

# DuPont™ Suva® refrigerants

## Thermodynamic Properties of DuPont™ Suva® MP39 Refrigerant

(R-401A)



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# Thermodynamic Properties of Suva® MP39 Refrigerant Engineering (I/P) Units

New tables of the thermodynamic properties of Suva® 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	-27.34°F (-32.97°C)	
Critical Temperature, T <sub>c</sub>	226.42°F 686.09°R (108.01°C) (381.16 K)	
Critical Pressure, P <sub>c</sub>	667.7 psia	(4603.8 kPa [abs])
Critical Density, D <sub>c</sub>	31.88 lb/ft <sup>3</sup>	(510.6 kg/m <sup>3</sup> )
Critical Volume, V <sub>c</sub>	0.0314 ft <sup>3</sup> /lb	(0.00196 m <sup>3</sup> /kg)

## Units and Factors

t = temperature in °F  
T = temperature in °R = °F + 459.67  
p<sub>f</sub> = pressure of saturated liquid (bubble point) in psia  
p<sub>g</sub> = pressure of saturated vapor (dew point) in psia  
v<sub>f</sub> = volume of saturated liquid in ft<sup>3</sup>/lb  
v<sub>g</sub> = volume of saturated vapor in ft<sup>3</sup>/lb  
V = volume of superheated vapor in ft<sup>3</sup>/lb  
d<sub>f</sub> = 1/v<sub>f</sub> = density of saturated liquid in lb/ft<sup>3</sup>  
d<sub>g</sub> = 1/v<sub>g</sub> = density of saturated vapor in lb/ft<sup>3</sup>  
h<sub>f</sub> = enthalpy of saturated liquid in Btu/lb  
h<sub>fg</sub> = enthalpy of vaporization in Btu/lb  
h<sub>g</sub> = enthalpy of saturated vapor in Btu/lb  
H = enthalpy of superheated vapor in Btu/lb  
s<sub>f</sub> = entropy of saturated liquid in Btu/(lb) (°R)  
s<sub>g</sub> = entropy of saturated vapor in Btu/(lb) (°R)  
S = entropy of superheated vapor in Btu/(lb) (°R)  
C<sub>p</sub> = heat capacity at constant pressure in Btu/(lb) (°F)  
C<sub>v</sub> = heat capacity at constant volume in Btu/(lb) (°F)

The gas constant, R = 10.732 (psia) (ft<sup>3</sup>)/(lb-mole) (°R)  
for Suva® MP39, R = 0.1136 (psia) (ft<sup>3</sup>)/(lb) (°R)

Conversion factor from Work Units to Heat Units:

$$J = 0.185053$$

$$\text{Btu/lb} = [(\text{psia}) (\text{ft}^3)/\text{lb}] \propto J$$

$$\text{One atmosphere} = 14.696 \text{ psia}$$

Reference point for enthalpy and entropy:

$$h_f = 0.0 \text{ Btu/lb at } -40^\circ\text{F}$$

$$s_f = 0.0 \text{ Btu/(lb) (°R) at } -40^\circ\text{F}$$

## 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:  $\kappa_i = \kappa_{0i}$  for  $T_r > 0.7$ )

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

$\kappa_{1i}$  = adjustable parameter for component i

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

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

Component	$T_{ci}$	$P_{ci}$	$\omega_i$	$\kappa_{li}$	$x_i$
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® 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):

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

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

where  $C_p^o$  and  $C_{pi}^o$  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® MP39).

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

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

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,  $H$  (ref) and  $S$  (ref) are the saturated liquid enthalpy and entropy at  $-40^\circ\text{C}$ . For Suva® MP39:  $H$  (ref) = 154.0 kJ/kg and  $S$  (ref) = 0.8188 kJ/kg · 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/ $\text{ft}^3$ )	$= D$ ( $\text{kg}/\text{m}^3$ ) $\cdot 0.062428$
$V$ (ft $^3$ /lb)	$= V$ ( $\text{m}^3/\text{kg}$ ) $\cdot 16.018$
$H$ (Btu/lb)	$= [H \text{ (kJ/kg)} - H \text{ (ref)}] \cdot 0.43021$
$S$ (Btu/lb $\cdot$ $^\circ\text{R}$ )	$= [S \text{ (kJ/kg} \cdot \text{K)} - S \text{ (ref)}] \cdot 0.23901$
$C_p$ (Btu/lb $\cdot$ $^\circ\text{F}$ )	$= C_p \text{ (kJ/kg} \cdot \text{K)} \cdot 0.23901$
$C_v$ (Btu/lb $\cdot$ $^\circ\text{F}$ )	$= C_v \text{ (kJ/kg} \cdot \text{K)} \cdot 0.23901$

