	-81
-80	6.9	4.0	0.0007	4.2034	1515.1	0.238	113.0	250.0	363.0	0.6266	1.9467	-80
-79	7.4	4.4	0.0007	3.8986	1512.4	0.257	114.0	249.6	363.5	0.6316	1.9424	-79
-78	7.9	4.7	0.0007	3.6206	1509.8	0.276	115.0	249.1	364.1	0.6367	1.9381	-78
-77	8.5	5.1	0.0007	3.3647	1507.2	0.297	115.9	248.7	364.6	0.6416	1.9340	-77
-76	9.1	5.5	0.0007	3.1299	1504.5	0.320	116.9	248.2	365.1	0.6466	1.9299	-76
-75	9.8	6.0	0.0007	2.9138	1501.9	0.343	117.9	247.8	365.7	0.6516	1.9258	-75
-74	10.5	6.4	0.0007	2.7152	1499.2	0.368	118.9	247.3	366.2	0.6566	1.9219	-74
-73	11.2	6.9	0.0007	2.5323	1496.5	0.395	119.9	246.8	366.7	0.6615	1.9180	-73
-72	12.0	7.5	0.0007	2.3635	1493.9	0.423	120.9	246.4	367.2	0.6664	1.9142	-72
-71	12.8	8.0	0.0007	2.2080	1491.2	0.453	121.9	245.9	367.8	0.6714	1.9105	-71
-70	13.7	8.6	0.0007	2.0644	1488.5	0.484	122.9	245.5	368.3	0.6763	1.9069	-70
-69	14.6	9.3	0.0007	1.9320	1485.8	0.518	123.9	245.0	368.9	0.6812	1.9033	-69
-68	15.6	9.9	0.0007	1.8093	1483.1	0.553	124.9	244.6	369.4	0.6861	1.8998	-68
-67	16.6	10.7	0.0007	1.6955	1480.4	0.590	125.9	244.1	369.9	0.6909	1.8963	-67
-66	17.7	11.4	0.0007	1.5903	1477.7	0.629	126.9	243.6	370.5	0.6958	1.8929	-66
-65	18.8	12.2	0.0007	1.4928	1474.9	0.670	127.9	243.2	371.0	0.7006	1.8896	-65
-64	20.0	13.1	0.0007	1.4021	1472.2	0.713	128.9	242.7	371.6	0.7055	1.8864	-64
-63	21.3	14.0	0.0007	1.3180	1469.5	0.759	129.9	242.2	372.1	0.7103	1.8832	-63
-62	22.6	14.9	0.0007	1.2398	1466.7	0.807	130.9	241.8	372.7	0.7151	1.8800	-62
-61	24.0	15.9	0.0007	1.1670	1463.9	0.857	131.9	241.3	373.2	0.7200	1.8770	-61
-60	25.4	16.9	0.0007	1.0993	1461.2	0.910	133.0	240.8	373.8	0.7248	1.8739	-60
-59	27.0	18.1	0.0007	1.0362	1458.4	0.965	134.0	240.4	374.3	0.7296	1.8710	-59
-58	28.6	19.2	0.0007	0.9773	1455.6	1.023	135.0	239.9	374.9	0.7343	1.8681	-58
-57	30.2	20.5	0.0007	0.9224	1452.8	1.084	136.0	239.4	375.4	0.7391	1.8652	-57
-56	32.0	21.7	0.0007	0.8712	1450.0	1.148	137.1	238.9	376.0	0.7439	1.8624	-56
-55	33.8	23.1	0.0007	0.8233	1447.2	1.215	138.1	238.4	376.5	0.7486	1.8597	-55
-54	35.8	24.5	0.0007	0.7786	1444.4	1.284	139.1	238.0	377.1	0.7534	1.8570	-54
-53	37.8	26.0	0.0007	0.7367	1441.6	1.357	140.2	237.5	377.7	0.7581	1.8544	-53
-52	39.9	27.6	0.0007	0.6975	1438.7	1.434	141.2	237.0	378.2	0.7628	1.8518	-52
-51	42.1	29.3	0.0007	0.6607	1435.9	1.514	142.3	236.5	378.8	0.7675	1.8493	-51
-50	44.4	31.0	0.0007	0.6263	1433.1	1.597	143.3	236.0	379.3	0.7722	1.8468	-50
-49	46.7	32.8	0.0007	0.5940	1430.2	1.684	144.4	235.5	379.9	0.7769	1.8443	-49
-48	49.2	34.7	0.0007	0.5637	1427.3	1.774	145.4	235.0	380.5	0.7816	1.8419	-48
-47	51.8	36.7	0.0007	0.5352	1424.5	1.869	146.5	234.5	381.0	0.7863	1.8396	-47
-46	54.5	38.8	0.0007	0.5084	1421.6	1.967	147.6	234.0	381.6	0.7910	1.8373	-46
-45	57.4	41.0	0.0007	0.4832	1418.7	2.069	148.6	233.5	382.2	0.7956	1.8350	-45
-44	60.3	43.2	0.0007	0.4596	1415.8	2.176	149.7	233.0	382.7	0.8003	1.8328	-44
-43	63.3	45.6	0.0007	0.4373	1412.9	2.287	150.8	232.5	383.3	0.8049	1.8307	-43
-42	66.5	48.1	0.0007	0.4163	1410.0	2.402	151.8	232.0	383.8	0.8096	1.8285	-42
-41	69.8	50.7	0.0007	0.3964	1407.1	2.523	152.9	231.5	384.4	0.8142	1.8264	-41

**TABLE 1** (continued)  
**SUVA® MP39 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/(kg)(K)		TEMP. °C
	LIQUID P <sub>f</sub>	VAPOR P <sub>g</sub>	LIQUID v <sub>f</sub>	VAPOR v <sub>g</sub>	LIQUID 1/v <sub>f</sub>	VAPOR 1/v <sub>g</sub>	LIQUID h <sub>f</sub>	LATENT h <sub>fg</sub>	VAPOR h <sub>g</sub>	LIQUID s <sub>f</sub>	VAPOR s <sub>g</sub>	
-40	73.3	53.3	0.0007	0.3778	1404.1	2.647	154.0	231.0	385.0	0.8188	1.8244	-40
-39	76.8	56.2	0.0007	0.3601	1401.2	2.777	155.1	230.5	385.5	0.8235	1.8224	-39
-38	80.5	59.1	0.0007	0.3435	1398.2	2.911	156.1	230.0	386.1	0.8281	1.8204	-38
-37	84.4	62.1	0.0007	0.3278	1395.3	3.051	157.2	229.4	386.7	0.8327	1.8185	-37
-36	88.3	65.3	0.0007	0.3129	1392.3	3.196	158.3	228.9	387.2	0.8373	1.8166	-36
-35	92.5	68.6	0.0007	0.2989	1389.3	3.346	159.4	228.4	387.8	0.8419	1.8147	-35
-34	96.8	72.0	0.0007	0.2856	1386.4	3.502	160.5	227.9	388.4	0.8464	1.8129	-34
-33	101.2	75.6	0.0007	0.2730	1383.4	3.663	161.6	227.3	388.9	0.8510	1.8111	-33
-32	105.8	79.3	0.0007	0.2611	1380.4	3.830	162.7	226.8	389.5	0.8556	1.8093	-32
-31	110.5	83.1	0.0007	0.2498	1377.4	4.003	163.8	226.3	390.1	0.8601	1.8076	-31
-30	115.5	87.1	0.0007	0.2391	1374.3	4.183	164.9	225.7	390.6	0.8647	1.8059	-30
-29	120.6	91.3	0.0007	0.2289	1371.3	4.368	166.0	225.2	391.2	0.8692	1.8043	-29
-28	125.8	95.6	0.0007	0.2193	1368.3	4.560	167.1	224.6	391.8	0.8738	1.8026	-28
-27	131.3	100.1	0.0007	0.2102	1365.2	4.759	168.3	224.1	392.3	0.8783	1.8010	-27
-26	136.9	104.7	0.0007	0.2015	1362.2	4.964	169.4	223.5	392.9	0.8828	1.7995	-26
-25	142.8	109.5	0.0007	0.1932	1359.1	5.176	170.5	222.9	393.5	0.8874	1.7979	-25
-24	148.8	114.4	0.0007	0.1854	1356.1	5.395	171.6	222.4	394.0	0.8919	1.7964	-24
-23	155.0	119.6	0.0007	0.1779	1353.0	5.621	172.8	221.8	394.6	0.8964	1.7949	-23
-22	161.4	124.9	0.0007	0.1708	1349.9	5.855	173.9	221.2	395.1	0.9009	1.7935	-22
-21	168.0	130.4	0.0007	0.1640	1346.8	6.096	175.0	220.7	395.7	0.9054	1.7921	-21
-20	174.8	136.1	0.0007	0.1576	1343.7	6.346	176.2	220.1	396.3	0.9099	1.7907	-20
-19	181.9	142.0	0.0007	0.1515	1340.6	6.603	177.3	219.5	396.8	0.9144	1.7893	-19
-18	189.1	148.0	0.0007	0.1456	1337.4	6.868	178.5	218.9	397.4	0.9189	1.7879	-18
-17	196.6	154.3	0.0007	0.1400	1334.3	7.141	179.6	218.3	398.0	0.9233	1.7866	-17
-16	204.3	160.8	0.0008	0.1347	1331.2	7.423	180.8	217.7	398.5	0.9278	1.7853	-16
-15	212.3	167.5	0.0008	0.1296	1328.0	7.713	181.9	217.1	399.1	0.9323	1.7840	-15
-14	220.4	174.4	0.0008	0.1248	1324.9	8.012	183.0	216.5	399.6	0.9368	1.7828	-14
-13	228.8	181.6	0.0008	0.1202	1321.7	8.320	184.1	215.9	400.2	0.9413	1.7816	-13
-12	237.4	188.9	0.0008	0.1158	1318.5	8.637	185.3	215.3	400.7	0.9458	1.7804	-12
-11	246.2	196.5	0.0008	0.1116	1315.3	8.963	186.4	214.7	401.3	0.9503	1.7792	-11
-10	255.3	204.3	0.0008	0.1075	1312.1	9.299	187.6	214.1	401.8	0.9548	1.7781	-10
-9	264.7	212.4	0.0008	0.1037	1308.9	9.644	188.7	213.5	402.4	0.9593	1.7769	-9
-8	274.3	220.7	0.0008	0.1000	1305.7	10.000	189.9	212.9	403.0	0.9638	1.7758	-8
-7	284.2	229.2	0.0008	0.0965	1302.4	10.366	191.1	212.3	403.5	0.9683	1.7747	-7
-6	294.4	238.0	0.0008	0.0931	1299.2	10.743	192.3	211.7	404.0	0.9728	1.7737	-6
-5	304.9	247.1	0.0008	0.0898	1296.0	11.130	193.5	211.1	404.6	0.9773	1.7726	-5
-4	315.6	256.4	0.0008	0.0867	1292.7	11.528	194.7	210.5	405.1	0.9818	1.7716	-4
-3	326.6	266.0	0.0008	0.0838	1289.4	11.937	195.9	210.0	405.7	0.9863	1.7705	-3
-2	337.9	275.9	0.0008	0.0809	1286.1	12.358	197.1	209.4	406.2	0.9908	1.7695	-2
-1	349.5	286.0	0.0008	0.0782	1282.9	12.792	198.3	208.9	406.8	0.9953	1.7685	-1
0	361.5	296.5	0.0008	0.0755	1279.6	13.237	199.5	208.3	407.3	1.0000	1.7675	0
1	373.7	307.2	0.0008	0.0730	1276.3	13.694	200.7	207.8	407.8	1.0043	1.7666	1
2	386.2	318.3	0.0008	0.0706	1272.9	14.164	201.9	207.3	408.4	1.0087	1.7656	2
3	399.1	329.6	0.0008	0.0683	1269.6	14.647	203.1	206.8	408.9	1.0131	1.7647	3
4	412.3	341.3	0.0008	0.0660	1266.3	15.142	204.3	206.3	409.4	1.0176	1.7638	4
5	425.8	353.2	0.0008	0.0639	1262.9	15.648	205.5	205.8	410.0	1.0221	1.7629	5
6	439.6	365.4	0.0008	0.0619	1259.5	16.168	206.7	205.3	410.5	1.0266	1.7620	6
7	453.8	378.0	0.0008	0.0599	1256.2	16.701	207.9	204.8	411.0	1.0311	1.7612	7
8	468.3	390.9	0.0008	0.0580	1252.8	17.249	209.1	204.3	411.5	1.0356	1.7603	8
9	483.1	404.1	0.0008	0.0561	1249.4	17.811	210.3	203.8	412.0	1.0401	1.7595	9
10	498.4	417.7	0.0008	0.0544	1246.0	18.387	211.5	203.3	412.6	1.0446	1.7587	10
11	513.9	431.6	0.0008	0.0527	1242.6	18.979	212.7	202.8	413.1	1.0491	1.7579	11
12	529.9	445.8	0.0008	0.0511	1239.2	19.586	213.9	202.3	413.6	1.0536	1.7570	12
13	546.2	460.5	0.0008	0.0495	1235.7	20.208	215.1	201.8	414.1	1.0581	1.7563	13
14	562.9	475.4	0.0008	0.0480	1232.3	20.847	216.3	201.3	414.6	1.0626	1.7555	14
15	579.9	490.8	0.0008	0.0465	1228.8	21.501	217.5	200.8	415.1	1.0671	1.7547	15
16	597.4	506.5	0.0008	0.0451	1225.3	22.173	218.7	200.3	415.6	1.0716	1.7539	16
17	615.2	522.6	0.0008	0.0437	1221.9	22.861	219.9	200.0	416.1	1.0761	1.7532	17
18	633.5	539.1	0.0008	0.0424	1218.4	23.567	221.1	199.5	416.6	1.0806	1.7524	18
19	652.1	556.0	0.0008	0.0412	1214.9	24.291	222.3	199.0	417.1	1.0851	1.7517	19