## 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:

$$a_0 = 2.301857 \quad a_3 = -1.362305$$

$$a_1 = 2.833603 \quad a_4 = -4.522461$$

$$a_2 = 1.826214 \quad t_0 = 0.5891813$$

**Table 1**  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
-150	0.17	0.08	0.0102	416.6667	97.94	0.0024	-26.2	111.6	85.4	-0.0721	0.2968	-150
-149	0.18	0.09	0.0102	400.0000	97.86	0.0025	-26.0	111.5	85.5	-0.0714	0.2959	-149
-148	0.19	0.09	0.0102	384.6154	97.77	0.0026	-25.8	111.4	85.6	-0.0706	0.2951	-148
-147	0.20	0.10	0.0102	357.1429	97.69	0.0028	-25.5	111.3	85.7	-0.0699	0.2942	-147
-146	0.21	0.10	0.0102	344.8276	97.60	0.0029	-25.3	111.2	85.8	-0.0692	0.2934	-146
-145	0.22	0.11	0.0103	322.5806	97.51	0.0031	-25.1	111.1	86.0	-0.0685	0.2926	-145
-144	0.23	0.12	0.0103	303.0303	97.43	0.0033	-24.9	111.0	86.1	-0.0678	0.2917	-144
-143	0.24	0.12	0.0103	294.1176	97.34	0.0034	-24.7	110.8	86.2	-0.0671	0.2909	-143
-142	0.26	0.13	0.0103	277.7778	97.26	0.0036	-24.4	110.7	86.3	-0.0664	0.2901	-142
-141	0.27	0.14	0.0103	263.1579	97.17	0.0038	-24.2	110.6	86.4	-0.0657	0.2893	-141
-140	0.28	0.15	0.0103	250.0000	97.08	0.0040	-24.0	110.5	86.5	-0.0650	0.2885	-140
-139	0.30	0.15	0.0103	238.0952	97.00	0.0042	-23.8	110.4	86.7	-0.0643	0.2878	-139
-138	0.31	0.16	0.0103	222.2222	96.91	0.0045	-23.5	110.3	86.8	-0.0636	0.2870	-138
-137	0.33	0.17	0.0103	212.7660	96.82	0.0047	-23.3	110.2	86.9	-0.0630	0.2862	-137
-136	0.34	0.18	0.0103	204.0816	96.73	0.0049	-23.1	110.1	87.0	-0.0623	0.2855	-136
-135	0.36	0.19	0.0103	192.3077	96.65	0.0052	-22.9	110.0	87.1	-0.0616	0.2847	-135
-134	0.38	0.20	0.0104	181.8182	96.56	0.0055	-22.6	109.9	87.2	-0.0609	0.2840	-134
-133	0.40	0.21	0.0104	175.4386	96.47	0.0057	-22.4	109.8	87.4	-0.0602	0.2833	-133
-132	0.42	0.22	0.0104	166.6667	96.38	0.0060	-22.2	109.7	87.5	-0.0595	0.2825	-132
-131	0.44	0.24	0.0104	158.7302	96.29	0.0063	-22.0	109.6	87.6	-0.0588	0.2818	-131
-130	0.46	0.25	0.0104	151.5152	96.21	0.0066	-21.7	109.5	87.7	-0.0581	0.2811	-130
-129	0.48	0.26	0.0104	142.8571	96.12	0.0070	-21.5	109.4	87.8	-0.0574	0.2804	-129
-128	0.50	0.27	0.0104	136.9863	96.03	0.0073	-21.3	109.3	88.0	-0.0568	0.2797	-128
-127	0.52	0.29	0.0104	131.5789	95.94	0.0076	-21.1	109.2	88.1	-0.0561	0.2790	-127
-126	0.55	0.30	0.0104	125.0000	95.85	0.0080	-20.8	109.0	88.2	-0.0554	0.2784	-126
-125	0.57	0.32	0.0104	119.0476	95.76	0.0084	-20.6	108.9	88.3	-0.0547	0.2777	-125
-124	0.60	0.33	0.0105	113.6364	95.67	0.0088	-20.4	108.8	88.5	-0.0540	0.2770	-124
-123	0.63	0.35	0.0105	108.6957	95.59	0.0092	-20.2	108.7	88.6	-0.0534	0.2764	-123
-122	0.65	0.37	0.0105	104.1667	95.50	0.0096	-19.9	108.6	88.7	-0.0527	0.2757	-122
-121	0.68	0.39	0.0105	99.0099	95.41	0.0101	-19.7	108.5	88.8	-0.0520	0.2751	-121
-120	0.71	0.41	0.0105	95.2381	95.32	0.0105	-19.5	108.4	88.9	-0.0513	0.2744	-120
-119	0.74	0.42	0.0105	90.9091	95.23	0.0110	-19.2	108.3	89.1	-0.0506	0.2738	-119
-118	0.78	0.44	0.0105	86.9565	95.14	0.0115	-19.0	108.2	89.2	-0.0500	0.2732	-118
-117	0.81	0.47	0.0105	83.3333	95.05	0.0120	-18.8	108.1	89.3	-0.0493	0.2726	-117
-116	0.84	0.49	0.0105	80.0000	94.96	0.0125	-18.5	108.0	89.4	-0.0486	0.2720	-116
-115	0.88	0.51	0.0105	76.3359	94.87	0.0131	-18.3	107.9	89.6	-0.0480	0.2713	-115
-114	0.92	0.53	0.0106	73.5294	94.78	0.0136	-18.1	107.8	89.7	-0.0473	0.2707	-114
-113	0.96	0.56	0.0106	70.4225	94.69	0.0142	-17.9	107.7	89.8	-0.0466	0.2702	-113
-112	0.99	0.59	0.0106	67.1141	94.59	0.0149	-17.6	107.6	89.9	-0.0460	0.2696	-112
-111	1.04	0.61	0.0106	64.5161	94.50	0.0155	-17.4	107.4	90.1	-0.0453	0.2690	-111
-110	1.08	0.64	0.0106	62.1118	94.41	0.0161	-17.2	107.3	90.2	-0.0446	0.2684	-110
-109	1.12	0.67	0.0106	59.5238	94.32	0.0168	-16.9	107.2	90.3	-0.0440	0.2679	-109
-108	1.17	0.70	0.0106	57.1429	94.23	0.0175	-16.7	107.1	90.4	-0.0433	0.2673	-108
-107	1.22	0.73	0.0106	54.6448	94.14	0.0183	-16.5	107.0	90.6	-0.0426	0.2667	-107
-106	1.26	0.76	0.0106	52.6316	94.05	0.0190	-16.2	106.9	90.7	-0.0420	0.2662	-106
-105	1.31	0.80	0.0106	50.5051	93.96	0.0198	-16.0	106.8	90.8	-0.0413	0.2656	-105
-104	1.37	0.83	0.0107	48.5437	93.86	0.0206	-15.8	106.7	90.9	-0.0406	0.2651	-104
-103	1.42	0.87	0.0107	46.7290	93.77	0.0214	-15.5	106.6	91.1	-0.0400	0.2646	-103
-102	1.48	0.90	0.0107	44.8430	93.68	0.0223	-15.3	106.5	91.2	-0.0393	0.2641	-102
-101	1.53	0.94	0.0107	43.1034	93.59	0.0232	-15.0	106.4	91.3	-0.0387	0.2635	-101
-100	1.59	0.98	0.0107	41.4938	93.49	0.0241	-14.8	106.3	91.4	-0.0380	0.2630	-100
-99	1.65	1.02	0.0107	40.0000	93.40	0.0250	-14.6	106.2	91.6	-0.0374	0.2625	-99
-98	1.72	1.07	0.0107	38.4615	93.31	0.0260	-14.3	106.0	91.7	-0.0367	0.2620	-98
-97	1.78	1.11	0.0107	37.0370	93.22	0.0270	-14.1	105.9	91.8	-0.0360	0.2615	-97
-96	1.85	1.16	0.0107	35.5872	93.12	0.0281	-13.9	105.8	92.0	-0.0354	0.2610	-96
-95	1.92	1.20	0.0107	34.3643	93.03	0.0291	-13.6	105.7	92.1	-0.0347	0.2605	-95
-94	1.99	1.25	0.0108	33.1126	92.94	0.0302	-13.4	105.6	92.2	-0.0341	0.2600	-94
-93	2.06	1.30	0.0108	31.8471	92.84	0.0314	-13.2	105.5	92.3	-0.0334	0.2596	-93
-92	2.14	1.35	0.0108	30.6748	92.75	0.0326	-12.9	105.4	92.5	-0.0328	0.2591	-92
-91	2.21	1.41	0.0108	29.5858	92.66	0.0338	-12.7	105.3	92.6	-0.0321	0.2586	-91

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
-90	2.29	1.46	0.0108	28.5714	92.56	0.0350	-12.4	105.2	92.7	-0.0315	0.2582	-90
-89	2.38	1.52	0.0108	27.5482	92.47	0.0363	-12.2	105.1	92.9	-0.0308	0.2577	-89
-88	2.46	1.58	0.0108	26.5957	92.37	0.0376	-12.0	104.9	93.0	-0.0302	0.2572	-88
-87	2.55	1.64	0.0108	25.6410	92.28	0.0390	-11.7	104.8	93.1	-0.0295	0.2568	-87
-86	2.64	1.71	0.0108	24.7525	92.18	0.0404	-11.5	104.7	93.3	-0.0289	0.2564	-86
-85	2.73	1.77	0.0109	23.9234	92.09	0.0418	-11.2	104.6	93.4	-0.0283	0.2559	-85
-84	2.83	1.84	0.0109	23.0947	91.99	0.0433	-11.0	104.5	93.5	-0.0276	0.2555	-84
-83	2.92	1.91	0.0109	22.3214	91.90	0.0448	-10.7	104.4	93.6	-0.0270	0.2551	-83
-82	3.03	1.98	0.0109	21.5517	91.80	0.0464	-10.5	104.3	93.8	-0.0263	0.2546	-82
-81	3.13	2.05	0.0109	20.8333	91.71	0.0480	-10.3	104.2	93.9	-0.0257	0.2542	-81
-80	3.23	2.13	0.0109	20.1207	91.61	0.0497	-10.0	104.1	94.0	-0.0250	0.2538	-80
-79	3.34	2.21	0.0109	19.4553	91.52	0.0514	-9.8	103.9	94.2	-0.0244	0.2534	-79
-78	3.46	2.29	0.0109	18.8324	91.42	0.0531	-9.5	103.8	94.3	-0.0238	0.2530	-78
-77	3.57	2.37	0.0109	18.2149	91.33	0.0549	-9.3	103.7	94.4	-0.0231	0.2526	-77
-76	3.69	2.46	0.0110	17.6056	91.23	0.0568	-9.0	103.6	94.6	-0.0225	0.2522	-76
-75	3.81	2.55	0.0110	17.0358	91.13	0.0587	-8.8	103.5	94.7	-0.0219	0.2518	-75
-74	3.94	2.64	0.0110	16.5017	91.04	0.0606	-8.6	103.4	94.8	-0.0212	0.2514	-74
-73	4.07	2.73	0.0110	15.9744	90.94	0.0626	-8.3	103.3	95.0	-0.0206	0.2510	-73
-72	4.20	2.83	0.0110	15.4560	90.84	0.0647	-8.1	103.2	95.1	-0.0200	0.2506	-72
-71	4.33	2.93	0.0110	14.9701	90.75	0.0668	-7.8	103.0	95.2	-0.0193	0.2502	-71
-70	4.47	3.03	0.0110	14.4928	90.65	0.0690	-7.6	102.9	95.4	-0.0187	0.2499	-70
-69	4.61	3.13	0.0110	14.0449	90.55	0.0712	-7.3	102.8	95.5	-0.0181	0.2495	-69
-68	4.76	3.24	0.0111	13.6054	90.46	0.0735	-7.1	102.7	95.6	-0.0174	0.2491	-68
-67	4.91	3.35	0.0111	13.1926	90.36	0.0758	-6.8	102.6	95.8	-0.0168	0.2488	-67
-66	5.06	3.47	0.0111	12.7877	90.26	0.0782	-6.6	102.5	95.9	-0.0162	0.2484	-66
-65	5.22	3.58	0.0111	12.3916	90.16	0.0807	-6.3	102.3	96.0	-0.0155	0.2481	-65
-64	5.38	3.70	0.0111	12.0192	90.07	0.0832	-6.1	102.2	96.2	-0.0149	0.2477	-64
-63	5.54	3.83	0.0111	11.6550	89.97	0.0858	-5.8	102.1	96.3	-0.0143	0.2474	-63
-62	5.71	3.95	0.0111	11.3122	89.87	0.0884	-5.6	102.0	96.4	-0.0136	0.2470	-62
-61	5.89	4.08	0.0111	10.9769	89.77	0.0911	-5.3	101.9	96.6	-0.0130	0.2467	-61
-60	6.06	4.22	0.0112	10.6496	89.67	0.0939	-5.1	101.8	96.7	-0.0124	0.2463	-60
-59	6.25	4.36	0.0112	10.3306	89.57	0.0968	-4.8	101.7	96.8	-0.0118	0.2460	-59
-58	6.43	4.50	0.0112	10.0301	89.47	0.0997	-4.6	101.5	97.0	-0.0111	0.2457	-58
-57	6.62	4.64	0.0112	9.7371	89.38	0.1027	-4.3	101.4	97.1	-0.0105	0.2454	-57
-56	6.82	4.79	0.0112	9.4607	89.28	0.1057	-4.1	101.3	97.2	-0.0099	0.2450	-56
-55	7.02	4.94	0.0112	9.1912	89.18	0.1088	-3.8	101.2	97.4	-0.0093	0.2447	-55
-54	7.22	5.10	0.0112	8.9286	89.08	0.1120	-3.6	101.1	97.5	-0.0087	0.2444	-54
-53	7.43	5.26	0.0112	8.6730	88.98	0.1153	-3.3	100.9	97.6	-0.0080	0.2441	-53
-52	7.65	5.42	0.0113	8.4246	88.88	0.1187	-3.1	100.8	97.8	-0.0074	0.2438	-52
-51	7.87	5.59	0.0113	8.1900	88.78	0.1221	-2.8	100.7	97.9	-0.0068	0.2435	-51
-50	8.09	5.76	0.0113	7.9618	88.68	0.1256	-2.6	100.6	98.0	-0.0062	0.2432	-50
-49	8.32	5.94	0.0113	7.7399	88.58	0.1292	-2.3	100.5	98.2	-0.0056	0.2429	-49
-48	8.55	6.12	0.0113	7.5245	88.48	0.1329	-2.1	100.3	98.3	-0.0049	0.2426	-48
-47	8.79	6.31	0.0113	7.3206	88.38	0.1366	-1.8	100.2	98.4	-0.0043	0.2423	-47
-46	9.04	6.50	0.0113	7.1225	88.28	0.1404	-1.5	100.1	98.6	-0.0037	0.2420	-46
-45	9.29	6.69	0.0113	6.9252	88.18	0.1444	-1.3	100.0	98.7	-0.0031	0.2417	-45
-44	9.54	6.89	0.0114	6.7385	88.07	0.1484	-1.0	99.9	98.8	-0.0025	0.2414	-44
-43	9.81	7.10	0.0114	6.5617	87.97	0.1524	-0.8	99.7	99.0	-0.0019	0.2412	-43
-42	10.07	7.30	0.0114	6.3857	87.87	0.1566	-0.5	99.6	99.1	-0.0012	0.2409	-42
-41	10.35	7.52	0.0114	6.2150	87.77	0.1609	-0.3	99.5	99.2	-0.0006	0.2406	-41
-40	10.62	7.74	0.0114	6.0496	87.67	0.1653	0.0	99.4	99.4	0.0000	0.2403	-40
-39	10.91	7.96	0.0114	5.8928	87.57	0.1697	0.3	99.3	99.5	0.0006	0.2401	-39
-38	11.20	8.19	0.0114	5.7372	87.46	0.1743	0.5	99.1	99.6	0.0012	0.2398	-38
-37	11.50	8.43	0.0114	5.5897	87.36	0.1789	0.8	99.0	99.8	0.0018	0.2395	-37
-36	11.80	8.67	0.0115	5.4466	87.26	0.1836	1.0	98.9	99.9	0.0024	0.2393	-36
-35	12.11	8.91	0.0115	5.3050	87.16	0.1885	1.3	98.8	100.1	0.0031	0.2390	-35
-34	12.42	9.16	0.0115	5.1706	87.05	0.1934	1.6	98.6	100.2	0.0037	0.2388	-34
-33	12.75	9.42	0.0115	5.0378	86.95	0.1985	1.8	98.5	100.3	0.0043	0.2385	-33
-32	13.08	9.68	0.0115	4.9116	86.85	0.2036	2.1	98.4	100.5	0.0049	0.2383	-32
-31	13.41	9.95	0.0115	4.7870	86.75	0.2089	2.3	98.3	100.6	0.0055	0.2380	-31