**TABLE 1** (continued)  
**SUVA® MP39 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/(kg)(K)		TEMP. °C
	LIQUID P <sub>f</sub>	VAPOR P <sub>g</sub>	LIQUID v <sub>f</sub>	VAPOR v <sub>g</sub>	LIQUID 1/v <sub>f</sub>	VAPOR 1/v <sub>g</sub>	LIQUID h <sub>f</sub>	LATENT h <sub>fg</sub>	VAPOR h <sub>g</sub>	LIQUID s <sub>f</sub>	VAPOR s <sub>g</sub>	
20	671.2	573.3	0.0008	0.0399	1211.3	25.032	225.3	192.3	417.6	1.0884	1.7510	20
21	690.7	591.0	0.0008	0.0388	1207.8	25.793	226.6	191.5	418.0	1.0927	1.7502	21
22	710.6	609.1	0.0008	0.0376	1204.3	26.572	227.9	190.7	418.5	1.0971	1.7495	22
23	730.9	627.6	0.0008	0.0365	1200.7	27.371	229.1	189.9	419.0	1.1014	1.7488	23
24	751.7	646.6	0.0008	0.0355	1197.2	28.190	230.4	189.0	419.5	1.1057	1.7481	24
25	772.9	666.0	0.0008	0.0344	1193.6	29.029	231.7	188.2	419.9	1.1100	1.7474	25
26	794.5	685.8	0.0008	0.0335	1190.0	29.889	233.1	187.4	420.4	1.1143	1.7467	26
27	816.6	706.1	0.0008	0.0325	1186.4	30.770	234.4	186.5	420.9	1.1186	1.7460	27
28	839.2	726.8	0.0008	0.0316	1182.8	31.673	235.7	185.6	421.3	1.1230	1.7453	28
29	862.2	748.0	0.0008	0.0307	1179.2	32.599	237.0	184.8	421.8	1.1273	1.7446	29
30	885.7	769.7	0.0009	0.0298	1175.5	33.547	238.3	183.9	422.2	1.1316	1.7439	30
31	909.6	791.8	0.0009	0.0290	1171.9	34.518	239.7	183.0	422.7	1.1360	1.7433	31
32	934.0	814.4	0.0009	0.0282	1168.2	35.514	241.0	182.1	423.1	1.1403	1.7426	32
33	959.0	837.5	0.0009	0.0274	1164.5	36.534	242.4	181.2	423.5	1.1446	1.7419	33
34	984.4	861.1	0.0009	0.0266	1160.8	37.579	243.7	180.3	424.0	1.1490	1.7412	34
35	1010.3	885.1	0.0009	0.0259	1157.1	38.649	245.1	179.3	424.4	1.1533	1.7406	35
36	1036.7	909.7	0.0009	0.0252	1153.4	39.746	246.5	178.4	424.8	1.1577	1.7399	36
37	1063.6	934.8	0.0009	0.0245	1149.7	40.870	247.8	177.4	425.2	1.1621	1.7392	37
38	1091.1	960.4	0.0009	0.0238	1145.9	42.022	249.2	176.4	425.7	1.1664	1.7386	38
39	1119.0	986.6	0.0009	0.0231	1142.2	43.202	250.6	175.5	426.1	1.1708	1.7379	39
40	1147.5	1013.3	0.0009	0.0225	1138.4	44.411	252.0	174.5	426.5	1.1752	1.7372	40
41	1176.5	1040.5	0.0009	0.0219	1134.6	45.651	253.4	173.5	426.8	1.1796	1.7366	41
42	1206.1	1068.3	0.0009	0.0213	1130.8	46.920	254.8	172.4	427.2	1.1840	1.7359	42
43	1236.2	1096.6	0.0009	0.0207	1127.0	48.222	256.2	171.4	427.6	1.1884	1.7352	43
44	1266.9	1125.5	0.0009	0.0202	1123.2	49.555	257.6	170.4	428.0	1.1928	1.7345	44
45	1298.1	1155.0	0.0009	0.0196	1119.3	50.922	259.1	169.3	428.4	1.1972	1.7338	45
46	1329.9	1185.0	0.0009	0.0191	1115.5	52.323	260.5	168.2	428.7	1.2016	1.7332	46
47	1362.2	1215.7	0.0009	0.0186	1111.6	53.759	262.0	167.1	429.1	1.2061	1.7325	47
48	1395.2	1246.9	0.0009	0.0181	1107.7	55.232	263.4	166.0	429.4	1.2105	1.7318	48
49	1428.7	1278.8	0.0009	0.0176	1103.8	56.741	264.9	164.9	429.8	1.2150	1.7311	49
50	1462.8	1311.2	0.0009	0.0172	1099.9	58.288	266.4	163.8	430.1	1.2194	1.7304	50
51	1497.5	1344.3	0.0009	0.0167	1095.9	59.875	267.8	162.6	430.4	1.2239	1.7297	51
52	1532.8	1378.0	0.0009	0.0163	1092.0	61.502	269.3	161.4	430.8	1.2284	1.7289	52
53	1568.7	1412.3	0.0009	0.0158	1088.0	63.171	270.8	160.3	431.1	1.2329	1.7282	53
54	1605.3	1447.3	0.0009	0.0154	1084.0	64.883	272.3	159.0	431.4	1.2374	1.7275	54
55	1642.4	1482.9	0.0009	0.0150	1080.0	66.640	273.8	157.8	431.7	1.2419	1.7267	55
56	1680.2	1519.2	0.0009	0.0146	1076.0	68.442	275.4	156.6	432.0	1.2464	1.7259	56
57	1718.6	1556.1	0.0009	0.0142	1071.9	70.291	276.9	155.3	432.2	1.2510	1.7252	57
58	1757.7	1593.8	0.0009	0.0139	1067.8	72.189	278.5	154.1	432.5	1.2556	1.7244	58
59	1797.4	1632.1	0.0009	0.0135	1063.8	74.137	280.0	152.8	432.8	1.2601	1.7236	59
60	1837.8	1671.1	0.0009	0.0131	1059.7	76.138	281.6	151.4	433.0	1.2647	1.7228	60
61	1878.8	1710.8	0.0009	0.0128	1055.5	78.192	283.2	150.1	433.3	1.2694	1.7220	61
62	1920.5	1751.2	0.0010	0.0125	1051.4	80.302	284.8	148.7	433.5	1.2740	1.7211	62
63	1962.8	1792.4	0.0010	0.0121	1047.2	82.470	286.4	147.4	433.7	1.2786	1.7203	63
64	2005.9	1834.3	0.0010	0.0118	1043.0	84.698	288.0	145.9	433.9	1.2833	1.7194	64
65	2049.6	1876.9	0.0010	0.0115	1038.8	86.987	289.6	144.5	434.1	1.2880	1.7185	65
66	2094.0	1920.2	0.0010	0.0112	1034.6	89.342	291.2	143.1	434.3	1.2927	1.7176	66
67	2139.1	1964.4	0.0010	0.0109	1030.3	91.763	292.9	141.6	434.5	1.2974	1.7167	67
68	2184.9	2009.3	0.0010	0.0106	1026.0	94.254	294.6	140.1	434.6	1.3022	1.7158	68
69	2231.5	2054.9	0.0010	0.0103	1021.7	96.817	296.3	138.5	434.8	1.3070	1.7148	69
70	2278.7	2101.4	0.0010	0.0101	1017.4	99.456	297.9	137.0	434.9	1.3118	1.7138	70
71	2326.7	2148.6	0.0010	0.0098	1013.0	102.173	299.7	135.4	435.0	1.3166	1.7128	71
72	2375.4	2196.7	0.0010	0.0095	1008.6	104.972	301.4	133.8	435.1	1.3215	1.7117	72
73	2424.8	2245.6	0.0010	0.0093	1004.2	107.858	303.1	132.1	435.2	1.3264	1.7107	73
74	2475.0	2295.3	0.0010	0.0090	999.8	110.832	304.9	130.4	435.3	1.3313	1.7096	74
75	2525.9	2345.8	0.0010	0.0088	995.3	113.901	306.7	128.7	435.4	1.3362	1.7084	75
76	2577.5	2397.2	0.0010	0.0085	990.8	117.068	308.5	126.9	435.4	1.3412	1.7072	76
77	2630.0	2449.5	0.0010	0.0083	986.2	120.338	310.3	125.1	435.4	1.3463	1.7060	77
78	2683.1	2502.6	0.0010	0.0081	981.6	123.717	312.1	123.3	435.4	1.3513	1.7048	78
79	2737.1	2556.6	0.0010	0.0079	977.0	127.210	314.0	121.4	435.4	1.3564	1.7035	79

**TABLE 1** (continued)  
**SUVA® MP39 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/(kg)(K)		TEMP. °C
	LIQUID P <sub>f</sub>	VAPOR P <sub>g</sub>	LIQUID v <sub>f</sub>	VAPOR v <sub>g</sub>	LIQUID 1/v <sub>f</sub>	VAPOR 1/v <sub>g</sub>	LIQUID h <sub>f</sub>	LATENT h <sub>fg</sub>	VAPOR h <sub>g</sub>	LIQUID s <sub>f</sub>	VAPOR s <sub>g</sub>	
80	2791.8	2611.6	0.0010	0.0076	972.4	130.823	315.9	119.5	435.4	1.3616	1.7022	80
81	2847.3	2667.4	0.0010	0.0074	967.7	134.564	317.8	117.5	435.3	1.3668	1.7008	81
82	2903.6	2724.1	0.0010	0.0072	962.9	138.440	319.7	115.5	435.2	1.3721	1.6994	82
83	2960.7	2781.8	0.0010	0.0070	958.1	142.459	321.6	113.4	435.1	1.3774	1.6979	83
84	3018.6	2840.5	0.0010	0.0068	953.3	146.629	323.6	111.3	435.0	1.3827	1.6964	84
85	3077.2	2900.1	0.0011	0.0066	948.4	150.962	325.6	109.1	434.8	1.3881	1.6948	85
86	3136.7	2960.6	0.0011	0.0064	943.4	155.467	327.7	106.9	434.6	1.3936	1.6932	86
87	3196.9	3022.2	0.0011	0.0062	938.4	160.158	329.8	104.6	434.4	1.3992	1.6914	87
88	3258.0	3084.8	0.0011	0.0061	933.3	165.047	331.9	102.2	434.1	1.4048	1.6896	88
89	3319.9	3148.4	0.0011	0.0059	928.2	170.151	334.0	99.8	433.8	1.4105	1.6878	89
90	3382.6	3213.0	0.0011	0.0057	922.9	175.487	336.2	97.3	433.5	1.4163	1.6858	90
91	3446.0	3278.7	0.0011	0.0055	917.6	181.076	338.4	94.6	433.1	1.4223	1.6837	91
92	3510.3	3345.5	0.0011	0.0053	912.2	186.940	340.7	91.9	432.6	1.4283	1.6816	92
93	3575.4	3413.4	0.0011	0.0052	906.7	193.106	343.0	89.1	432.2	1.4344	1.6793	93
94	3641.3	3482.4	0.0011	0.0050	901.0	199.606	345.4	86.2	431.6	1.4407	1.6768	94
95	3708.0	3552.6	0.0011	0.0048	895.2	206.477	347.9	83.2	431.0	1.4471	1.6743	95
96	3775.5	3624.0	0.0011	0.0047	889.3	213.764	350.4	80.0	430.4	1.4537	1.6715	96
97	3843.7	3696.6	0.0011	0.0045	883.1	221.522	353.0	76.6	429.6	1.4604	1.6686	97
98	3912.7	3770.4	0.0011	0.0044	876.8	229.817	355.7	73.1	428.8	1.4674	1.6655	98
99	3982.4	3845.5	0.0011	0.0042	870.2	238.734	358.5	69.4	427.8	1.4746	1.6621	99



**TABLE 2**  
**SUVA<sup>®</sup> MP39 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	10.0			20.0			30.0			40.0			TEMP. °C
	(-67.91°C)			(-57.36°C)			(-50.57°C)			(-45.43°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(1.7984)	(369.5)	(1.8994)	(0.9420)	(375.2)	(1.8663)	(0.6457)	(379.0)	(1.8482)	(0.4940)	(381.9)	(1.8360)	
-65	1.8242	371.1	1.9073	—	—	—	—	—	—	—	—	—	-65
-60	1.8686	373.9	1.9208	—	—	—	—	—	—	—	—	—	-60
-55	1.9129	376.8	1.9342	0.9526	—	—	—	—	—	—	—	—	-55
-50	1.9572	379.8	1.9475	0.9749	376.6	1.8726	—	—	—	—	—	—	-50
-45	2.0015	382.7	1.9608	0.9971	379.6	1.8860	0.6474	379.4	1.8497	—	—	—	-45
-40	2.0457	385.8	1.9739	1.0194	382.6	1.8992	0.6623	382.4	1.8630	0.4949	382.2	1.8372	-40
-35	2.0900	388.9	1.9870	1.0416	385.6	1.9124	0.6773	385.4	1.8762	0.5062	385.2	1.8504	-35
-30	2.1342	392.0	2.0000	1.0639	388.7	1.9255	0.6922	388.5	1.8894	0.5174	388.3	1.8636	-30
-25	2.1785	395.2	2.0130	1.0861	391.8	1.9386	0.7071	391.6	1.9024	0.5287	391.5	1.8766	-25
-20	2.2227	398.4	2.0258	1.1083	395.0	1.9515	0.7220	394.8	1.9154	0.5399	394.7	1.8896	-20
-15	2.2669	401.6	2.0386	1.1305	398.2	1.9644	0.7369	398.1	1.9283	0.5511	397.9	1.9025	-15
-10	2.3111	405.0	2.0512	1.1527	401.5	1.9772	0.7517	401.3	1.9411	0.5623	401.2	1.9153	-10
-5	2.3553	408.3	2.0639	1.1749	404.8	1.9899	0.7666	404.6	1.9538	0.5735	404.5	1.9281	-5
0	2.3995	411.7	2.0764	1.1971	408.2	2.0025	0.7815	408.0	1.9664	0.5847	407.9	1.9407	0
5	2.4437	415.1	2.0888	1.2193	411.5	2.0150	0.7963	411.4	1.9790	0.5959	411.3	1.9533	5
10	2.4879	418.6	2.1012	1.2415	415.0	2.0275	0.8111	414.8	1.9915	0.6071	414.7	1.9658	10
15	2.5320	422.1	2.1135	1.2636	418.5	2.0399	0.8260	418.3	2.0039	0.6182	418.2	1.9782	15
20	2.5762	425.7	2.1257	1.2858	422.0	2.0522	0.8408	421.8	2.0162	0.6294	421.7	1.9905	20
25	2.6204	429.2	2.1378	1.3079	425.5	2.0644	0.8556	425.4	2.0284	0.6405	425.3	2.0028	25
30	2.6645	432.9	2.1499	1.3301	429.1	2.0765	0.8704	429.0	2.0406	0.6517	428.9	2.0150	30
35	2.7087	436.5	2.1619	1.3522	432.7	2.0886	0.8852	432.6	2.0527	0.6628	432.5	2.0271	35
40	2.7528	440.2	2.1738	1.3743	436.4	2.1006	0.9000	436.3	2.0647	0.6740	436.2	2.0391	40
45	2.7970	444.0	2.1857	1.3965	440.2	2.1126	0.9148	440.0	2.0766	0.6851	439.9	2.0510	45
50	2.8411	447.8	2.1974	1.4186	443.9	2.1244	0.9296	443.7	2.0885	0.6962	443.6	2.0629	50
55	2.8852	451.6	2.2092	1.4407	447.6	2.1362	0.9444	447.5	2.1003	0.7073	447.4	2.0747	55
60	2.9293	455.4	2.2208	1.4628	451.5	2.1479	0.9592	451.3	2.1120	0.7185	451.2	2.0864	60
65	2.9735	459.3	2.2324	1.4850	455.3	2.1596	0.9740	455.2	2.1236	0.7296	455.1	2.0981	65
70	3.0176	463.2	2.2439	1.5071	459.2	2.1711	0.9888	459.1	2.1352	0.7407	459.0	2.1097	70
75	3.0617	467.2	2.2553	1.5292	463.1	2.1826	1.0036	463.0	2.1467	0.7518	462.9	2.1212	75
80	3.1058	471.2	2.2667	1.5513	467.1	2.1941	1.0183	467.0	2.1582	0.7629	466.9	2.1327	80
85	3.1499	475.2	2.2780	1.5734	471.1	2.2054	1.0331	471.0	2.1696	0.7740	470.9	2.1441	85
90	—	—	—	1.5955	475.1	2.2168	1.0479	475.0	2.1809	0.7851	474.9	2.1554	90
95	—	—	—	1.6176	479.1	2.2280	1.0626	479.0	2.1921	0.7962	478.9	2.1666	95
100	—	—	—	—	483.2	2.2392	1.0774	483.1	2.2033	0.8073	483.0	2.1778	100
105	—	—	—	—	—	—	1.0921	487.3	2.2144	0.8184	487.2	2.1890	105
105	—	—	—	—	—	—	—	—	—	0.8295	491.3	2.2000	105