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
-30	13.75	10.22	0.0115	4.6685	86.64	0.2142	2.6	98.1	100.7	0.0061	0.2378	-30
-29	14.10	10.50	0.0116	4.5517	86.54	0.2197	2.9	98.0	100.9	0.0067	0.2375	-29
-28	14.46	10.79	0.0116	4.4385	86.44	0.2253	3.1	97.9	101.0	0.0073	0.2373	-28
-27	14.82	11.08	0.0116	4.3290	86.33	0.2310	3.4	97.7	101.1	0.0079	0.2371	-27
-26	15.19	11.38	0.0116	4.2230	86.23	0.2368	3.7	97.6	101.3	0.0085	0.2368	-26
-25	15.57	11.68	0.0116	4.1203	86.12	0.2427	3.9	97.5	101.4	0.0091	0.2366	-25
-24	15.96	12.00	0.0116	4.0209	86.02	0.2487	4.2	97.4	101.5	0.0097	0.2364	-24
-23	16.35	12.31	0.0116	3.9246	85.91	0.2548	4.4	97.2	101.7	0.0104	0.2361	-23
-22	16.75	12.64	0.0117	3.8300	85.81	0.2611	4.7	97.1	101.8	0.0110	0.2359	-22
-21	17.16	12.97	0.0117	3.7383	85.70	0.2675	5.0	97.0	101.9	0.0116	0.2357	-21
-20	17.57	13.31	0.0117	3.6496	85.60	0.2740	5.2	96.8	102.1	0.0122	0.2355	-20
-19	17.99	13.65	0.0117	3.5638	85.49	0.2806	5.5	96.7	102.2	0.0128	0.2353	-19
-18	18.43	14.01	0.0117	3.4795	85.39	0.2874	5.8	96.6	102.4	0.0134	0.2350	-18
-17	18.87	14.37	0.0117	3.3979	85.28	0.2943	6.0	96.4	102.5	0.0140	0.2348	-17
-16	19.31	14.73	0.0117	3.3190	85.18	0.3013	6.3	96.3	102.6	0.0146	0.2346	-16
-15	19.77	15.11	0.0118	3.2425	85.07	0.3084	6.6	96.2	102.8	0.0152	0.2344	-15
-14	20.23	15.49	0.0118	3.1676	84.97	0.3157	6.8	96.0	102.9	0.0158	0.2342	-14
-13	20.71	15.88	0.0118	3.0950	84.86	0.3231	7.1	95.9	103.0	0.0164	0.2340	-13
-12	21.19	16.27	0.0118	3.0239	84.75	0.3307	7.4	95.8	103.2	0.0170	0.2338	-12
-11	21.68	16.68	0.0118	2.9560	84.65	0.3383	7.7	95.6	103.3	0.0176	0.2336	-11
-10	22.18	17.09	0.0118	2.8885	84.54	0.3462	7.9	95.5	103.4	0.0182	0.2334	-10
-9	22.68	17.51	0.0118	2.8241	84.43	0.3541	8.2	95.4	103.6	0.0188	0.2332	-9
-8	23.20	17.94	0.0119	2.7609	84.33	0.3622	8.5	95.2	103.7	0.0194	0.2330	-8
-7	23.72	18.38	0.0119	2.6991	84.22	0.3705	8.7	95.1	103.8	0.0200	0.2328	-7
-6	24.26	18.82	0.0119	2.6392	84.11	0.3789	9.0	95.0	104.0	0.0206	0.2326	-6
-5	24.80	19.27	0.0119	2.5813	84.00	0.3874	9.3	94.8	104.1	0.0212	0.2325	-5
-4	25.36	19.74	0.0119	2.5246	83.89	0.3961	9.6	94.7	104.2	0.0218	0.2323	-4
-3	25.92	20.21	0.0119	2.4691	83.79	0.4050	9.8	94.5	104.4	0.0224	0.2321	-3
-2	26.49	20.69	0.0120	2.4155	83.68	0.4140	10.1	94.4	104.5	0.0230	0.2319	-2
-1	27.08	21.18	0.0120	2.3629	83.57	0.4232	10.4	94.3	104.6	0.0235	0.2317	-1
0	27.67	21.67	0.0120	2.3121	83.46	0.4325	10.6	94.1	104.8	0.0241	0.2315	0
1	28.27	22.18	0.0120	2.2624	83.35	0.4420	10.9	94.0	104.9	0.0247	0.2314	1
2	28.89	22.69	0.0120	2.2143	83.24	0.4516	11.2	93.8	105.0	0.0253	0.2312	2
3	29.51	23.22	0.0120	2.1673	83.14	0.4614	11.5	93.7	105.2	0.0259	0.2310	3
4	30.14	23.75	0.0120	2.1213	83.03	0.4714	11.8	93.6	105.3	0.0265	0.2309	4
5	30.79	24.30	0.0121	2.0768	82.92	0.4815	12.0	93.4	105.4	0.0271	0.2307	5
6	31.44	24.85	0.0121	2.0333	82.81	0.4918	12.7	92.9	105.6	0.0285	0.2305	6
7	32.10	25.41	0.0121	1.9908	82.70	0.5023	13.0	92.7	105.7	0.0291	0.2304	7
8	32.77	25.99	0.0121	1.9497	82.59	0.5129	13.2	92.6	105.8	0.0297	0.2302	8
9	33.45	26.57	0.0121	1.9095	82.48	0.5237	13.5	92.5	106.0	0.0303	0.2300	9
10	34.15	27.16	0.0121	1.8702	82.37	0.5347	13.8	92.3	106.1	0.0309	0.2299	10
11	34.85	27.76	0.0122	1.8318	82.26	0.5459	14.1	92.2	106.2	0.0314	0.2297	11
12	35.57	28.37	0.0122	1.7947	82.15	0.5572	14.3	92.0	106.4	0.0320	0.2296	12
13	36.30	29.00	0.0122	1.7581	82.03	0.5688	14.6	91.9	106.5	0.0326	0.2294	13
14	37.03	29.63	0.0122	1.7227	81.92	0.5805	14.9	91.7	106.6	0.0332	0.2293	14
15	37.78	30.28	0.0122	1.6880	81.81	0.5924	15.2	91.6	106.8	0.0338	0.2291	15
16	38.55	30.93	0.0122	1.6543	81.70	0.6045	15.4	91.5	106.9	0.0343	0.2290	16
17	39.32	31.60	0.0123	1.6213	81.59	0.6168	15.7	91.3	107.0	0.0349	0.2288	17
18	40.11	32.28	0.0123	1.5891	81.48	0.6293	16.0	91.2	107.2	0.0355	0.2287	18
19	40.90	32.96	0.0123	1.5576	81.36	0.6420	16.3	91.0	107.3	0.0361	0.2285	19
20	41.71	33.66	0.0123	1.5270	81.25	0.6549	16.6	90.9	107.4	0.0367	0.2284	20
21	42.53	34.38	0.0123	1.4970	81.14	0.6680	16.8	90.7	107.6	0.0372	0.2282	21
22	43.37	35.10	0.0123	1.4678	81.03	0.6813	17.1	90.6	107.7	0.0378	0.2281	22
23	44.22	35.83	0.0124	1.4393	80.91	0.6948	17.4	90.4	107.8	0.0384	0.2280	23
24	45.08	36.58	0.0124	1.4114	80.80	0.7085	17.7	90.3	107.9	0.0390	0.2278	24
25	45.95	37.34	0.0124	1.3841	80.69	0.7225	18.0	90.1	108.1	0.0395	0.2277	25
26	46.83	38.11	0.0124	1.3576	80.58	0.7366	18.2	90.0	108.2	0.0401	0.2275	26
27	47.73	38.89	0.0124	1.3316	80.46	0.7510	18.5	89.8	108.3	0.0407	0.2274	27
28	48.64	39.69	0.0124	1.3062	80.35	0.7656	18.7	89.8	108.5	0.0410	0.2273	28
29	49.57	40.50	0.0125	1.2814	80.23	0.7804	18.9	89.7	108.6	0.0416	0.2271	29

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
30	50.51	41.32	0.0125	1.2571	80.12	0.7955	19.2	89.5	108.7	0.0421	0.2270	30
31	51.46	42.16	0.0125	1.2333	80.01	0.8108	19.5	89.3	108.8	0.0427	0.2269	31
32	52.43	43.00	0.0125	1.2101	79.89	0.8264	19.8	89.2	109.0	0.0433	0.2267	32
33	53.41	43.86	0.0125	1.1875	79.78	0.8421	20.1	89.0	109.1	0.0439	0.2266	33
34	54.40	44.74	0.0126	1.1654	79.66	0.8581	20.4	88.9	109.2	0.0445	0.2265	34
35	55.41	45.63	0.0126	1.1436	79.55	0.8744	20.7	88.7	109.4	0.0450	0.2264	35
36	56.43	46.53	0.0126	1.1225	79.43	0.8909	21.0	88.5	109.5	0.0456	0.2262	36
37	57.47	47.44	0.0126	1.1018	79.32	0.9076	21.2	88.4	109.6	0.0462	0.2261	37
38	58.52	48.37	0.0126	1.0815	79.20	0.9246	21.5	88.2	109.7	0.0468	0.2260	38
39	59.58	49.31	0.0126	1.0618	79.08	0.9418	22.1	87.8	109.9	0.0479	0.2259	39
40	60.66	50.26	0.0127	1.0425	78.97	0.9592	22.4	87.6	110.0	0.0484	0.2258	40
41	61.75	51.23	0.0127	1.0236	78.85	0.9769	22.7	87.5	110.1	0.0490	0.2256	41
42	62.86	52.21	0.0127	1.0052	78.74	0.9948	22.9	87.3	110.2	0.0496	0.2255	42
43	63.99	53.20	0.0127	0.9872	78.62	1.0130	23.2	87.1	110.4	0.0501	0.2254	43
44	65.12	54.21	0.0127	0.9696	78.50	1.0314	23.5	87.0	110.5	0.0507	0.2253	44
45	66.28	55.23	0.0128	0.9523	78.38	1.0501	23.8	86.8	110.6	0.0513	0.2252	45
46	67.45	56.27	0.0128	0.9354	78.27	1.0691	24.1	86.6	110.7	0.0519	0.2251	46
47	68.63	57.33	0.0128	0.9188	78.15	1.0884	24.4	86.5	110.9	0.0524	0.2250	47
48	69.83	58.39	0.0128	0.9026	78.03	1.1079	24.7	86.3	111.0	0.0530	0.2248	48
49	71.05	59.48	0.0128	0.8867	77.91	1.1278	25.0	86.1	111.1	0.0536	0.2247	49
50	72.28	60.58	0.0129	0.8712	77.80	1.1479	25.3	86.0	111.2	0.0541	0.2246	50
51	73.53	61.69	0.0129	0.8559	77.68	1.1683	25.6	85.8	111.4	0.0547	0.2245	51
52	74.79	62.82	0.0129	0.8410	77.56	1.1890	25.9	85.6	111.5	0.0553	0.2244	52
53	76.07	63.97	0.0129	0.8264	77.44	1.2100	26.2	85.4	111.6	0.0559	0.2243	53
54	77.37	65.13	0.0129	0.8122	77.32	1.2312	26.5	85.3	111.7	0.0564	0.2242	54
55	78.69	66.31	0.0130	0.7982	77.20	1.2528	26.8	85.1	111.9	0.0570	0.2241	55
56	80.02	67.50	0.0130	0.7845	77.08	1.2747	27.1	84.9	112.0	0.0576	0.2240	56
57	81.37	68.71	0.0130	0.7711	76.96	1.2969	27.4	84.7	112.1	0.0581	0.2239	57
58	82.73	69.94	0.0130	0.7579	76.84	1.3194	27.7	84.6	112.2	0.0587	0.2238	58
59	84.11	71.18	0.0130	0.7450	76.72	1.3423	28.0	84.4	112.3	0.0593	0.2237	59
60	85.51	72.44	0.0131	0.7324	76.60	1.3654	28.3	84.2	112.5	0.0599	0.2236	60
61	86.93	73.72	0.0131	0.7200	76.48	1.3889	28.6	84.0	112.6	0.0604	0.2235	61
62	88.36	75.02	0.0131	0.7079	76.36	1.4127	28.9	83.8	112.7	0.0610	0.2234	62
63	89.82	76.33	0.0131	0.6959	76.24	1.4369	29.2	83.7	112.8	0.0616	0.2233	63
64	91.29	77.66	0.0131	0.6843	76.12	1.4613	29.5	83.5	112.9	0.0621	0.2232	64
65	92.78	79.00	0.0132	0.6729	76.00	1.4862	29.8	83.3	113.0	0.0627	0.2231	65
66	94.28	80.37	0.0132	0.6617	75.88	1.5113	30.1	83.1	113.2	0.0633	0.2230	66
67	95.81	81.75	0.0132	0.6507	75.75	1.5369	30.4	82.9	113.3	0.0639	0.2229	67
68	97.35	83.15	0.0132	0.6399	75.63	1.5627	30.7	82.7	113.4	0.0644	0.2228	68
69	98.91	84.57	0.0132	0.6293	75.51	1.5890	31.0	82.5	113.5	0.0650	0.2227	69
70	100.49	86.01	0.0133	0.6190	75.39	1.6155	31.3	82.3	113.6	0.0656	0.2226	70
71	102.09	87.46	0.0133	0.6088	75.26	1.6425	31.6	82.1	113.7	0.0662	0.2225	71
72	103.71	88.94	0.0133	0.5989	75.14	1.6698	31.9	82.0	113.9	0.0667	0.2224	72
73	105.35	90.43	0.0133	0.5891	75.02	1.6975	32.2	81.8	114.0	0.0673	0.2223	73
74	107.01	91.94	0.0134	0.5795	74.90	1.7256	32.5	81.6	114.1	0.0679	0.2222	74
75	108.68	93.47	0.0134	0.5701	74.77	1.7541	32.8	81.4	114.2	0.0684	0.2221	75
76	110.38	95.02	0.0134	0.5609	74.65	1.7830	33.1	81.2	114.3	0.0690	0.2220	76
77	112.10	96.59	0.0134	0.5518	74.52	1.8122	33.5	81.0	114.4	0.0696	0.2219	77
78	113.83	98.18	0.0134	0.5429	74.40	1.8419	33.8	80.8	114.5	0.0702	0.2218	78
79	115.59	99.79	0.0135	0.5342	74.27	1.8720	34.1	80.6	114.6	0.0707	0.2217	79
80	117.36	101.42	0.0135	0.5257	74.15	1.9024	34.4	80.4	114.8	0.0713	0.2216	80
81	119.16	103.07	0.0135	0.5173	74.02	1.9333	34.7	80.2	114.9	0.0719	0.2216	81
82	120.98	104.74	0.0135	0.5090	73.90	1.9647	35.0	79.9	115.0	0.0725	0.2215	82
83	122.82	106.43	0.0136	0.5009	73.77	1.9964	35.3	79.7	115.1	0.0730	0.2214	83
84	124.67	108.15	0.0136	0.4930	73.65	2.0286	35.7	79.5	115.2	0.0736	0.2213	84
85	126.55	109.88	0.0136	0.4852	73.52	2.0612	36.0	79.3	115.3	0.0742	0.2212	85
86	128.45	111.63	0.0136	0.4775	73.40	2.0943	36.3	79.1	115.4	0.0748	0.2211	86
87	130.38	113.40	0.0136	0.4700	73.27	2.1278	36.6	78.9	115.5	0.0753	0.2210	87
88	132.32	115.20	0.0137	0.4626	73.14	2.1617	36.9	78.7	115.6	0.0759	0.2209	88
89	134.28	117.02	0.0137	0.4553	73.02	2.1962	37.3	78.5	115.7	0.0765	0.2208	89