TEMP. °C	50.0			60.0			70.0			80.0			TEMP. °C
	(-41.25°C)			(-37.69°C)			(-34.59°C)			(-31.81°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.4013)	(384.3)	(1.8270)	(0.3386)	(386.3)	(1.8198)	(0.2933)	(388.0)	(1.8140)	(0.2590)	(389.6)	(1.8090)	
-40	0.4035	385.0	1.8303	—	—	—	—	—	—	—	—	—	-40
-35	0.4126	388.1	1.8434	0.3427	—	—	—	—	—	—	—	—	-35
-30	0.4216	391.3	1.8565	0.3503	388.0	1.8269	—	—	—	—	—	—	-30
-25	0.4307	394.5	1.8696	0.3578	391.1	1.8400	0.2993	390.9	1.8260	0.2610	390.8	1.8138	-25
-20	0.4397	397.7	1.8825	0.3654	394.3	1.8531	0.3058	394.1	1.8391	0.2668	394.0	1.8269	-20
-15	0.4487	401.0	1.8953	0.3729	397.6	1.8660	0.3123	397.4	1.8520	0.2725	397.2	1.8398	-15
-10	0.4577	404.3	1.9081	0.3804	400.8	1.8789	0.3188	400.7	1.8649	0.2782	400.5	1.8527	-10
-5	0.4667	407.7	1.9207	0.3880	404.2	1.8916	0.3253	404.0	1.8777	0.2839	403.9	1.8656	-5
0	0.4756	411.1	1.9333	0.3955	407.5	1.9043	0.3317	407.4	1.8904	0.2896	407.2	1.8783	0
5	0.4846	414.6	1.9458	0.4030	411.0	1.9169	0.3382	410.8	1.9030	0.2953	410.7	1.8909	5
10	0.4936	418.0	1.9583	0.4105	414.4	1.9294	0.3447	414.3	1.9155	0.3009	414.1	1.9035	10
15	0.5025	421.6	1.9706	0.4180	417.9	1.9419	0.3511	417.8	1.9280	0.3066	417.6	1.9159	15
20	0.5115	425.1	1.9829	0.4255	421.4	1.9542	0.3576	421.3	1.9404	0.3123	421.2	1.9283	20
25	0.5204	428.7	1.9950	0.4329	425.0	1.9665	0.3640	424.9	1.9527	0.3179	424.7	1.9406	25
30	0.5294	432.4	2.0072	0.4404	428.6	1.9787	0.3704	428.5	1.9649	0.3236	428.3	1.9528	30
35	0.5383	436.1	2.0192	0.4479	432.2	1.9908	0.3769	432.1	1.9770	0.3292	432.0	1.9650	35
40	0.5472	439.8	2.0311	0.4553	435.9	2.0029	0.3833	435.8	1.9890	0.3348	435.7	1.9770	40
45	0.5562	443.5	2.0430	0.4628	439.6	2.0148	0.3897	439.5	2.0010	0.3405	439.4	1.9890	45
50	0.5651	447.3	2.0548	0.4703	443.4	2.0267	0.3961	443.3	2.0129	0.3461	443.2	2.0009	50
55	0.5740	451.1	2.0666	0.4777	447.1	2.0386	0.4025	447.1	2.0247	0.3517	447.0	2.0128	55
60	0.5829	455.0	2.0782	0.4852	451.0	2.0503	0.4089	450.9	2.0365	0.3573	450.8	2.0245	60
65	0.5918	458.9	2.0898	0.4926	454.9	2.0620	0.4153	454.8	2.0482	0.3629	454.7	2.0362	65
70	0.6007	462.8	2.1014	0.5000	458.8	2.0736	0.4217	458.7	2.0598	0.3685	458.6	2.0478	70
75	0.6096	466.8	2.1128	0.5075	462.7	2.0851	0.4281	462.6	2.0713	0.3742	462.5	2.0594	75
80	0.6185	470.8	2.1242	0.5149	466.7	2.0966	0.4345	466.6	2.0828	0.3798	466.5	2.0709	80
85	0.6274	474.8	2.1355	0.5223	470.7	2.1080	0.4409	470.6	2.0942	0.3854	470.5	2.0823	85
90	0.6363	478.9	2.1468	0.5298	474.7	2.1193	0.4473	474.6	2.1056	0.3909	474.5	2.0936	90
95	0.6452	482.9	2.1580	0.5372	478.8	2.1306	0.4536	478.7	2.1168	0.3965	478.6	2.1049	95
100	0.6541	487.1	2.1691	0.5446	482.9	2.1418	0.4600	482.8	2.1280	0.4021	482.7	2.1161	100
105	0.6630	491.2	2.1802	0.5520	487.0	2.1529	0.4664	486.9	2.1392	0.4077	486.8	2.1273	105
110	0.6719	495.4	2.1912	0.5594	491.1	2.1640	0.4727	491.0	2.1503	0.4133	491.0	2.1384	110
115	—	—	—	0.5668	495.3	2.1750	0.4791	495.2	2.1613	0.4189	495.2	2.1494	115
120	—	—	—	—	499.6	2.1860	0.4855	499.5	2.1723	0.4245	499.4	2.1604	120
120	—	—	—	—	—	—	0.4918	503.7	2.1832	0.4300	503.7	2.1713	120

**TABLE 2** (continued)  
**SUVA® MP39 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	90.0			100.0			101.325			110.0			TEMP. °C
	(-29.31°C)			(-27.01°C)			(-26.72°C)			(-24.89°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.2320)	(391.0)	(1.8048)	(0.2103)	(392.3)	(1.8011)	(0.2077)	(392.5)	(1.8006)	(0.1923)	(393.5)	(1.7978)	
-25	0.2364	393.8	1.8160	0.2121	393.6	1.8063	0.2093	393.6	1.8051	—	—	—	-25
-20	0.2415	397.1	1.8290	0.2167	396.9	1.8193	0.2138	396.9	1.8181	0.1965	396.7	1.8105	-20
-15	0.2466	400.4	1.8420	0.2213	400.2	1.8323	0.2184	400.2	1.8311	0.2007	400.0	1.8235	-15
-10	0.2517	403.7	1.8548	0.2259	403.5	1.8451	0.2229	403.5	1.8439	0.2049	403.4	1.8364	-10
-5	0.2568	407.1	1.8675	0.2305	406.9	1.8579	0.2275	406.9	1.8567	0.2091	406.8	1.8491	-5
0	0.2619	410.5	1.8802	0.2351	410.4	1.8706	0.2320	410.3	1.8693	0.2133	410.2	1.8618	0
5	0.2669	414.0	1.8928	0.2397	413.8	1.8831	0.2365	413.8	1.8819	0.2174	413.7	1.8744	5
10	0.2720	417.5	1.9052	0.2443	417.3	1.8956	0.2410	417.3	1.8944	0.2216	417.2	1.8869	10
15	0.2770	421.0	1.9176	0.2488	420.9	1.9080	0.2455	420.9	1.9068	0.2258	420.7	1.8993	15
20	0.2821	424.6	1.9299	0.2534	424.5	1.9204	0.2500	424.4	1.9192	0.2299	424.3	1.9117	20
25	0.2871	428.2	1.9422	0.2579	428.1	1.9326	0.2545	428.1	1.9314	0.2341	428.0	1.9239	25
30	0.2921	431.9	1.9543	0.2625	431.7	1.9448	0.2590	431.7	1.9436	0.2382	431.6	1.9361	30
35	0.2971	435.6	1.9664	0.2670	435.4	1.9569	0.2635	435.4	1.9557	0.2423	435.3	1.9482	35
40	0.3022	439.3	1.9784	0.2715	439.2	1.9689	0.2679	439.1	1.9677	0.2465	439.0	1.9602	40
45	0.3072	443.0	1.9903	0.2761	442.9	1.9808	0.2724	442.9	1.9796	0.2506	442.8	1.9722	45
50	0.3122	446.8	2.0022	0.2806	446.7	1.9926	0.2769	446.7	1.9915	0.2547	446.6	1.9840	50
55	0.3172	450.7	2.0139	0.2851	450.6	2.0044	0.2813	450.6	2.0032	0.2588	450.5	1.9958	55
60	0.3222	454.5	2.0256	0.2896	454.4	2.0161	0.2858	454.4	2.0149	0.2629	454.3	2.0075	60
65	0.3272	458.5	2.0373	0.2941	458.3	2.0278	0.2902	458.3	2.0266	0.2671	458.2	2.0192	65
70	0.3322	462.4	2.0488	0.2986	462.3	2.0393	0.2947	462.3	2.0382	0.2712	462.2	2.0307	70
75	0.3372	466.4	2.0603	0.3031	466.3	2.0508	0.2991	466.2	2.0496	0.2753	466.2	2.0422	75
80	0.3422	470.4	2.0717	0.3076	470.3	2.0623	0.3036	470.3	2.0611	0.2794	470.2	2.0537	80
85	0.3472	474.4	2.0831	0.3121	474.3	2.0736	0.3080	474.3	2.0724	0.2834	474.2	2.0650	85
90	0.3521	478.5	2.0944	0.3166	478.4	2.0849	0.3124	478.4	2.0837	0.2875	478.3	2.0763	90
95	0.3571	482.6	2.1056	0.3211	482.5	2.0961	0.3169	482.5	2.0950	0.2916	482.4	2.0876	95
100	0.3621	486.7	2.1167	0.3256	486.6	2.1073	0.3213	486.6	2.1061	0.2957	486.5	2.0987	100
105	0.3671	490.9	2.1278	0.3301	490.8	2.1184	0.3257	490.8	2.1172	0.2998	490.7	2.1098	105
110	0.3720	495.1	2.1389	0.3345	495.0	2.1294	0.3301	495.0	2.1283	0.3039	494.9	2.1209	110
115	0.3770	499.3	2.1498	0.3390	499.2	2.1404	0.3346	499.2	2.1392	0.3080	499.1	2.1319	115
120	0.3820	503.6	2.1607	0.3435	503.5	2.1513	0.3390	503.5	2.1501	0.3120	503.4	2.1428	120
125	0.3869	507.9	2.1716	0.3480	507.8	2.1622	0.3434	507.8	2.1610	0.3161	507.7	2.1536	125
130	—	—	—	—	—	—	—	—	—	0.3202	512.0	2.1644	130

TEMP. °C	120.0			130.0			140.0			150.0			TEMP. °C
	(-22.92°C)			(-21.07°C)			(-19.33°C)			(-17.69°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.1773)	(394.6)	(1.7948)	(0.1645)	(395.7)	(1.7922)	(0.1535)	(396.6)	(1.7897)	(0.1438)	(397.6)	(1.7875)	
-20	0.1796	396.5	1.8024	0.1653	396.4	1.7950	—	—	—	—	—	—	-20
-15	0.1834	399.9	1.8154	0.1689	399.7	1.8079	0.1564	399.5	1.8010	0.1455	399.4	1.7945	-15
-10	0.1873	403.2	1.8283	0.1725	403.1	1.8209	0.1597	402.9	1.8140	0.1487	402.7	1.8075	-10
-5	0.1912	406.6	1.8411	0.1760	406.5	1.8337	0.1630	406.3	1.8268	0.1518	406.2	1.8203	-5
0	0.1950	410.1	1.8538	0.1796	409.9	1.8464	0.1664	409.8	1.8395	0.1549	409.6	1.8331	0
5	0.1989	413.5	1.8664	0.1832	413.4	1.8590	0.1697	413.2	1.8522	0.1580	413.1	1.8457	5
10	0.2027	417.1	1.8789	0.1867	416.9	1.8716	0.1730	416.8	1.8647	0.1611	416.6	1.8583	10
15	0.2065	420.6	1.8914	0.1903	420.5	1.8840	0.1763	420.3	1.8772	0.1642	420.2	1.8708	15
20	0.2103	424.2	1.9037	0.1938	424.1	1.8964	0.1796	423.9	1.8895	0.1673	423.8	1.8832	20
25	0.2142	427.8	1.9160	0.1973	427.7	1.9087	0.1829	427.6	1.9018	0.1704	427.4	1.8955	25
30	0.2180	431.5	1.9282	0.2009	431.4	1.9209	0.1862	431.2	1.9140	0.1735	431.1	1.9077	30
35	0.2218	435.2	1.9403	0.2044	435.1	1.9330	0.1895	434.9	1.9262	0.1765	434.8	1.9198	35
40	0.2256	438.9	1.9523	0.2079	438.8	1.9450	0.1927	438.7	1.9382	0.1796	438.6	1.9319	40
45	0.2294	442.7	1.9643	0.2114	442.6	1.9570	0.1960	442.5	1.9502	0.1827	442.3	1.9439	45
50	0.2332	446.5	1.9761	0.2149	446.4	1.9688	0.1993	446.3	1.9621	0.1857	446.2	1.9558	50
55	0.2369	450.3	1.9879	0.2184	450.2	1.9807	0.2025	450.1	1.9739	0.1888	450.0	1.9676	55
60	0.2407	454.2	1.9996	0.2219	454.1	1.9924	0.2058	454.0	1.9856	0.1918	453.9	1.9793	60
65	0.2445	458.1	2.0113	0.2254	458.0	2.0040	0.2090	457.9	1.9973	0.1949	457.8	1.9910	65
70	0.2483	462.1	2.0229	0.2289	462.0	2.0156	0.2123	461.9	2.0089	0.1979	461.8	2.0026	70
75	0.2520	466.1	2.0344	0.2324	466.0	2.0271	0.2155	465.8	2.0204	0.2009	465.7	2.0142	75
80	0.2558	470.1	2.0458	0.2359	470.0	2.0386	0.2188	469.9	2.0319	0.2040	469.8	2.0256	80
85	0.2596	474.1	2.0572	0.2393	474.0	2.0500	0.2220	473.9	2.0433	0.2070	473.8	2.0370	85
90	0.2633	478.2	2.0685	0.2428	478.1	2.0613	0.2253	478.0	2.0546	0.2100	477.9	2.0483	90
95	0.2671	482.3	2.0797	0.2463	482.2	2.0725	0.2285	482.1	2.0658	0.2131	482.0	2.0596	95
100	0.2708	486.4	2.0909	0.2498	486.3	2.0837	0.2317	486.3	2.0770	0.2161	486.2	2.0708	100
105	0.2746	490.6	2.1020	0.2532	490.5	2.0948	0.2349	490.4	2.0881	0.2191	490.3	2.0819	105
110	0.2783	494.8	2.1131	0.2567	494.7	2.1059	0.2382	494.6	2.0992	0.2221	494.6	2.0930	110
115	0.2821	499.1	2.1241	0.2602	499.0	2.1169	0.2414	498.9	2.1102	0.2251	498.8	2.1040	115
120	0.2858	503.3	2.1350	0.2636	503.2	2.1278	0.2446	503.1	2.1211	0.2281	503.1	2.1149	120
125	0.2896	507.6	2.1458	0.2671	507.5	2.1387	0.2478	507.5	2.1320	0.2311	507.4	2.1258	125
130	0.2933	511.9	2.1566	0.2705	511.9	2.1495	0.2510	511.8	2.1428	0.2341	511.7	2.1366	130
135	—	—	—	—	—	—	0.2542	516.1	2.1535	0.2371	516.1	2.1473	135