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
90	136.27	118.86	0.0137	0.4482	72.89	2.2311	37.6	78.3	115.8	0.0771	0.2207	90
91	138.28	120.72	0.0137	0.4412	72.76	2.2664	37.9	78.0	115.9	0.0776	0.2207	91
92	140.31	122.60	0.0138	0.4343	72.63	2.3023	38.2	77.8	116.0	0.0782	0.2206	92
93	142.36	124.50	0.0138	0.4276	72.50	2.3386	38.5	77.6	116.1	0.0788	0.2205	93
94	144.43	126.43	0.0138	0.4210	72.38	2.3755	38.9	77.4	116.2	0.0794	0.2204	94
95	146.53	128.38	0.0138	0.4145	72.25	2.4128	39.2	77.1	116.3	0.0799	0.2203	95
96	148.65	130.35	0.0139	0.4081	72.12	2.4506	39.5	76.9	116.4	0.0805	0.2202	96
97	150.79	132.35	0.0139	0.4018	71.99	2.4890	39.9	76.7	116.5	0.0811	0.2201	97
98	152.96	134.36	0.0139	0.3956	71.86	2.5279	40.2	76.5	116.6	0.0817	0.2200	98
99	155.14	136.40	0.0139	0.3895	71.73	2.5673	40.5	76.2	116.7	0.0823	0.2199	99
100	157.35	138.47	0.0140	0.3836	71.60	2.6072	40.8	76.0	116.8	0.0828	0.2199	100
101	159.59	140.56	0.0140	0.3777	71.47	2.6477	41.2	75.8	116.9	0.0834	0.2198	101
102	161.85	142.67	0.0140	0.3719	71.34	2.6887	41.5	75.5	117.0	0.0840	0.2197	102
103	164.13	144.80	0.0140	0.3663	71.21	2.7303	41.8	75.3	117.1	0.0846	0.2196	103
104	166.43	146.96	0.0141	0.3607	71.08	2.7725	42.2	75.1	117.2	0.0852	0.2195	104
105	168.76	149.15	0.0141	0.3552	70.95	2.8153	42.5	74.8	117.3	0.0858	0.2194	105
106	171.11	151.36	0.0141	0.3498	70.82	2.8586	42.8	74.6	117.4	0.0863	0.2193	106
107	173.49	153.59	0.0141	0.3445	70.68	2.9025	43.2	74.3	117.5	0.0869	0.2192	107
108	175.89	155.85	0.0142	0.3393	70.55	2.9470	43.5	74.1	117.6	0.0875	0.2191	108
109	178.32	158.13	0.0142	0.3342	70.42	2.9922	43.9	73.8	117.7	0.0881	0.2191	109
110	180.77	160.44	0.0142	0.3292	70.29	3.0379	44.2	73.6	117.8	0.0887	0.2190	110
111	183.25	162.77	0.0143	0.3242	70.15	3.0843	44.5	73.3	117.9	0.0893	0.2189	111
112	185.75	165.13	0.0143	0.3194	70.02	3.1313	44.9	73.1	118.0	0.0898	0.2188	112
113	188.27	167.52	0.0143	0.3146	69.89	3.1790	45.2	72.8	118.0	0.0904	0.2187	113
114	190.82	169.93	0.0143	0.3099	69.75	3.2273	45.6	72.6	118.1	0.0910	0.2186	114
115	193.40	172.37	0.0144	0.3052	69.62	3.2763	45.9	72.3	118.2	0.0916	0.2185	115
116	196.00	174.83	0.0144	0.3007	69.49	3.3260	46.2	72.1	118.3	0.0922	0.2184	116
117	198.63	177.32	0.0144	0.2962	69.35	3.3763	46.6	71.8	118.4	0.0928	0.2183	117
118	201.28	179.84	0.0144	0.2918	69.22	3.4274	46.9	71.5	118.5	0.0934	0.2182	118
119	203.96	182.38	0.0145	0.2874	69.08	3.4791	47.3	71.3	118.6	0.0940	0.2181	119
120	206.67	184.95	0.0145	0.2832	68.94	3.5316	47.6	71.0	118.6	0.0946	0.2180	120
121	209.40	187.55	0.0145	0.2789	68.81	3.5849	48.0	70.7	118.7	0.0951	0.2180	121
122	212.16	190.17	0.0146	0.2748	68.67	3.6388	48.3	70.5	118.8	0.0957	0.2179	122
123	214.95	192.83	0.0146	0.2707	68.54	3.6935	48.7	70.2	118.9	0.0963	0.2178	123
124	217.76	195.51	0.0146	0.2667	68.40	3.7490	49.1	69.9	119.0	0.0969	0.2177	124
125	220.60	198.22	0.0146	0.2628	68.26	3.8053	49.4	69.6	119.0	0.0975	0.2176	125
126	223.47	200.96	0.0147	0.2589	68.12	3.8624	49.8	69.3	119.1	0.0981	0.2175	126
127	226.36	203.72	0.0147	0.2551	67.99	3.9203	50.1	69.1	119.2	0.0987	0.2174	127
128	229.28	206.52	0.0147	0.2513	67.85	3.9790	50.5	68.8	119.3	0.0993	0.2173	128
129	232.23	209.34	0.0148	0.2476	67.71	4.0385	50.8	68.5	119.3	0.0999	0.2172	129
130	235.21	212.19	0.0148	0.2440	67.57	4.0989	51.2	68.2	119.4	0.1005	0.2171	130
131	238.22	215.08	0.0148	0.2404	67.43	4.1602	51.6	67.9	119.5	0.1011	0.2170	131
132	241.25	217.99	0.0149	0.2368	67.29	4.2223	51.9	67.6	119.5	0.1017	0.2169	132
133	244.31	220.93	0.0149	0.2334	67.15	4.2853	52.3	67.3	119.6	0.1023	0.2168	133
134	247.40	223.90	0.0149	0.2299	67.01	4.3493	52.7	67.0	119.7	0.1029	0.2167	134
135	250.52	226.90	0.0150	0.2265	66.87	4.4142	53.0	66.7	119.7	0.1035	0.2166	135
136	253.67	229.94	0.0150	0.2232	66.73	4.4800	53.4	66.4	119.8	0.1041	0.2165	136
137	256.84	233.00	0.0150	0.2199	66.59	4.5468	53.8	66.1	119.9	0.1047	0.2164	137
138	260.05	236.09	0.0150	0.2167	66.45	4.6146	54.2	65.8	119.9	0.1054	0.2163	138
139	263.28	239.22	0.0151	0.2135	66.30	4.6833	54.5	65.5	120.0	0.1060	0.2162	139
140	266.55	242.37	0.0151	0.2104	66.16	4.7531	54.9	65.1	120.0	0.1066	0.2160	140
141	269.84	245.56	0.0151	0.2073	66.02	4.8239	55.3	64.8	120.1	0.1072	0.2159	141
142	273.16	248.78	0.0152	0.2043	65.87	4.8958	55.7	64.5	120.2	0.1078	0.2158	142
143	276.52	252.03	0.0152	0.2013	65.73	4.9688	56.0	64.2	120.2	0.1084	0.2157	143
144	279.90	255.31	0.0152	0.1983	65.59	5.0428	56.4	63.9	120.3	0.1090	0.2156	144
145	283.31	258.63	0.0153	0.1954	65.44	5.1180	56.8	63.5	120.3	0.1096	0.2155	145
146	286.76	261.98	0.0153	0.1925	65.30	5.1944	57.2	63.2	120.4	0.1103	0.2154	146
147	290.23	265.36	0.0153	0.1897	65.15	5.2719	57.6	62.9	120.4	0.1109	0.2153	147
148	293.73	268.77	0.0154	0.1869	65.01	5.3505	58.0	62.5	120.5	0.1115	0.2151	148
149	297.27	272.22	0.0154	0.1841	64.86	5.4304	58.3	62.2	120.5	0.1121	0.2150	149