**TABLE 2 (continued)**  
**SUVA® MP39 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	160.0			170.0			180.0			190.0			TEMP. °C
	(-16.13°C)			(-14.64°C)			(-13.22°C)			(-11.85°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.1354)	(398.4)	(1.7855)	(0.1279)	(399.3)	(1.7836)	(0.1212)	(400.1)	(1.7819)	(0.1152)	(400.8)	(1.7802)	
-15	0.1360	399.2	1.7884	—	—	—	—	—	—	—	—	—	-15
-10	0.1390	402.6	1.8014	0.1305	402.4	1.7957	0.1229	402.3	1.7902	0.1161	402.1	1.7851	-10
-5	0.1419	406.0	1.8143	0.1333	405.8	1.8085	0.1255	405.7	1.8031	0.1186	405.5	1.7980	-5
0	0.1449	409.5	1.8270	0.1360	409.3	1.8213	0.1282	409.1	1.8159	0.1211	409.0	1.8108	0
5	0.1478	412.9	1.8397	0.1388	412.8	1.8340	0.1308	412.7	1.8286	0.1236	412.5	1.8235	5
10	0.1507	416.5	1.8523	0.1416	416.3	1.8466	0.1334	416.2	1.8413	0.1261	416.0	1.8362	10
15	0.1536	420.0	1.8648	0.1443	419.9	1.8591	0.1360	419.8	1.8538	0.1286	419.6	1.8487	15
20	0.1566	423.7	1.8772	0.1471	423.5	1.8715	0.1386	423.4	1.8662	0.1311	423.2	1.8611	20
25	0.1595	427.3	1.8895	0.1498	427.2	1.8839	0.1412	427.0	1.8785	0.1335	426.9	1.8735	25
30	0.1623	431.0	1.9017	0.1525	430.8	1.8961	0.1438	430.7	1.8908	0.1360	430.6	1.8858	30
35	0.1652	434.7	1.9139	0.1553	434.6	1.9083	0.1464	434.4	1.9030	0.1385	434.3	1.8979	35
40	0.1681	438.4	1.9260	0.1580	438.3	1.9204	0.1490	438.2	1.9151	0.1409	438.1	1.9100	40
45	0.1710	442.2	1.9379	0.1607	442.1	1.9324	0.1515	442.0	1.9271	0.1433	441.9	1.9221	45
50	0.1739	446.0	1.9499	0.1634	445.9	1.9443	0.1541	445.8	1.9390	0.1458	445.7	1.9340	50
55	0.1767	449.9	1.9617	0.1661	449.8	1.9561	0.1567	449.7	1.9509	0.1482	449.6	1.9459	55
60	0.1796	453.8	1.9734	0.1688	453.7	1.9679	0.1592	453.6	1.9626	0.1506	453.4	1.9576	60
65	0.1825	457.7	1.9851	0.1715	457.6	1.9796	0.1618	457.5	1.9743	0.1531	457.4	1.9694	65
70	0.1853	461.7	1.9967	0.1742	461.5	1.9912	0.1643	461.4	1.9860	0.1555	461.3	1.9810	70
75	0.1882	465.6	2.0083	0.1769	465.5	2.0027	0.1669	465.4	1.9975	0.1579	465.3	1.9925	75
80	0.1910	469.7	2.0197	0.1796	469.6	2.0142	0.1694	469.5	2.0090	0.1603	469.4	2.0040	80
85	0.1939	473.7	2.0311	0.1823	473.6	2.0256	0.1720	473.5	2.0204	0.1627	473.4	2.0155	85
90	0.1967	477.8	2.0425	0.1849	477.7	2.0370	0.1745	477.6	2.0317	0.1651	477.5	2.0268	90
95	0.1995	481.9	2.0537	0.1876	481.8	2.0482	0.1770	481.7	2.0430	0.1676	481.6	2.0381	95
100	0.2024	486.1	2.0649	0.1903	486.0	2.0594	0.1796	485.9	2.0542	0.1700	485.8	2.0493	100
105	0.2052	490.3	2.0761	0.1930	490.2	2.0706	0.1821	490.1	2.0654	0.1724	490.0	2.0604	105
110	0.2080	494.5	2.0871	0.1956	494.4	2.0816	0.1846	494.3	2.0764	0.1748	494.2	2.0715	110
115	0.2109	498.7	2.0981	0.1983	498.6	2.0926	0.1871	498.5	2.0875	0.1771	498.4	2.0825	115
120	0.2137	503.0	2.1091	0.2010	502.9	2.1036	0.1897	502.8	2.0984	0.1795	502.7	2.0935	120
125	0.2165	507.3	2.1199	0.2036	507.2	2.1145	0.1922	507.1	2.1093	0.1819	507.0	2.1044	125
130	0.2193	511.6	2.1308	0.2063	511.5	2.1253	0.1947	511.5	2.1201	0.1843	511.4	2.1152	130
135	0.2222	516.0	2.1415	0.2090	515.9	2.1361	0.1972	515.8	2.1309	0.1867	515.7	2.1260	135
140	—	—	—	0.2116	520.3	2.1468	0.1997	520.2	2.1416	0.1891	520.1	2.1367	140

TEMP. °C	200.0			210.0			220.0			230.0			TEMP. °C
	(-10.55°C)			(-9.29°C)			(-8.08°C)			(-6.91°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.1097)	(401.5)	(1.7787)	(0.1048)	(402.2)	(1.7773)	(0.1003)	(402.9)	(1.7759)	(0.0962)	(403.5)	(1.7746)	
-10	0.1100	401.9	1.7801	—	—	—	—	—	—	—	—	—	-10
-5	0.1124	405.4	1.7931	0.1068	405.2	1.7884	0.1016	405.0	1.7839	0.0970	404.9	1.7796	-5
0	0.1148	408.8	1.8059	0.1091	408.7	1.8012	0.1038	408.5	1.7968	0.0991	408.4	1.7925	0
5	0.1172	412.3	1.8187	0.1113	412.2	1.8140	0.1060	412.0	1.8096	0.1012	411.9	1.8053	5
10	0.1195	415.9	1.8313	0.1136	415.8	1.8267	0.1082	415.6	1.8222	0.1033	415.5	1.8180	10
15	0.1219	419.5	1.8439	0.1159	419.3	1.8392	0.1104	419.2	1.8348	0.1053	419.1	1.8306	15
20	0.1243	423.1	1.8563	0.1181	423.0	1.8517	0.1125	422.8	1.8473	0.1074	422.7	1.8431	20
25	0.1266	426.8	1.8687	0.1204	426.6	1.8641	0.1147	426.5	1.8597	0.1095	426.4	1.8555	25
30	0.1290	430.5	1.8810	0.1226	430.3	1.8764	0.1168	430.2	1.8720	0.1115	430.1	1.8678	30
35	0.1313	434.2	1.8932	0.1248	434.1	1.8886	0.1190	433.9	1.8842	0.1136	433.8	1.8800	35
40	0.1336	437.9	1.9053	0.1271	437.8	1.9007	0.1211	437.7	1.8964	0.1156	437.6	1.8922	40
45	0.1360	441.7	1.9173	0.1293	441.6	1.9128	0.1232	441.5	1.9084	0.1177	441.4	1.9042	45
50	0.1383	445.6	1.9292	0.1315	445.5	1.9247	0.1254	445.3	1.9204	0.1197	445.2	1.9162	50
55	0.1406	449.4	1.9411	0.1337	449.3	1.9366	0.1275	449.2	1.9323	0.1218	449.1	1.9281	55
60	0.1429	453.3	1.9529	0.1359	453.2	1.9484	0.1296	453.1	1.9441	0.1238	453.0	1.9399	60
65	0.1452	457.3	1.9646	0.1381	457.2	1.9601	0.1317	457.0	1.9558	0.1258	456.9	1.9517	65
70	0.1475	461.2	1.9763	0.1403	461.1	1.9718	0.1338	461.0	1.9675	0.1278	460.9	1.9633	70
75	0.1498	465.2	1.9878	0.1425	465.1	1.9833	0.1359	465.0	1.9790	0.1299	464.9	1.9749	75
80	0.1521	469.3	1.9993	0.1447	469.2	1.9948	0.1380	469.1	1.9905	0.1319	469.0	1.9864	80
85	0.1544	473.3	2.0108	0.1469	473.2	2.0063	0.1401	473.1	2.0020	0.1339	473.0	1.9979	85
90	0.1567	477.4	2.0221	0.1491	477.3	2.0176	0.1422	477.2	2.0134	0.1359	477.1	2.0093	90
95	0.1590	481.5	2.0334	0.1513	481.5	2.0289	0.1443	481.4	2.0247	0.1379	481.3	2.0206	95
100	0.1613	485.7	2.0446	0.1535	485.6	2.0401	0.1464	485.5	2.0359	0.1399	485.4	2.0318	100
105	0.1636	489.9	2.0558	0.1557	489.8	2.0513	0.1485	489.7	2.0470	0.1419	489.6	2.0430	105
110	0.1659	494.1	2.0668	0.1578	494.0	2.0624	0.1505	493.9	2.0581	0.1439	493.8	2.0541	110
115	0.1682	498.4	2.0779	0.1600	498.3	2.0734	0.1526	498.2	2.0692	0.1459	498.1	2.0651	115
120	0.1704	502.6	2.0888	0.1622	502.6	2.0844	0.1547	502.5	2.0801	0.1479	502.4	2.0761	120
125	0.1727	507.0	2.0997	0.1644	506.9	2.0953	0.1568	506.8	2.0911	0.1498	506.7	2.0870	125
130	0.1750	511.3	2.1106	0.1665	511.2	2.1061	0.1588	511.1	2.1019	0.1518	511.1	2.0978	130
135	0.1772	515.7	2.1213	0.1687	515.6	2.1169	0.1609	515.5	2.1127	0.1538	515.4	2.1086	135
140	0.1795	520.1	2.1321	0.1708	520.0	2.1276	0.1630	519.9	2.1234	0.1558	519.8	2.1194	140
145	—	—	—	0.1730	524.4	2.1383	0.1650	524.4	2.1341	0.1578	524.3	2.1300	145

**TABLE 2** (continued)  
**SUVA® MP39 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	240.0			250.0			260.0			270.0			TEMP. °C
	(-5.78°C)			(-4.68°C)			(-3.62°C)			(-2.59°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0924)	(404.2)	(1.7734)	(0.0889)	(404.8)	(1.7723)	(0.0856)	(405.3)	(1.7712)	(0.0826)	(405.9)	(1.7701)	
-5	0.0927	404.7	1.7754	—	—	—	—	—	—	—	—	—	-5
0	0.0947	408.2	1.7883	0.0907	408.0	1.7844	0.0870	407.9	1.7805	0.0835	407.7	1.7768	0
5	0.0967	411.7	1.8012	0.0926	411.6	1.7972	0.0889	411.4	1.7934	0.0854	411.3	1.7897	5
10	0.0987	415.3	1.8139	0.0946	415.2	1.8099	0.0907	415.0	1.8061	0.0872	414.9	1.8025	10
15	0.1007	418.9	1.8265	0.0965	418.8	1.8226	0.0926	418.6	1.8188	0.0890	418.5	1.8151	15
20	0.1027	422.5	1.8390	0.0984	422.4	1.8351	0.0944	422.3	1.8313	0.0908	422.1	1.8277	20
25	0.1047	426.2	1.8514	0.1003	426.1	1.8475	0.0963	425.9	1.8438	0.0926	425.8	1.8402	25
30	0.1067	429.9	1.8638	0.1022	429.8	1.8599	0.0981	429.7	1.8561	0.0943	429.5	1.8525	30
35	0.1087	433.7	1.8760	0.1042	433.5	1.8721	0.1000	433.4	1.8684	0.0961	433.3	1.8648	35
40	0.1106	437.4	1.8882	0.1060	437.3	1.8843	0.1018	437.2	1.8806	0.0979	437.1	1.8770	40
45	0.1126	441.3	1.9002	0.1079	441.1	1.8964	0.1036	441.0	1.8927	0.0996	440.9	1.8891	45
50	0.1146	445.1	1.9122	0.1098	445.0	1.9084	0.1054	444.9	1.9047	0.1014	444.7	1.9011	50
55	0.1165	449.0	1.9241	0.1117	448.9	1.9203	0.1073	448.7	1.9166	0.1031	448.6	1.9131	55
60	0.1185	452.9	1.9360	0.1136	452.8	1.9321	0.1091	452.7	1.9285	0.1049	452.5	1.9249	60
65	0.1204	456.8	1.9477	0.1155	456.7	1.9439	0.1109	456.6	1.9402	0.1066	456.5	1.9367	65
70	0.1224	460.8	1.9594	0.1173	460.7	1.9556	0.1127	460.6	1.9519	0.1084	460.5	1.9484	70
75	0.1243	464.8	1.9710	0.1192	464.7	1.9672	0.1145	464.6	1.9635	0.1101	464.5	1.9600	75
80	0.1262	468.9	1.9825	0.1210	468.8	1.9787	0.1163	468.7	1.9751	0.1118	468.5	1.9715	80
85	0.1282	472.9	1.9940	0.1229	472.8	1.9902	0.1180	472.7	1.9865	0.1136	472.6	1.9830	85
90	0.1301	477.0	2.0053	0.1248	476.9	2.0016	0.1198	476.8	1.9979	0.1153	476.7	1.9944	90
95	0.1320	481.2	2.0166	0.1266	481.1	2.0129	0.1216	481.0	2.0092	0.1170	480.9	2.0057	95
100	0.1339	485.3	2.0279	0.1285	485.2	2.0241	0.1234	485.1	2.0205	0.1187	485.1	2.0170	100
105	0.1358	489.5	2.0391	0.1303	489.4	2.0353	0.1252	489.3	2.0317	0.1204	489.3	2.0282	105
110	0.1378	493.8	2.0502	0.1321	493.7	2.0464	0.1269	493.6	2.0428	0.1221	493.5	2.0393	110
115	0.1397	498.0	2.0612	0.1340	497.9	2.0575	0.1287	497.8	2.0539	0.1238	497.8	2.0504	115
120	0.1416	502.3	2.0722	0.1358	502.2	2.0684	0.1305	502.1	2.0648	0.1256	502.1	2.0614	120
125	0.1435	506.6	2.0831	0.1376	506.5	2.0794	0.1323	506.5	2.0758	0.1273	506.4	2.0723	125
130	0.1454	511.0	2.0940	0.1395	510.9	2.0902	0.1340	510.8	2.0866	0.1290	510.7	2.0832	130
135	0.1473	515.4	2.1048	0.1413	515.3	2.1010	0.1358	515.2	2.0974	0.1307	515.1	2.0940	135
140	0.1492	519.8	2.1155	0.1431	519.7	2.1118	0.1375	519.6	2.1082	0.1324	519.5	2.1047	140
145	0.1511	524.2	2.1262	0.1450	524.1	2.1224	0.1393	524.0	2.1189	0.1341	524.0	2.1154	145
150	—	—	—	0.1468	528.6	2.1331	0.1411	528.5	2.1295	0.1357	528.4	2.1260	150

TEMP. °C	280.0			290.0			300.0			310.0			TEMP. °C
	(-1.59°C)			(-0.62°C)			(0.33°C)			(1.25°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0798)	(406.4)	(1.7691)	(0.0772)	(407.0)	(1.7681)	(0.0747)	(407.5)	(1.7672)	(0.0724)	(408.0)	(1.7663)	
0	0.0803	407.6	1.7732	0.0774	407.4	1.7697	—	—	—	—	—	—	0
5	0.0821	411.1	1.7861	0.0791	411.0	1.7827	0.0763	410.8	1.7793	0.0736	410.6	1.7761	5
10	0.0839	414.7	1.7989	0.0808	414.6	1.7955	0.0779	414.4	1.7921	0.0752	414.2	1.7889	10
15	0.0856	418.3	1.8116	0.0825	418.2	1.8082	0.0796	418.0	1.8048	0.0768	417.9	1.8016	15
20	0.0873	422.0	1.8242	0.0842	421.8	1.8208	0.0812	421.7	1.8175	0.0784	421.6	1.8142	20
25	0.0891	425.7	1.8367	0.0858	425.5	1.8333	0.0828	425.4	1.8300	0.0800	425.3	1.8268	25
30	0.0908	429.4	1.8490	0.0875	429.3	1.8457	0.0844	429.1	1.8424	0.0816	429.0	1.8392	30
35	0.0925	433.2	1.8613	0.0892	433.0	1.8580	0.0860	432.9	1.8547	0.0831	432.8	1.8515	35
40	0.0942	436.9	1.8735	0.0908	436.8	1.8702	0.0876	436.7	1.8669	0.0847	436.6	1.8638	40
45	0.0959	440.8	1.8856	0.0925	440.6	1.8823	0.0892	440.5	1.8791	0.0862	440.4	1.8759	45
50	0.0976	444.6	1.8977	0.0941	444.5	1.8943	0.0908	444.4	1.8911	0.0878	444.3	1.8880	50
55	0.0993	448.5	1.9096	0.0958	448.4	1.9063	0.0924	448.3	1.9031	0.0893	448.2	1.8999	55
60	0.1010	452.4	1.9215	0.0974	452.3	1.9182	0.0940	452.2	1.9150	0.0909	452.1	1.9118	60
65	0.1027	456.4	1.9333	0.0990	456.3	1.9300	0.0956	456.2	1.9268	0.0924	456.1	1.9236	65
70	0.1044	460.4	1.9450	0.1006	460.3	1.9417	0.0972	460.2	1.9385	0.0939	460.1	1.9354	70
75	0.1060	464.4	1.9566	0.1023	464.3	1.9533	0.0987	464.2	1.9501	0.0954	464.1	1.9470	75
80	0.1077	468.4	1.9681	0.1039	468.3	1.9649	0.1003	468.2	1.9617	0.0970	468.1	1.9586	80
85	0.1094	472.5	1.9796	0.1055	472.4	1.9763	0.1019	472.3	1.9732	0.0985	472.2	1.9701	85
90	0.1110	476.6	1.9910	0.1071	476.5	1.9878	0.1034	476.4	1.9846	0.1000	476.3	1.9815	90
95	0.1127	480.8	2.0024	0.1087	480.7	1.9991	0.1050	480.6	1.9959	0.1015	480.5	1.9929	95
100	0.1144	485.0	2.0136	0.1103	484.9	2.0104	0.1065	484.8	2.0072	0.1030	484.7	2.0042	100
105	0.1160	489.2	2.0248	0.1119	489.1	2.0216	0.1081	489.0	2.0184	0.1045	488.9	2.0154	105
110	0.1177	493.4	2.0360	0.1135	493.3	2.0327	0.1096	493.2	2.0296	0.1060	493.1	2.0265	110
115	0.1193	497.7	2.0470	0.1151	497.6	2.0438	0.1112	497.5	2.0406	0.1075	497.4	2.0376	115
120	0.1210	502.0	2.0580	0.1167	501.9	2.0548	0.1127	501.8	2.0517	0.1090	501.7	2.0486	120
125	0.1226	506.3	2.0690	0.1183	506.2	2.0657	0.1143	506.1	2.0626	0.1105	506.0	2.0596	125
130	0.1243	510.7	2.0798	0.1199	510.6	2.0766	0.1158	510.5	2.0735	0.1120	510.4	2.0705	130
135	0.1259	515.0	2.0906	0.1215	515.0	2.0874	0.1173	514.9	2.0843	0.1135	514.8	2.0813	135
140	0.1275	519.5	2.1014	0.1231	519.4	2.0982	0.1189	519.3	2.0951	0.1150	519.2	2.0920	140
145	0.1292	523.9	2.1121	0.1246	523.8	2.1089	0.1204	523.7	2.1058	0.1165	523.7	2.1027	145
150	0.1308	528.4	2.1227	0.1262	528.3	2.1195	0.1219	528.2	2.1164	0.1179	528.1	2.1134	150
155	—	—	—	—	—	—	0.1235	532.7	2.1270	0.1194	532.6	2.1240	155