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
150	300.84	275.70	0.0155	0.1814	64.71	5.5116	58.7	61.8	120.6	0.1128	0.2149	150
151	304.43	279.21	0.0155	0.1788	64.57	5.5940	59.1	61.5	120.6	0.1134	0.2148	151
152	308.06	282.76	0.0155	0.1761	64.42	5.6777	59.5	61.1	120.7	0.1140	0.2147	152
153	311.72	286.35	0.0156	0.1735	64.27	5.7627	59.9	60.8	120.7	0.1146	0.2145	153
154	315.41	289.96	0.0156	0.1710	64.12	5.8491	60.3	60.4	120.7	0.1153	0.2144	154
155	319.14	293.61	0.0156	0.1684	63.97	5.9369	60.7	60.0	120.8	0.1159	0.2143	155
156	322.89	297.30	0.0157	0.1659	63.82	6.0261	61.1	59.7	120.8	0.1165	0.2142	156
157	326.68	301.02	0.0157	0.1635	63.67	6.1167	61.5	59.3	120.8	0.1172	0.2140	157
158	330.50	304.78	0.0157	0.1611	63.52	6.2088	61.9	58.9	120.9	0.1178	0.2139	158
159	334.35	308.57	0.0158	0.1587	63.37	6.3024	62.3	58.5	120.9	0.1185	0.2138	159
160	338.24	312.40	0.0158	0.1563	63.22	6.3976	62.8	58.2	120.9	0.1191	0.2136	160
161	342.15	316.27	0.0159	0.1540	63.07	6.4944	63.2	57.8	120.9	0.1197	0.2135	161
162	346.10	320.17	0.0159	0.1517	62.91	6.5928	63.6	57.4	121.0	0.1204	0.2133	162
163	350.09	324.11	0.0159	0.1494	62.76	6.6928	64.0	57.0	121.0	0.1210	0.2132	163
164	354.10	328.08	0.0160	0.1472	62.61	6.7946	64.4	56.6	121.0	0.1217	0.2131	164
165	358.15	332.10	0.0160	0.1450	62.45	6.8981	64.8	56.2	121.0	0.1223	0.2129	165
166	362.23	336.15	0.0161	0.1428	62.30	7.0034	65.3	55.8	121.0	0.1230	0.2128	166
167	366.35	340.24	0.0161	0.1406	62.14	7.1106	65.7	55.4	121.1	0.1237	0.2126	167
168	370.50	344.36	0.0161	0.1385	61.99	7.2197	66.1	54.9	121.1	0.1243	0.2125	168
169	374.68	348.53	0.0162	0.1364	61.83	7.3307	66.6	54.5	121.1	0.1250	0.2123	169
170	378.90	352.73	0.0162	0.1343	61.67	7.4437	67.0	54.1	121.1	0.1257	0.2121	170
171	383.15	356.97	0.0163	0.1323	61.51	7.5587	67.4	53.7	121.1	0.1263	0.2120	171
172	387.43	361.25	0.0163	0.1303	61.35	7.6759	67.9	53.2	121.1	0.1270	0.2118	172
173	391.75	365.57	0.0163	0.1283	61.19	7.7953	68.3	52.8	121.1	0.1277	0.2116	173
174	396.11	369.93	0.0164	0.1263	61.03	7.9169	68.7	52.3	121.1	0.1284	0.2115	174
175	400.50	374.34	0.0164	0.1244	60.87	8.0408	69.2	51.9	121.1	0.1290	0.2113	175
176	404.92	378.78	0.0165	0.1224	60.71	8.1670	69.6	51.4	121.1	0.1297	0.2111	176
177	409.38	383.26	0.0165	0.1205	60.55	8.2958	70.1	50.9	121.0	0.1304	0.2109	177
178	413.87	387.78	0.0166	0.1187	60.38	8.4270	70.6	50.5	121.0	0.1311	0.2108	178
179	418.40	392.35	0.0166	0.1168	60.22	8.5609	71.0	50.0	121.0	0.1318	0.2106	179
180	422.96	396.95	0.0167	0.1150	60.06	8.6975	71.5	49.5	121.0	0.1325	0.2104	180
181	427.56	401.60	0.0167	0.1132	59.89	8.8369	71.9	49.0	121.0	0.1332	0.2102	181
182	432.20	406.29	0.0167	0.1114	59.72	8.9791	72.4	48.5	120.9	0.1339	0.2100	182
183	436.87	411.02	0.0168	0.1096	59.55	9.1244	72.9	48.0	120.9	0.1346	0.2098	183
184	441.57	415.80	0.0168	0.1078	59.38	9.2727	73.4	47.5	120.8	0.1353	0.2096	184
185	446.31	420.62	0.0169	0.1061	59.21	9.4242	73.9	47.0	120.8	0.1361	0.2094	185
186	451.09	425.48	0.0169	0.1044	59.04	9.5791	74.3	46.4	120.8	0.1368	0.2091	186
187	455.90	430.39	0.0170	0.1027	58.87	9.7374	74.8	45.9	120.7	0.1375	0.2089	187
188	460.75	435.34	0.0170	0.1010	58.70	9.8994	75.3	45.3	120.7	0.1383	0.2087	188
189	465.64	440.34	0.0171	0.0994	58.52	10.0650	75.8	44.8	120.6	0.1390	0.2085	189
190	470.56	445.38	0.0171	0.0977	58.34	10.2346	76.3	44.2	120.5	0.1398	0.2082	190
191	475.51	450.47	0.0172	0.0961	58.17	10.4082	76.8	43.6	120.5	0.1405	0.2080	191
192	480.51	455.60	0.0172	0.0945	57.99	10.5861	77.3	43.0	120.4	0.1413	0.2077	192
193	485.54	460.78	0.0173	0.0929	57.81	10.7684	77.9	42.5	120.3	0.1420	0.2075	193
194	490.60	466.01	0.0174	0.0913	57.63	10.9553	78.4	41.8	120.2	0.1428	0.2072	194
195	495.70	471.29	0.0174	0.0897	57.44	11.1471	78.9	41.2	120.1	0.1436	0.2069	195
196	500.84	476.61	0.0175	0.0882	57.26	11.3440	79.5	40.6	120.1	0.1444	0.2067	196
197	506.01	481.98	0.0175	0.0866	57.07	11.5462	80.0	39.9	119.9	0.1452	0.2064	197
198	511.22	487.40	0.0176	0.0851	56.88	11.7541	80.6	39.3	119.8	0.1460	0.2061	198
199	516.47	492.87	0.0176	0.0836	56.69	11.9679	81.1	38.6	119.7	0.1468	0.2058	199
200	521.75	498.39	0.0177	0.0820	56.49	12.1880	81.7	37.9	119.6	0.1476	0.2055	200
201	527.06	503.97	0.0178	0.0805	56.30	12.4148	82.2	37.2	119.5	0.1485	0.2051	201
202	532.41	509.59	0.0178	0.0791	56.10	12.6486	82.8	36.5	119.3	0.1493	0.2048	202
203	537.80	515.27	0.0179	0.0776	55.89	12.8900	83.4	35.8	119.2	0.1502	0.2045	203
204	543.22	520.99	0.0180	0.0761	55.69	13.1393	84.0	35.0	119.0	0.1510	0.2041	204