**TABLE 2** (continued)  
**SUVA® MP39 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	320.0			330.0			340.0			350.0			TEMP. °C
	(2.15°C)			(3.03°C)			(3.89°C)			(4.73°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0702)	(408.4)	(1.7655)	(0.0682)	(408.9)	(1.7647)	(0.0663)	(409.4)	(1.7639)	(0.0645)	(409.8)	(1.7632)	
5	0.0711	410.5	1.7729	0.0688	410.3	1.7698	0.0666	410.2	1.7668	0.0645	410.0	1.7638	5
10	0.0727	414.1	1.7857	0.0703	413.9	1.7827	0.0681	413.8	1.7797	0.0660	413.6	1.7768	10
15	0.0743	417.7	1.7985	0.0718	417.6	1.7954	0.0696	417.4	1.7925	0.0674	417.3	1.7896	15
20	0.0758	421.4	1.8111	0.0733	421.3	1.8081	0.0710	421.1	1.8051	0.0689	421.0	1.8022	20
25	0.0773	425.1	1.8237	0.0748	425.0	1.8206	0.0725	424.8	1.8177	0.0703	424.7	1.8148	25
30	0.0789	428.9	1.8361	0.0763	428.7	1.8331	0.0739	428.6	1.8302	0.0717	428.4	1.8273	30
35	0.0804	432.6	1.8484	0.0778	432.5	1.8454	0.0754	432.4	1.8425	0.0731	432.2	1.8397	35
40	0.0819	436.4	1.8607	0.0793	436.3	1.8577	0.0768	436.2	1.8548	0.0745	436.0	1.8520	40
45	0.0834	440.3	1.8729	0.0807	440.1	1.8699	0.0782	440.0	1.8670	0.0759	439.9	1.8642	45
50	0.0849	444.1	1.8849	0.0822	444.0	1.8820	0.0797	443.9	1.8791	0.0773	443.8	1.8763	50
55	0.0864	448.0	1.8969	0.0837	447.9	1.8940	0.0811	447.8	1.8911	0.0787	447.7	1.8883	55
60	0.0879	452.0	1.9088	0.0851	451.9	1.9059	0.0825	451.7	1.9030	0.0800	451.6	1.9002	60
65	0.0894	455.9	1.9206	0.0866	455.8	1.9177	0.0839	455.7	1.9148	0.0814	455.6	1.9121	65
70	0.0909	459.9	1.9324	0.0880	459.8	1.9294	0.0853	459.7	1.9266	0.0828	459.6	1.9238	70
75	0.0923	464.0	1.9440	0.0894	463.9	1.9411	0.0867	463.8	1.9383	0.0841	463.7	1.9355	75
80	0.0938	468.0	1.9556	0.0909	467.9	1.9527	0.0881	467.8	1.9499	0.0855	467.7	1.9471	80
85	0.0953	472.1	1.9671	0.0923	472.0	1.9642	0.0895	471.9	1.9614	0.0868	471.8	1.9586	85
90	0.0968	476.2	1.9785	0.0937	476.2	1.9757	0.0909	476.1	1.9728	0.0882	476.0	1.9701	90
95	0.0982	480.4	1.9899	0.0952	480.3	1.9870	0.0923	480.2	1.9842	0.0895	480.1	1.9815	95
100	0.0997	484.6	2.0012	0.0966	484.5	1.9983	0.0937	484.4	1.9955	0.0909	484.3	1.9928	100
105	0.1012	488.8	2.0124	0.0980	488.7	2.0095	0.0950	488.6	2.0067	0.0922	488.5	2.0040	105
110	0.1026	493.0	2.0236	0.0994	493.0	2.0207	0.0964	492.9	2.0179	0.0936	492.8	2.0152	110
115	0.1041	497.3	2.0347	0.1008	497.2	2.0318	0.0978	497.1	2.0290	0.0949	497.1	2.0263	115
120	0.1055	501.6	2.0457	0.1022	501.5	2.0428	0.0992	501.5	2.0400	0.0962	501.4	2.0373	120
125	0.1070	506.0	2.0566	0.1036	505.9	2.0538	0.1005	505.8	2.0510	0.0976	505.7	2.0483	125
130	0.1084	510.3	2.0675	0.1051	510.2	2.0647	0.1019	510.2	2.0619	0.0989	510.1	2.0592	130
135	0.1099	514.7	2.0783	0.1065	514.6	2.0755	0.1033	514.6	2.0727	0.1002	514.5	2.0700	135
140	0.1113	519.1	2.0891	0.1079	519.1	2.0863	0.1046	519.0	2.0835	0.1016	518.9	2.0808	140
145	0.1127	523.6	2.0998	0.1093	523.5	2.0970	0.1060	523.4	2.0942	0.1029	523.4	2.0915	145
150	0.1142	528.1	2.1105	0.1107	528.0	2.1076	0.1073	527.9	2.1049	0.1042	527.8	2.1022	150
155	0.1156	532.6	2.1211	0.1121	532.5	2.1182	0.1087	532.4	2.1155	0.1055	532.4	2.1128	155

TEMP. °C	360.0			370.0			380.0			390.0			TEMP. °C
	(5.56°C)			(6.37°C)			(7.16°C)			(7.93°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0628)	(410.2)	(1.7624)	(0.0611)	(410.7)	(1.7617)	(0.0596)	(411.1)	(1.7611)	(0.0581)	(411.5)	(1.7604)	
10	0.0640	413.5	1.7739	0.0621	413.3	1.7711	0.0603	413.2	1.7684	0.0587	413.0	1.7658	10
15	0.0654	417.1	1.7867	0.0635	417.0	1.7840	0.0617	416.8	1.7813	0.0600	416.7	1.7786	15
20	0.0668	420.8	1.7994	0.0649	420.7	1.7967	0.0630	420.5	1.7940	0.0613	420.4	1.7914	20
25	0.0682	424.6	1.8120	0.0662	424.4	1.8093	0.0643	424.3	1.8066	0.0626	424.1	1.8040	25
30	0.0696	428.3	1.8245	0.0676	428.2	1.8218	0.0657	428.0	1.8192	0.0638	427.9	1.8166	30
35	0.0709	432.1	1.8369	0.0689	432.0	1.8342	0.0670	431.8	1.8316	0.0651	431.7	1.8290	35
40	0.0723	435.9	1.8492	0.0702	435.8	1.8465	0.0683	435.7	1.8439	0.0664	435.5	1.8413	40
45	0.0737	439.8	1.8614	0.0716	439.6	1.8588	0.0696	439.5	1.8561	0.0677	439.4	1.8536	45
50	0.0750	443.7	1.8735	0.0729	443.5	1.8709	0.0708	443.4	1.8683	0.0689	443.3	1.8657	50
55	0.0764	447.6	1.8856	0.0742	447.5	1.8829	0.0721	447.3	1.8803	0.0702	447.2	1.8778	55
60	0.0777	451.5	1.8975	0.0755	451.4	1.8949	0.0734	451.3	1.8923	0.0714	451.2	1.8898	60
65	0.0790	455.5	1.9094	0.0768	455.4	1.9067	0.0747	455.3	1.9042	0.0727	455.2	1.9016	65
70	0.0804	459.5	1.9211	0.0781	459.4	1.9185	0.0759	459.3	1.9159	0.0739	459.2	1.9134	70
75	0.0817	463.5	1.9328	0.0794	463.4	1.9302	0.0772	463.3	1.9277	0.0751	463.2	1.9252	75
80	0.0830	467.6	1.9444	0.0807	467.5	1.9418	0.0785	467.4	1.9393	0.0764	467.3	1.9368	80
85	0.0843	471.7	1.9560	0.0820	471.6	1.9534	0.0797	471.5	1.9508	0.0776	471.4	1.9483	85
90	0.0857	475.9	1.9674	0.0833	475.8	1.9648	0.0810	475.7	1.9623	0.0788	475.6	1.9558	90
95	0.0870	480.0	1.9788	0.0845	479.9	1.9762	0.0822	479.8	1.9737	0.0800	479.7	1.9712	95
100	0.0883	484.2	1.9901	0.0858	484.1	1.9876	0.0835	484.0	1.9850	0.0813	483.9	1.9826	100
105	0.0896	488.4	2.0014	0.0871	488.3	1.9988	0.0847	488.3	1.9963	0.0825	488.2	1.9938	105
110	0.0909	492.7	2.0126	0.0884	492.6	2.0100	0.0860	492.5	2.0075	0.0837	492.4	2.0050	110
115	0.0922	497.0	2.0237	0.0896	496.9	2.0211	0.0872	496.8	2.0186	0.0849	496.7	2.0161	115
120	0.0935	501.3	2.0347	0.0909	501.2	2.0321	0.0884	501.1	2.0296	0.0861	501.0	2.0272	120
125	0.0948	505.6	2.0457	0.0922	505.5	2.0431	0.0897	505.5	2.0406	0.0873	505.4	2.0382	125
130	0.0961	510.0	2.0566	0.0934	509.9	2.0540	0.0909	509.8	2.0515	0.0885	509.8	2.0491	130
135	0.0974	514.4	2.0674	0.0947	514.3	2.0649	0.0921	514.2	2.0624	0.0897	514.2	2.0600	135
140	0.0987	518.8	2.0782	0.0959	518.7	2.0757	0.0934	518.7	2.0732	0.0909	518.6	2.0708	140
145	0.1000	523.3	2.0889	0.0972	523.2	2.0864	0.0946	523.1	2.0839	0.0921	523.1	2.0815	145
150	0.1012	527.8	2.0996	0.0984	527.7	2.0971	0.0958	527.6	2.0946	0.0933	527.5	2.0922	150
155	0.1025	532.3	2.1102	0.0997	532.2	2.1077	0.0970	532.1	2.1052	0.0945	532.1	2.1028	155
160	0.1038	536.8	2.1208	0.1009	536.8	2.1182	0.0982	536.7	2.1158	0.0957	536.6	2.1134	160

**TABLE 2 (continued)**  
**SUVA® MP39 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
TEMP. °C	400.0			425.0			450.0			475.0			
	(8.69°C)			(10.53°C)			(12.29°C)			(13.97°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0567)	(411.9)	(1.7598)	(0.0535)	(412.8)	(1.7582)	(0.0506)	(413.7)	(1.7568)	(0.0480)	(414.6)	(1.7555)		
10	0.0570	412.8	1.7631	—	—	—	—	—	—	—	—	—	10
15	0.0583	416.5	1.7760	0.0546	416.1	1.7698	0.0512	415.7	1.7639	0.0482	415.3	1.7582	15
20	0.0596	420.2	1.7888	0.0558	419.9	1.7826	0.0524	419.5	1.7767	0.0494	419.1	1.7711	20
25	0.0609	424.0	1.8015	0.0570	423.6	1.7953	0.0535	423.3	1.7895	0.0505	422.9	1.7839	25
30	0.0621	427.8	1.8140	0.0582	427.4	1.8079	0.0547	427.1	1.8021	0.0515	426.7	1.7966	30
35	0.0634	431.6	1.8265	0.0594	431.2	1.8204	0.0558	430.9	1.8146	0.0526	430.5	1.8091	35
40	0.0646	435.4	1.8388	0.0606	435.1	1.8328	0.0569	434.7	1.8270	0.0537	434.4	1.8216	40
45	0.0659	439.3	1.8511	0.0617	438.9	1.8451	0.0581	438.6	1.8394	0.0548	438.3	1.8339	45
50	0.0671	443.2	1.8632	0.0629	442.9	1.8573	0.0592	442.5	1.8516	0.0558	442.2	1.8462	50
55	0.0683	447.1	1.8753	0.0641	446.8	1.8694	0.0603	446.5	1.8637	0.0569	446.2	1.8583	55
60	0.0695	451.1	1.8873	0.0652	450.8	1.8814	0.0614	450.5	1.8757	0.0579	450.2	1.8704	60
65	0.0708	455.0	1.8992	0.0664	454.8	1.8933	0.0625	454.5	1.8877	0.0590	454.2	1.8823	65
70	0.0720	459.1	1.9110	0.0675	458.8	1.9051	0.0636	458.5	1.8995	0.0600	458.2	1.8942	70
75	0.0732	463.1	1.9227	0.0687	462.8	1.9169	0.0646	462.6	1.9113	0.0611	462.3	1.9060	75
80	0.0744	467.2	1.9344	0.0698	466.9	1.9285	0.0657	466.7	1.9230	0.0621	466.4	1.9177	80
85	0.0756	471.3	1.9459	0.0709	471.1	1.9401	0.0668	470.8	1.9346	0.0631	470.5	1.9293	85
90	0.0768	475.5	1.9574	0.0721	475.2	1.9516	0.0679	475.0	1.9461	0.0641	474.7	1.9409	90
95	0.0780	479.6	1.9688	0.0732	479.4	1.9630	0.0690	479.1	1.9576	0.0652	478.9	1.9523	95
100	0.0792	483.8	1.9802	0.0743	483.6	1.9744	0.0700	483.4	1.9689	0.0662	483.1	1.9637	100
105	0.0803	488.1	1.9914	0.0754	487.8	1.9857	0.0711	487.6	1.9802	0.0672	487.4	1.9750	105
110	0.0815	492.3	2.0026	0.0766	492.1	1.9969	0.0721	491.9	1.9914	0.0682	491.6	1.9863	110
115	0.0827	496.6	2.0138	0.0777	496.4	2.0080	0.0732	496.2	2.0026	0.0692	496.0	1.9974	115
120	0.0839	500.9	2.0248	0.0788	500.7	2.0191	0.0743	500.5	2.0137	0.0702	500.3	2.0085	120
125	0.0851	505.3	2.0358	0.0799	505.1	2.0301	0.0753	504.9	2.0247	0.0712	504.7	2.0196	125
130	0.0862	509.7	2.0467	0.0810	509.5	2.0410	0.0764	509.3	2.0357	0.0722	509.0	2.0305	130
135	0.0874	514.1	2.0576	0.0821	513.9	2.0519	0.0774	513.7	2.0465	0.0732	513.5	2.0414	135
140	0.0886	518.5	2.0684	0.0832	518.3	2.0627	0.0785	518.1	2.0574	0.0742	517.9	2.0523	140
145	0.0897	523.0	2.0791	0.0843	522.8	2.0735	0.0795	522.6	2.0681	0.0752	522.4	2.0630	145
150	0.0909	527.5	2.0898	0.0854	527.3	2.0842	0.0805	527.1	2.0788	0.0762	526.9	2.0738	150
155	0.0921	532.0	2.1004	0.0865	531.8	2.0948	0.0816	531.6	2.0895	0.0772	531.4	2.0844	155
160	0.0932	536.5	2.1110	0.0876	536.4	2.1054	0.0826	536.2	2.1000	0.0782	536.0	2.0950	160
165	—	—	—	0.0887	540.9	2.1159	0.0837	540.8	2.1106	0.0791	540.6	2.1055	165

ABSOLUTE PRESSURE, kPa													TEMP. °C
TEMP. °C	500.0			525.0			550.0			575.0			
	(15.59°C)			(17.15°C)			(18.65°C)			(20.1°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0457)	(415.4)	(1.7542)	(0.0436)	(416.2)	(1.7531)	(0.0416)	(416.9)	(1.7519)	(0.0398)	(417.6)	(1.7509)		
20	0.0466	418.7	1.7657	0.0441	418.3	1.7605	0.0419	417.9	1.7555	—	—	—	20
25	0.0477	422.5	1.7785	0.0452	422.1	1.7734	0.0429	421.8	1.7684	0.0408	421.4	1.7636	25
30	0.0487	426.3	1.7912	0.0462	426.0	1.7861	0.0438	425.6	1.7812	0.0417	425.2	1.7765	30
35	0.0498	430.2	1.8038	0.0472	429.8	1.7988	0.0448	429.5	1.7939	0.0426	429.1	1.7892	35
40	0.0508	434.1	1.8163	0.0481	433.7	1.8113	0.0457	433.4	1.8065	0.0436	433.0	1.8018	40
45	0.0518	438.0	1.8287	0.0491	437.6	1.8237	0.0467	437.3	1.8189	0.0445	437.0	1.8143	45
50	0.0528	441.9	1.8410	0.0501	441.6	1.8360	0.0476	441.3	1.8313	0.0454	441.0	1.8267	50
55	0.0538	445.9	1.8532	0.0511	445.6	1.8482	0.0486	445.3	1.8435	0.0463	444.9	1.8389	55
60	0.0548	449.9	1.8653	0.0520	449.6	1.8603	0.0495	449.3	1.8556	0.0472	449.0	1.8511	60
65	0.0558	453.9	1.8772	0.0530	453.6	1.8724	0.0504	453.3	1.8677	0.0480	453.0	1.8632	65
70	0.0568	458.0	1.8891	0.0539	457.7	1.8843	0.0513	457.4	1.8796	0.0489	457.1	1.8751	70
75	0.0578	462.0	1.9010	0.0549	461.8	1.8961	0.0522	461.5	1.8915	0.0498	461.2	1.8870	75
80	0.0588	466.1	1.9127	0.0558	465.9	1.9079	0.0531	465.6	1.9032	0.0507	465.3	1.8988	80
85	0.0598	470.3	1.9243	0.0568	470.0	1.9195	0.0540	469.8	1.9149	0.0516	469.5	1.9105	85
90	0.0608	474.5	1.9359	0.0577	474.2	1.9311	0.0549	473.9	1.9265	0.0524	473.7	1.9221	90
95	0.0617	478.7	1.9474	0.0587	478.4	1.9426	0.0558	478.2	1.9380	0.0533	477.9	1.9337	95
100	0.0627	482.9	1.9588	0.0596	482.6	1.9540	0.0567	482.4	1.9495	0.0541	482.2	1.9451	100
105	0.0637	487.1	1.9701	0.0605	486.9	1.9654	0.0576	486.7	1.9608	0.0550	486.4	1.9565	105
110	0.0646	491.4	1.9813	0.0614	491.2	1.9766	0.0585	491.0	1.9721	0.0558	490.7	1.9678	110
115	0.0656	495.7	1.9925	0.0623	495.5	1.9878	0.0594	495.3	1.9833	0.0567	495.1	1.9790	115
120	0.0666	500.1	2.0036	0.0633	499.9	1.9990	0.0603	499.6	1.9945	0.0575	499.4	1.9902	120
125	0.0675	504.4	2.0147	0.0642	504.2	2.0100	0.0611	504.0	2.0056	0.0584	503.8	2.0013	125
130	0.0685	508.8	2.0257	0.0651	508.6	2.0210	0.0620	508.4	2.0166	0.0592	508.2	2.0123	130
135	0.0694	513.3	2.0366	0.0660	513.1	2.0319	0.0629	512.9	2.0275	0.0600	512.7	2.0232	135
140	0.0704	517.7	2.0474	0.0669	517.5	2.0428	0.0638	517.3	2.0384	0.0609	517.1	2.0341	140
145	0.0713	522.2	2.0582	0.0678	522.0	2.0536	0.0646	521.8	2.0492	0.0617	521.6	2.0449	145
150	0.0723	526.7	2.0689	0.0687	526.5	2.0643	0.0655	526.3	2.0599	0.0625	526.1	2.0557	150
155	0.0732	531.2	2.0796	0.0696	531.1	2.0750	0.0664	530.9	2.0706	0.0634	530.7	2.0664	155
160	0.0741	535.8	2.0902	0.0705	535.6	2.0856	0.0672	535.4	2.0812	0.0642	535.3	2.0770	160
165	0.0751	540.4	2.1007	0.0714	540.2	2.0961	0.0681	540.0	2.0917	0.0650	539.9	2.0875	165
170	0.0760	545.0	2.1112	0.0723	544.8	2.1066	0.0689	544.7	2.1022	0.0658	544.5	2.0981	170
175	—	—	—	—	—	—	—	—	—	0.0667	549.2	2.1085	175



**TABLE 2** (continued)  
**SUVA® MP39 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	600.0			625.0			650.0			675.0			TEMP. °C
	(21.5°C)			(22.86°C)			(24.18°C)			(25.46°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0382)	(418.3)	(1.7499)	(0.0367)	(418.9)	(1.7489)	(0.0353)	(419.6)	(1.7480)	(0.0340)	(420.2)	(1.7471)	
25	0.0388	421.0	1.7590	0.0371	420.6	1.7545	0.0354	420.2	1.7501	—	—	—	25
30	0.0398	424.9	1.7719	0.0380	424.5	1.7674	0.0363	424.1	1.7631	0.0348	423.7	1.7589	30
35	0.0406	428.8	1.7847	0.0388	428.4	1.7802	0.0371	428.0	1.7760	0.0356	427.7	1.7718	35
40	0.0415	432.7	1.7973	0.0397	432.3	1.7929	0.0380	432.0	1.7887	0.0364	431.6	1.7846	40
45	0.0424	436.6	1.8098	0.0405	436.3	1.8055	0.0388	436.0	1.8013	0.0372	435.6	1.7972	45
50	0.0433	440.6	1.8222	0.0414	440.3	1.8179	0.0396	440.0	1.8138	0.0380	439.6	1.8098	50
55	0.0442	444.6	1.8345	0.0422	444.3	1.8303	0.0404	444.0	1.8262	0.0388	443.7	1.8222	55
60	0.0450	448.7	1.8467	0.0431	448.4	1.8425	0.0412	448.1	1.8384	0.0396	447.7	1.8345	60
65	0.0459	452.7	1.8588	0.0439	452.4	1.8546	0.0421	452.1	1.8506	0.0403	451.8	1.8466	65
70	0.0467	456.8	1.8708	0.0447	456.5	1.8667	0.0428	456.2	1.8626	0.0411	455.9	1.8587	70
75	0.0476	460.9	1.8827	0.0455	460.6	1.8786	0.0436	460.4	1.8746	0.0419	460.1	1.8707	75
80	0.0484	465.1	1.8945	0.0463	464.8	1.8904	0.0444	464.5	1.8864	0.0426	464.2	1.8826	80
85	0.0493	469.2	1.9063	0.0472	469.0	1.9022	0.0452	468.7	1.8982	0.0434	468.4	1.8944	85
90	0.0501	473.4	1.9179	0.0480	473.2	1.9138	0.0460	472.9	1.9099	0.0442	472.7	1.9061	90
95	0.0509	477.7	1.9295	0.0488	477.4	1.9254	0.0468	477.2	1.9215	0.0449	476.9	1.9177	95
100	0.0517	481.9	1.9409	0.0496	481.7	1.9369	0.0475	481.4	1.9330	0.0457	481.2	1.9292	100
105	0.0526	486.2	1.9523	0.0503	486.0	1.9483	0.0483	485.7	1.9444	0.0464	485.5	1.9406	105
110	0.0534	490.5	1.9636	0.0511	490.3	1.9596	0.0491	490.0	1.9557	0.0471	489.8	1.9520	110
115	0.0542	494.8	1.9749	0.0519	494.6	1.9709	0.0498	494.4	1.9670	0.0479	494.2	1.9633	115
120	0.0550	499.2	1.9860	0.0527	499.0	1.9821	0.0506	498.8	1.9782	0.0486	498.5	1.9745	120
125	0.0558	503.6	1.9971	0.0535	503.4	1.9932	0.0513	503.2	1.9893	0.0493	502.9	1.9856	125
130	0.0566	508.0	2.0082	0.0543	507.8	2.0042	0.0521	507.6	2.0004	0.0501	507.4	1.9967	130
135	0.0574	512.5	2.0191	0.0550	512.2	2.0152	0.0528	512.0	2.0114	0.0508	511.8	2.0077	135
140	0.0582	516.9	2.0300	0.0558	516.7	2.0261	0.0536	516.5	2.0223	0.0515	516.3	2.0186	140
145	0.0590	521.4	2.0408	0.0566	521.2	2.0369	0.0543	521.0	2.0331	0.0522	520.8	2.0295	145
150	0.0598	525.9	2.0516	0.0574	525.8	2.0477	0.0551	525.6	2.0439	0.0529	525.4	2.0403	150
155	0.0606	530.5	2.0623	0.0581	530.3	2.0584	0.0558	530.1	2.0546	0.0537	529.9	2.0510	155
160	0.0614	535.1	2.0729	0.0589	534.9	2.0690	0.0565	534.7	2.0653	0.0544	534.5	2.0617	160
165	0.0622	539.7	2.0835	0.0597	539.5	2.0796	0.0573	539.3	2.0759	0.0551	539.1	2.0723	165
170	0.0630	544.3	2.0940	0.0604	544.1	2.0901	0.0580	544.0	2.0864	0.0558	543.8	2.0828	170
175	0.0638	549.0	2.1045	0.0612	548.8	2.1006	0.0587	548.6	2.0969	0.0565	548.5	2.0933	175
180	—	—	—	—	—	—	—	—	—	0.0572	553.2	2.1037	180

TEMP. °C	700.0			725.0			750.0			800.0			TEMP. °C
	(26.7°C)			(27.91°C)			(29.09°C)			(31.37°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0328)	(420.7)	(1.7462)	(0.0317)	(421.3)	(1.7454)	(0.0306)	(421.8)	(1.7446)	(0.0287)	(422.8)	(1.743)	
30	0.0333	423.3	1.7548	0.0320	422.9	1.7508	0.0307	422.5	1.7470	—	—	—	30
35	0.0341	427.3	1.7678	0.0328	426.9	1.7639	0.0315	426.5	1.7600	0.0292	425.8	1.7526	35
40	0.0349	431.3	1.7806	0.0335	430.9	1.7767	0.0323	430.5	1.7729	0.0299	429.8	1.7656	40
45	0.0357	435.3	1.7933	0.0343	434.9	1.7894	0.0330	434.6	1.7857	0.0306	433.9	1.7784	45
50	0.0365	439.3	1.8058	0.0351	439.0	1.8020	0.0337	438.6	1.7983	0.0313	437.9	1.7912	50
55	0.0372	443.4	1.8183	0.0358	443.0	1.8145	0.0345	442.7	1.8108	0.0320	442.0	1.8037	55
60	0.0380	447.4	1.8306	0.0366	447.1	1.8269	0.0352	446.8	1.8232	0.0327	446.2	1.8162	60
65	0.0388	451.5	1.8428	0.0373	451.2	1.8391	0.0359	450.9	1.8355	0.0334	450.3	1.8285	65
70	0.0395	455.6	1.8549	0.0380	455.4	1.8512	0.0366	455.1	1.8477	0.0341	454.5	1.8408	70
75	0.0403	459.8	1.8669	0.0387	459.5	1.8633	0.0373	459.2	1.8597	0.0348	458.6	1.8529	75
80	0.0410	464.0	1.8788	0.0395	463.7	1.8752	0.0380	463.4	1.8717	0.0354	462.9	1.8649	80
85	0.0417	468.2	1.8906	0.0402	467.9	1.8870	0.0387	467.6	1.8835	0.0361	467.1	1.8768	85
90	0.0425	472.4	1.9024	0.0409	472.1	1.8988	0.0394	471.9	1.8953	0.0367	471.3	1.8886	90
95	0.0432	476.7	1.9140	0.0416	476.4	1.9104	0.0401	476.1	1.9069	0.0374	475.6	1.9003	95
100	0.0439	480.9	1.9255	0.0423	480.7	1.9220	0.0408	480.4	1.9185	0.0380	479.9	1.9119	100
105	0.0446	485.2	1.9370	0.0430	485.0	1.9335	0.0415	484.8	1.9300	0.0387	484.3	1.9234	105
110	0.0453	489.6	1.9484	0.0437	489.3	1.9449	0.0421	489.1	1.9414	0.0393	488.6	1.9349	110
115	0.0461	493.9	1.9597	0.0444	493.7	1.9562	0.0428	493.5	1.9528	0.0399	493.0	1.9463	115
120	0.0468	498.3	1.9709	0.0451	498.1	1.9674	0.0435	497.9	1.9640	0.0406	497.4	1.9575	120
125	0.0475	502.7	1.9821	0.0457	502.5	1.9786	0.0441	502.3	1.9752	0.0412	501.8	1.9688	125
130	0.0482	507.2	1.9931	0.0464	506.9	1.9897	0.0448	506.7	1.9863	0.0418	506.3	1.9799	130
135	0.0489	511.6	2.0041	0.0471	511.4	2.0007	0.0455	511.2	1.9973	0.0425	510.8	1.9909	135
140	0.0496	516.1	2.0151	0.0478	515.9	2.0116	0.0461	515.7	2.0083	0.0431	515.3	2.0019	140
145	0.0503	520.6	2.0259	0.0485	520.4	2.0225	0.0468	520.2	2.0192	0.0437	519.8	2.0128	145
150	0.0510	525.2	2.0367	0.0491	525.0	2.0333	0.0474	524.8	2.0300	0.0443	524.4	2.0237	150
155	0.0517	529.8	2.0475	0.0498	529.6	2.0441	0.0481	529.4	2.0408	0.0449	529.0	2.0345	155
160	0.0524	534.3	2.0582	0.0505	534.2	2.0548	0.0487	534.0	2.0515	0.0455	533.6	2.0452	160
165	0.0530	539.0	2.0688	0.0511	538.8	2.0654	0.0494	538.6	2.0621	0.0462	538.2	2.0558	165
170	0.0537	543.6	2.0793	0.0518	543.4	2.0759	0.0500	543.3	2.0727	0.0468	542.9	2.0664	170
175	0.0544	548.3	2.0898	0.0525	548.1	2.0864	0.0507	547.9	2.0832	0.0474	547.6	2.0769	175
180	0.0551	553.0	2.1002	0.0531	552.8	2.0969	0.0513	552.7	2.0936	0.0480	552.3	2.0874	180
185	—	—	—	—	—	—	—	—	—	0.0486	557.1	2.0978	185

**TABLE 2** (continued)  
**SUVA® MP39 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
TEMP. °C	850.0			900.0			950.0			1000.0			
	(33.53°C)			(35.61°C)			(37.59°C)			(39.5°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0270)	(423.8)	(1.7416)	(0.0254)	(424.7)	(1.7402)	(0.0241)	(425.5)	(1.7388)	(0.0228)	(426.3)	(1.7376)		
35	0.0272	425.0	1.7454	—	—	—	—	—	—	—	—	—	35
40	0.0279	429.0	1.7586	0.0260	428.3	1.7518	0.0244	427.5	1.7452	0.0229	426.7	1.7389	40
45	0.0286	433.1	1.7715	0.0267	432.4	1.7648	0.0250	431.6	1.7584	0.0235	430.9	1.7522	45
50	0.0292	437.2	1.7843	0.0273	436.5	1.7777	0.0256	435.8	1.7714	0.0241	435.1	1.7653	50
55	0.0299	441.4	1.7970	0.0280	440.7	1.7905	0.0263	440.0	1.7842	0.0247	439.3	1.7782	55
60	0.0306	445.5	1.8095	0.0286	444.8	1.8031	0.0269	444.2	1.7969	0.0253	443.5	1.7910	60
65	0.0312	449.7	1.8219	0.0292	449.0	1.8156	0.0275	448.4	1.8095	0.0259	447.7	1.8036	65
70	0.0318	453.9	1.8342	0.0299	453.2	1.8279	0.0281	452.6	1.8219	0.0265	452.0	1.8161	70
75	0.0325	458.1	1.8464	0.0305	457.5	1.8401	0.0287	456.9	1.8342	0.0270	456.3	1.8284	75
80	0.0331	462.3	1.8584	0.0311	461.7	1.8522	0.0292	461.1	1.8463	0.0276	460.5	1.8407	80
85	0.0337	466.5	1.8704	0.0317	466.0	1.8643	0.0298	465.4	1.8584	0.0281	464.8	1.8528	85
90	0.0344	470.8	1.8822	0.0323	470.3	1.8761	0.0304	469.7	1.8703	0.0287	469.2	1.8648	90
95	0.0350	475.1	1.8940	0.0329	474.6	1.8879	0.0310	474.1	1.8822	0.0292	473.5	1.8766	95
100	0.0356	479.4	1.9056	0.0335	478.9	1.8996	0.0315	478.4	1.8939	0.0298	477.9	1.8884	100
105	0.0362	483.8	1.9172	0.0340	483.3	1.9113	0.0321	482.8	1.9056	0.0303	482.3	1.9001	105
110	0.0368	488.1	1.9287	0.0346	487.7	1.9228	0.0326	487.2	1.9171	0.0309	486.7	1.9117	110
115	0.0374	492.5	1.9401	0.0352	492.1	1.9342	0.0332	491.6	1.9286	0.0314	491.1	1.9232	115
120	0.0380	497.0	1.9514	0.0358	496.5	1.9456	0.0337	496.1	1.9400	0.0319	495.6	1.9346	120
125	0.0386	501.4	1.9626	0.0363	501.0	1.9568	0.0343	500.5	1.9513	0.0324	500.1	1.9460	125
130	0.0392	505.9	1.9738	0.0369	505.4	1.9680	0.0348	505.0	1.9625	0.0329	504.6	1.9572	130
135	0.0398	510.4	1.9849	0.0375	510.0	1.9791	0.0354	509.5	1.9736	0.0335	509.1	1.9684	135
140	0.0404	514.9	1.9959	0.0380	514.5	1.9902	0.0359	514.1	1.9847	0.0340	513.7	1.9795	140
145	0.0410	519.4	2.0068	0.0386	519.0	2.0011	0.0364	518.6	1.9957	0.0345	518.2	1.9905	145
150	0.0416	524.0	2.0177	0.0391	523.6	2.0120	0.0370	523.2	2.0066	0.0350	522.8	2.0014	150
155	0.0422	528.6	2.0285	0.0397	528.2	2.0228	0.0375	527.8	2.0174	0.0355	527.5	2.0123	155
160	0.0427	533.2	2.0392	0.0402	532.9	2.0336	0.0380	532.5	2.0282	0.0360	532.1	2.0231	160
165	0.0433	537.9	2.0499	0.0408	537.5	2.0443	0.0385	537.2	2.0389	0.0365	536.8	2.0338	165
170	0.0439	542.6	2.0605	0.0413	542.2	2.0549	0.0391	541.8	2.0496	0.0370	541.5	2.0445	170
175	0.0445	547.3	2.0711	0.0419	546.9	2.0655	0.0396	546.6	2.0601	0.0375	546.2	2.0551	175
180	0.0450	552.0	2.0815	0.0424	551.6	2.0760	0.0401	551.3	2.0707	0.0380	551.0	2.0656	180
185	0.0456	556.7	2.0920	0.0430	556.4	2.0864	0.0406	556.1	2.0811	0.0385	555.7	2.0761	185
190	—	—	—	0.0435	561.2	2.0968	0.0411	560.8	2.0915	0.0390	560.5	2.0865	190

TEMP. °C	1100.0			1200.0			1300.0			1400.0			TEMP. °C
	(43.12°C)			(46.49°C)			(49.66°C)			(52.64°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0207)	(427.7)	(1.7351)	(0.0189)	(428.9)	(1.7328)	(0.0173)	(430.0)	(1.7306)	(0.0160)	(431.0)	(1.7285)	
45	0.0209	429.3	1.7402	—	—	—	—	—	—	—	—	—	45
50	0.0215	433.5	1.7535	0.0193	432.0	1.7423	0.0174	430.3	1.7316	—	—	—	50
55	0.0220	437.8	1.7667	0.0198	436.3	1.7557	0.0179	434.7	1.7452	0.0162	433.1	1.7350	55
60	0.0226	442.1	1.7796	0.0203	440.7	1.7689	0.0184	439.2	1.7586	0.0167	437.6	1.7486	60
65	0.0231	446.4	1.7924	0.0208	445.0	1.7818	0.0189	443.6	1.7718	0.0172	442.1	1.7621	65
70	0.0237	450.7	1.8050	0.0214	449.4	1.7946	0.0194	448.0	1.7847	0.0177	446.6	1.7752	70
75	0.0242	455.0	1.8175	0.0219	453.7	1.8073	0.0199	452.4	1.7975	0.0181	451.1	1.7882	75
80	0.0247	459.3	1.8299	0.0224	458.1	1.8198	0.0203	456.9	1.8102	0.0186	455.6	1.8010	80
85	0.0253	463.7	1.8421	0.0228	462.5	1.8321	0.0208	461.3	1.8226	0.0190	460.1	1.8136	85
90	0.0258	468.1	1.8542	0.0233	466.9	1.8443	0.0213	465.8	1.8350	0.0195	464.6	1.8261	90
95	0.0263	472.4	1.8662	0.0238	471.3	1.8564	0.0217	470.2	1.8472	0.0199	469.1	1.8384	95
100	0.0268	476.8	1.8781	0.0243	475.8	1.8684	0.0221	474.7	1.8593	0.0203	473.6	1.8506	100
105	0.0273	481.3	1.8898	0.0247	480.2	1.8802	0.0226	479.2	1.8712	0.0207	478.1	1.8627	105
110	0.0278	485.7	1.9015	0.0252	484.7	1.8920	0.0230	483.7	1.8831	0.0212	482.7	1.8746	110
115	0.0283	490.2	1.9131	0.0257	489.2	1.9037	0.0235	488.2	1.8948	0.0216	487.2	1.8864	115
120	0.0287	494.7	1.9246	0.0261	493.7	1.9152	0.0239	492.8	1.9064	0.0220	491.8	1.8981	120
125	0.0292	499.2	1.9360	0.0266	498.3	1.9267	0.0243	497.3	1.9180	0.0224	496.4	1.9097	125
130	0.0297	503.7	1.9473	0.0270	502.8	1.9380	0.0247	501.9	1.9294	0.0228	501.0	1.9213	130
135	0.0302	508.2	1.9585	0.0275	507.4	1.9493	0.0251	506.5	1.9407	0.0232	505.6	1.9327	135
140	0.0307	512.8	1.9696	0.0279	512.0	1.9605	0.0256	511.1	1.9520	0.0236	510.3	1.9440	140
145	0.0311	517.4	1.9807	0.0283	516.6	1.9716	0.0260	515.8	1.9632	0.0239	514.9	1.9552	145
150	0.0316	522.0	1.9917	0.0288	521.2	1.9827	0.0264	520.4	1.9743	0.0243	519.6	1.9663	150
155	0.0321	526.7	2.0026	0.0292	525.9	1.9936	0.0268	525.1	1.9853	0.0247	524.3	1.9774	155
160	0.0325	531.4	2.0134	0.0296	530.6	2.0045	0.0272	529.8	1.9962	0.0251	529.1	1.9884	160
165	0.0330	536.0	2.0242	0.0301	535.3	2.0153	0.0276	534.6	2.0070	0.0255	533.8	1.9993	165
170	0.0335	540.8	2.0349	0.0305	540.0	2.0261	0.0280	539.3	2.0178	0.0258	538.6	2.0101	170
175	0.0339	545.5	2.0455	0.0309	544.8	2.0367	0.0284	544.1	2.0285	0.0262	543.4	2.0209	175
180	0.0344	550.3	2.0561	0.0313	549.6	2.0473	0.0288	548.9	2.0392	0.0266	548.2	2.0315	180
185	0.0348	555.1	2.0666	0.0318	554.4	2.0579	0.0292	553.7	2.0498	0.0270	553.0	2.0421	185
190	0.0353	559.9	2.0771	0.0322	559.2	2.0684	0.0296	558.5	2.0603	0.0273	557.9	2.0527	190
195	0.0357	564.7	2.0874	0.0326	564.1	2.0788	0.0300	563.4	2.0707	0.0277	562.8	2.0632	195
200	—	—	—	0.0330	568.9	2.0891	0.0304	568.3	2.0811	0.0281	567.7	2.0736	200
205	—	—	—	—	—	—	—	—	—	0.0284	572.6	2.0839	205



**TABLE 2** (continued)  
**SUVA® MP39 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	1500.0			1600.0			1700.0			1800.0			TEMP. °C
	(55.47°C)			(58.16°C)			(60.73°C)			(63.18°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0148)	(431.8)	(1.7264)	(0.0138)	(432.6)	(1.7243)	(0.0129)	(433.2)	(1.7222)	(0.0121)	(433.8)	(1.7201)	
60	0.0153	436.0	1.7390	0.0140	434.3	1.7295	—	—	—	—	—	—	60
65	0.0157	440.6	1.7527	0.0144	439.0	1.7435	0.0133	437.3	1.7344	0.0122	435.5	1.7254	65
70	0.0162	445.1	1.7661	0.0149	443.6	1.7571	0.0137	442.1	1.7484	0.0127	440.4	1.7398	70
75	0.0166	449.7	1.7792	0.0153	448.3	1.7705	0.0141	446.8	1.7620	0.0131	445.2	1.7537	75
80	0.0171	454.3	1.7922	0.0157	452.9	1.7837	0.0146	451.5	1.7754	0.0135	450.0	1.7673	80
85	0.0175	458.8	1.8050	0.0162	457.5	1.7967	0.0150	456.2	1.7886	0.0139	454.8	1.7807	85
90	0.0179	463.4	1.8176	0.0166	462.1	1.8094	0.0154	460.8	1.8015	0.0143	459.5	1.7938	90
95	0.0183	467.9	1.8301	0.0170	466.7	1.8220	0.0157	465.5	1.8143	0.0147	464.2	1.8067	95
100	0.0187	472.5	1.8424	0.0174	471.3	1.8345	0.0161	470.1	1.8268	0.0150	468.9	1.8194	100
105	0.0191	477.0	1.8545	0.0177	475.9	1.8467	0.0165	474.8	1.8392	0.0154	473.6	1.8320	105
110	0.0195	481.6	1.8666	0.0181	480.5	1.8589	0.0169	479.5	1.8515	0.0157	478.4	1.8444	110
115	0.0199	486.2	1.8785	0.0185	485.2	1.8709	0.0172	484.1	1.8636	0.0161	483.1	1.8566	115
120	0.0203	490.8	1.8903	0.0189	489.8	1.8828	0.0176	488.8	1.8756	0.0164	487.8	1.8686	120
125	0.0207	495.4	1.9020	0.0192	494.5	1.8945	0.0179	493.5	1.8874	0.0168	492.5	1.8806	125
130	0.0211	500.1	1.9135	0.0196	499.1	1.9062	0.0183	498.2	1.8991	0.0171	497.2	1.8924	130
135	0.0214	504.7	1.9250	0.0199	503.8	1.9177	0.0186	502.9	1.9108	0.0174	502.0	1.9041	135
140	0.0218	509.4	1.9364	0.0203	508.5	1.9292	0.0190	507.6	1.9223	0.0178	506.7	1.9157	140
145	0.0222	514.1	1.9477	0.0206	513.2	1.9405	0.0193	512.4	1.9337	0.0181	511.5	1.9271	145
150	0.0226	518.8	1.9589	0.0210	518.0	1.9518	0.0196	517.1	1.9450	0.0184	516.3	1.9385	150
155	0.0229	523.5	1.9700	0.0213	522.7	1.9629	0.0200	521.9	1.9562	0.0187	521.1	1.9498	155
160	0.0233	528.3	1.9810	0.0217	527.5	1.9740	0.0203	526.7	1.9673	0.0190	525.9	1.9610	160
165	0.0236	533.0	1.9920	0.0220	532.3	1.9850	0.0206	531.5	1.9784	0.0193	530.7	1.9721	165
170	0.0240	537.8	2.0028	0.0224	537.1	1.9959	0.0209	536.3	1.9893	0.0196	535.6	1.9831	170
175	0.0243	542.6	2.0136	0.0227	541.9	2.0068	0.0212	541.2	2.0002	0.0200	540.5	1.9940	175
180	0.0247	547.5	2.0243	0.0230	546.8	2.0175	0.0216	546.1	2.0110	0.0203	545.3	2.0048	180
185	0.0250	552.3	2.0350	0.0234	551.6	2.0282	0.0219	550.9	2.0218	0.0206	550.3	2.0156	185
190	0.0254	557.2	2.0456	0.0237	556.5	2.0388	0.0222	555.9	2.0324	0.0209	555.2	2.0263	190
195	0.0257	562.1	2.0561	0.0240	561.4	2.0494	0.0225	560.8	2.0430	0.0212	560.1	2.0369	195
200	0.0261	567.0	2.0665	0.0243	566.4	2.0598	0.0228	565.7	2.0535	0.0215	565.1	2.0475	200
205	0.0264	572.0	2.0769	0.0247	571.3	2.0703	0.0231	570.7	2.0639	0.0217	570.1	2.0579	205
210	0.0268	576.9	2.0872	0.0250	576.3	2.0806	0.0234	575.7	2.0743	0.0220	575.1	2.0683	210
215	—	—	—	—	—	—	0.0237	580.7	2.0846	0.0223	580.1	2.0787	215

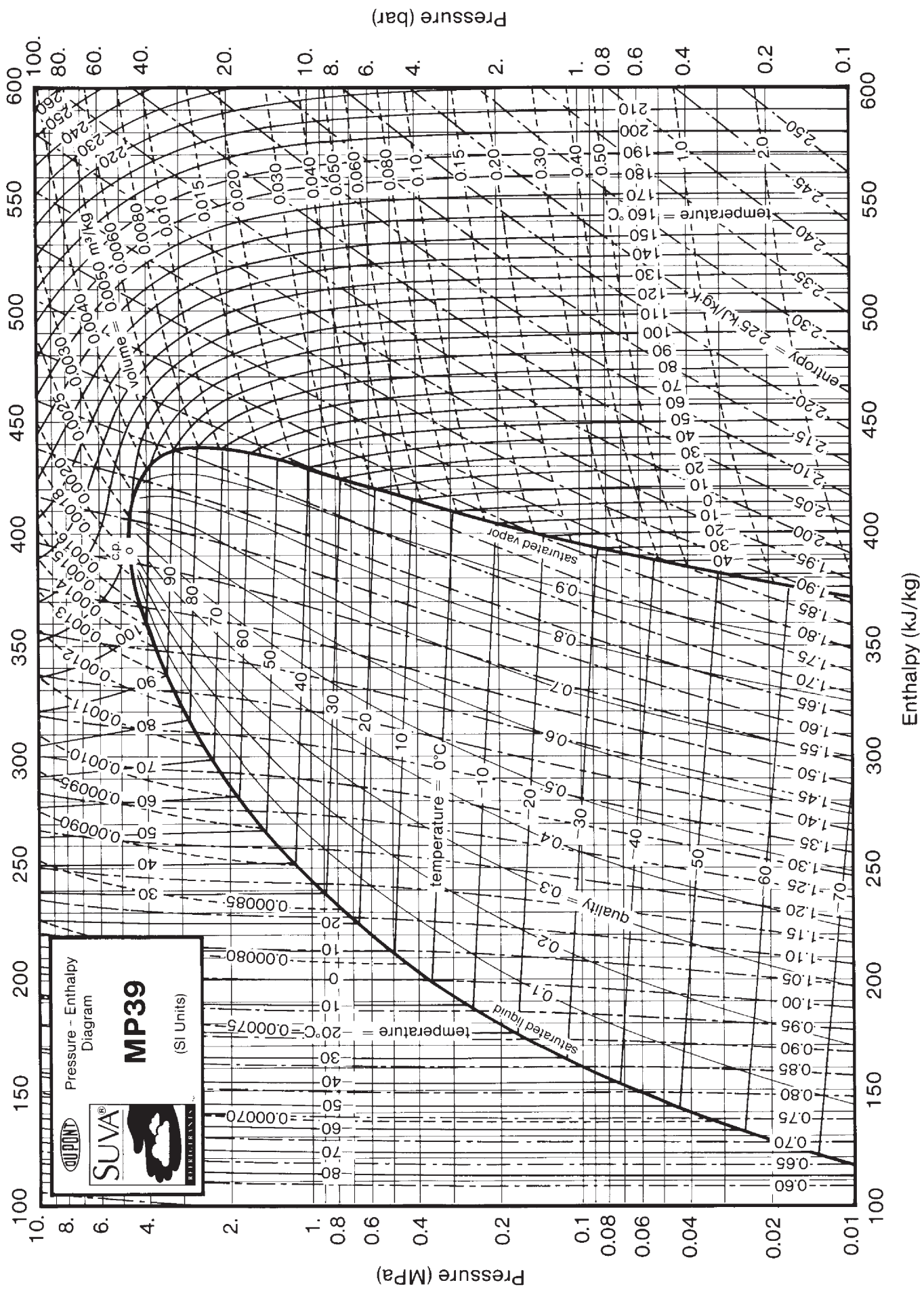
TEMP. °C	1900.0			2000.0			2200.0			2400.0			TEMP. °C
	(65.54°C)			(67.8°C)			(72.07°C)			(76.05°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
	(0.0113)	(434.2)	(1.7181)	(0.0107)	(434.6)	(1.716)	(0.0095)	(435.1)	(1.7117)	(0.0085)	(435.4)	(1.7072)	
70	0.0117	438.7	1.7312	0.0109	436.9	1.7226	—	—	—	—	—	—	70
75	0.0121	443.6	1.7455	0.0113	441.9	1.7373	0.0098	438.3	1.7208	—	—	—	75
80	0.0126	448.5	1.7594	0.0117	446.9	1.7515	0.0102	443.6	1.7358	0.0089	439.9	1.7199	80
85	0.0129	453.4	1.7730	0.0121	451.9	1.7654	0.0106	448.7	1.7503	0.0093	445.3	1.7353	85
90	0.0133	458.2	1.7863	0.0124	456.8	1.7789	0.0109	453.8	1.7644	0.0096	450.7	1.7501	90
95	0.0137	462.9	1.7994	0.0128	461.6	1.7922	0.0113	458.9	1.7782	0.0100	455.9	1.7644	95
100	0.0140	467.7	1.8123	0.0132	466.5	1.8053	0.0116	463.8	1.7916	0.0103	461.1	1.7784	100
105	0.0144	472.5	1.8249	0.0135	471.3	1.8181	0.0119	468.8	1.8048	0.0106	466.2	1.7919	105
110	0.0147	477.2	1.8374	0.0138	476.1	1.8307	0.0123	473.7	1.8177	0.0109	471.2	1.8052	110
115	0.0151	482.0	1.8498	0.0142	480.9	1.8432	0.0126	478.6	1.8305	0.0112	476.3	1.8183	115
120	0.0154	486.7	1.8619	0.0145	485.7	1.8555	0.0129	483.5	1.8430	0.0115	481.3	1.8311	120
125	0.0157	491.5	1.8740	0.0148	490.5	1.8676	0.0132	488.4	1.8553	0.0118	486.2	1.8437	125
130	0.0161	496.3	1.8859	0.0151	495.3	1.8796	0.0135	493.3	1.8675	0.0121	491.2	1.8561	130
135	0.0164	501.0	1.8977	0.0154	500.1	1.8914	0.0138	498.2	1.8796	0.0124	496.2	1.8683	135
140	0.0167	505.8	1.9093	0.0157	504.9	1.9032	0.0141	503.1	1.8915	0.0127	501.1	1.8804	140
145	0.0170	510.6	1.9209	0.0160	509.7	1.9148	0.0143	507.9	1.9032	0.0129	506.1	1.8923	145
150	0.0173	515.4	1.9323	0.0163	514.6	1.9263	0.0146	512.8	1.9149	0.0132	511.1	1.9041	150
155	0.0176	520.3	1.9436	0.0166	519.4	1.9377	0.0149	517.7	1.9264	0.0135	516.0	1.9158	155
160	0.0179	525.1	1.9549	0.0169	524.3	1.9490	0.0152	522.7	1.9378	0.0137	521.0	1.9273	160
165	0.0182	530.0	1.9660	0.0172	529.2	1.9602	0.0154	527.6	1.9491	0.0140	526.0	1.9387	165
170	0.0185	534.8	1.9771	0.0175	534.1	1.9713	0.0157	532.5	1.9603	0.0142	531.0	1.9501	170
175	0.0188	539.7	1.9880	0.0178	539.0	1.9823	0.0160	537.5	1.9714	0.0145	536.0	1.9613	175
180	0.0191	544.6	1.9989	0.0180	543.9	1.9932	0.0162	542.4	1.9825	0.0147	541.0	1.9724	180
185	0.0194	549.6	2.0097	0.0183	548.8	2.0041	0.0165	547.4	1.9934	0.0150	546.0	1.9834	185
190	0.0197	554.5	2.0205	0.0186	553.8	2.0148	0.0167	552.4	2.0042	0.0152	551.0	1.9944	190
195	0.0200	559.5	2.0311	0.0189	558.8	2.0255	0.0170	557.4	2.0150	0.0154	556.1	2.0052	195
200	0.0202	564.4	2.0417	0.0191	563.8	2.0361	0.0172	562.5	2.0257	0.0157	561.2	2.0160	200
205	0.0205	569.4	2.0522	0.0194	568.8	2.0467	0.0175	567.5	2.0363	0.0159	566.2	2.0266	205
210	0.0208	574.5	2.0626	0.0197	573.8	2.0572	0.0177	572.6	2.0469	0.0161	571.3	2.0373	210
215	0.0211	579.5	2.0730	0.0199	578.9	2.0676	0.0180	577.7	2.0573	0.0164	576.4	2.0478	215
220	0.0214	584.5	2.0833	0.0202	584.0	2.0779	0.0182	582.8	2.0677	0.0166	581.6	2.0582	220
225	—	—	—	—	—	—	0.0185	587.9	2.0781	0.0168	586.7	2.0686	225
230	—	—	—	—	—	—	—	—	—	0.0171	591.9	2.0790	230

**TABLE 2** (continued)  
**SUVA® MP39 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
TEMP. °C	2600.0			2800.0			3000.0			3200.0			
	(79.79°C)			(83.31°C)			(86.64°C)			(89.8°C)			
	V	H	S	V	H	S	V	H	S	V	H	S	
(0.0077)	(435.4)	(1.7025)	-0.0070	(435.1)	(1.6975)	(0.0063)	(434.4)	(1.6921)	(0.0057)	(433.5)	(1.6862)		
80	0.0077	435.6	1.7032	—	—	—	—	—	—	—	—	—	80
85	0.0081	441.6	1.7199	0.0071	437.2	1.7036	—	—	—	—	—	—	85
90	0.0085	447.2	1.7357	0.0075	443.4	1.7207	0.0066	439.1	1.7048	0.0058	433.8	1.6871	90
95	0.0089	452.8	1.7507	0.0079	449.3	1.7368	0.0070	445.5	1.7224	0.0062	441.1	1.7070	95
100	0.0092	458.1	1.7653	0.0082	455.0	1.7521	0.0074	451.5	1.7387	0.0066	447.7	1.7248	100
105	0.0095	463.4	1.7793	0.0085	460.5	1.7668	0.0077	457.3	1.7542	0.0069	453.9	1.7414	105
110	0.0098	468.6	1.7930	0.0088	465.9	1.7810	0.0080	463.0	1.7691	0.0072	459.9	1.7570	110
115	0.0101	473.8	1.8064	0.0091	471.2	1.7949	0.0083	468.5	1.7834	0.0075	465.7	1.7720	115
120	0.0104	478.9	1.8196	0.0094	476.5	1.8083	0.0086	474.0	1.7973	0.0078	471.3	1.7864	120
125	0.0107	484.0	1.8324	0.0097	481.7	1.8215	0.0088	479.3	1.8109	0.0081	476.8	1.8003	125
130	0.0110	489.1	1.8451	0.0100	486.9	1.8345	0.0091	484.6	1.8241	0.0083	482.3	1.8139	130
135	0.0112	494.1	1.8575	0.0102	492.0	1.8472	0.0093	489.9	1.8371	0.0086	487.7	1.8272	135
140	0.0115	499.2	1.8698	0.0105	497.2	1.8596	0.0096	495.1	1.8498	0.0088	493.0	1.8402	140
145	0.0117	504.2	1.8819	0.0107	502.3	1.8720	0.0098	500.3	1.8623	0.0091	498.3	1.8530	145
150	0.0120	509.2	1.8939	0.0110	507.4	1.8841	0.0101	505.5	1.8746	0.0093	503.6	1.8655	150
155	0.0122	514.3	1.9057	0.0112	512.5	1.8961	0.0103	510.7	1.8868	0.0095	508.8	1.8778	155
160	0.0125	519.3	1.9174	0.0114	517.6	1.9079	0.0105	515.8	1.8988	0.0097	514.1	1.8900	160
165	0.0127	524.3	1.9289	0.0117	522.7	1.9196	0.0107	521.0	1.9106	0.0099	519.3	1.9020	165
170	0.0130	529.4	1.9404	0.0119	527.8	1.9311	0.0110	526.1	1.9223	0.0101	524.5	1.9138	170
175	0.0132	534.4	1.9517	0.0121	532.9	1.9426	0.0112	531.3	1.9339	0.0104	529.7	1.9255	175
180	0.0134	539.5	1.9629	0.0123	538.0	1.9539	0.0114	536.5	1.9453	0.0106	534.9	1.9371	180
185	0.0137	544.6	1.9740	0.0126	543.1	1.9651	0.0116	541.6	1.9566	0.0108	540.1	1.9485	185
190	0.0139	549.6	1.9851	0.0128	548.2	1.9762	0.0118	546.8	1.9678	0.0110	545.3	1.9598	190
195	0.0141	554.7	1.9960	0.0130	553.3	1.9873	0.0120	551.9	1.9790	0.0111	550.5	1.9710	195
200	0.0143	559.8	2.0068	0.0132	558.5	1.9982	0.0122	557.1	1.9900	0.0113	555.8	1.9821	200
205	0.0146	564.9	2.0176	0.0134	563.6	2.0090	0.0124	562.3	2.0009	0.0115	561.0	1.9931	205
210	0.0148	570.1	2.0283	0.0136	568.8	2.0198	0.0126	567.5	2.0117	0.0117	566.2	2.0040	210
215	0.0150	575.2	2.0388	0.0138	574.0	2.0304	0.0128	572.7	2.0224	0.0119	571.5	2.0148	215
220	0.0152	580.4	2.0494	0.0140	579.2	2.0410	0.0130	578.0	2.0331	0.0121	576.7	2.0255	220
225	0.0154	585.6	2.0598	0.0142	584.4	2.0515	0.0132	583.2	2.0436	0.0123	582.0	2.0362	225
230	0.0156	590.7	2.0702	0.0144	589.6	2.0619	0.0134	588.5	2.0541	0.0125	587.3	2.0467	230
235	—	—	—	0.0146	594.8	2.0723	0.0136	593.7	2.0646	0.0126	592.6	2.0572	235
240	—	—	—	—	—	—	0.0138	599.0	2.0749	0.0128	597.9	2.0676	240

TEMP. °C	3400.0			3600.0			3800.0			TEMP. °C
	(92.80°C)			(95.67°C)			(98.4°C)			
	V	H	S	V	H	S	V	H	S	
(0.0052)	(432.3)	(1.6797)	(0.0047)	(430.6)	(1.6725)	(0.0043)	(428.4)	(1.6642)		
95	0.0054	435.9	1.6898	—	—	—	—	—	—	95
100	0.0059	443.4	1.7100	0.0052	438.4	1.6935	0.0045	432.0	1.6738	100
105	0.0062	450.2	1.7280	0.0056	446.0	1.7138	0.0050	441.2	1.6982	105
110	0.0065	456.5	1.7447	0.0059	452.9	1.7319	0.0053	448.8	1.7184	110
115	0.0068	462.6	1.7604	0.0062	459.3	1.7486	0.0057	455.8	1.7365	115
120	0.0071	468.5	1.7754	0.0065	465.5	1.7644	0.0060	462.3	1.7532	120
125	0.0074	474.2	1.7899	0.0068	471.5	1.7795	0.0062	468.6	1.7689	125
130	0.0077	479.8	1.8039	0.0070	477.3	1.7939	0.0065	474.6	1.7840	130
135	0.0079	485.3	1.8175	0.0073	483.0	1.8080	0.0067	480.5	1.7985	135
140	0.0081	490.8	1.8308	0.0075	488.6	1.8216	0.0070	486.2	1.8125	140
145	0.0084	496.2	1.8439	0.0077	494.1	1.8349	0.0072	491.9	1.8261	145
150	0.0086	501.6	1.8566	0.0080	499.6	1.8479	0.0074	497.5	1.8394	150
155	0.0088	506.9	1.8692	0.0082	505.0	1.8607	0.0076	503.0	1.8524	155
160	0.0090	512.2	1.8815	0.0084	510.4	1.8732	0.0078	508.5	1.8651	160
165	0.0092	517.5	1.8936	0.0086	515.8	1.8855	0.0080	514.0	1.8776	165
170	0.0094	522.8	1.9056	0.0088	521.1	1.8977	0.0082	519.4	1.8900	170
175	0.0096	528.1	1.9175	0.0090	526.4	1.9097	0.0084	524.8	1.9021	175
180	0.0098	533.3	1.9291	0.0092	531.8	1.9215	0.0086	530.2	1.9140	180
185	0.0100	538.6	1.9407	0.0094	537.1	1.9331	0.0088	535.5	1.9258	185
190	0.0102	543.9	1.9521	0.0095	542.4	1.9447	0.0089	540.9	1.9375	190
195	0.0104	549.1	1.9634	0.0097	547.7	1.9561	0.0091	546.3	1.9490	195
200	0.0106	554.4	1.9746	0.0099	553.0	1.9673	0.0093	551.6	1.9604	200
205	0.0108	559.7	1.9857	0.0101	558.3	1.9785	0.0095	557.0	1.9716	205
210	0.0109	564.9	1.9966	0.0103	563.6	1.9896	0.0096	562.3	1.9828	210
215	0.0111	570.2	2.0075	0.0104	569.0	2.0005	0.0098	567.7	1.9938	215
220	0.0113	575.5	2.0183	0.0106	574.3	2.0114	0.0100	573.1	2.0047	220
225	0.0115	580.8	2.0290	0.0108	579.6	2.0222	0.0101	578.4	2.0156	225
230	0.0116	586.1	2.0396	0.0109	585.0	2.0328	0.0103	583.8	2.0263	230
235	0.0118	591.5	2.0502	0.0111	590.3	2.0434	0.0104	589.2	2.0370	235
240	0.0120	596.8	2.0606	0.0113	595.7	2.0539	0.0106	594.6	2.0475	240
245	0.0122	602.2	2.0710	0.0114	601.1	2.0644	0.0108	600.0	2.0580	245



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