**Table 1** (continued)  
**Suva® MP39 Saturation Properties—Temperature Table**

TEMP. °F	PRESSURE psia		VOLUME ft <sup>3</sup> /lb		DENSITY lb/ft <sup>3</sup>		ENTHALPY Btu/lb			ENTROPY Btu/(lb)(°R)		TEMP. °F
	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>	
205	548.68	526.78	0.0180	0.0746	55.48	13.3972	84.6	34.2	118.9	0.1519	0.2037	205
206	554.17	532.61	0.0181	0.0732	55.27	13.6642	85.2	33.5	118.7	0.1528	0.2033	206
207	559.70	538.51	0.0182	0.0717	55.05	13.9412	85.9	32.6	118.5	0.1537	0.2029	207
208	565.25	544.46	0.0182	0.0703	54.83	14.2288	86.5	31.8	118.3	0.1546	0.2025	208
209	570.84	550.46	0.0183	0.0688	54.61	14.5279	87.2	30.9	118.1	0.1556	0.2021	209
210	576.47	556.53	0.0184	0.0674	54.38	14.8397	87.8	30.0	117.9	0.1565	0.2016	210
211	582.12	562.66	0.0185	0.0659	54.14	15.1653	88.5	29.1	117.6	0.1575	0.2012	211

**Table 2**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb

H = Enthalpy in Btu/lb

S = Entropy in Btu/(lb) (°R)

(Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	1.00 (-99.54°F)			2.00 (-81.72°F)			3.00 (-70.27°F)			4.00 (-61.64°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(40.7815)	(91.5)	(0.2628)	(21.3428)	(93.8)	(0.2545)	(14.624)	(95.3)	(0.2500)	(11.1861)	(96.5)	(0.2469)		
-90	41.8713	92.8	0.2662	—	—	—	—	—	—	—	—	—	-90	
-80	43.0132	94.1	0.2698	21.4413	94.0	0.2551	—	—	—	—	—	—	-80	
-70	44.1548	95.5	0.2734	22.0148	95.4	0.2587	14.6346	95.4	0.2501	—	—	—	-70	
-60	45.2962	96.9	0.2769	22.5880	96.8	0.2622	15.0184	96.8	0.2536	11.2335	96.7	0.2475	-60	
-50	46.4372	98.3	0.2804	23.1609	98.2	0.2658	15.4020	98.2	0.2572	11.5224	98.1	0.2510	-50	
-40	47.5780	99.7	0.2839	23.7335	99.7	0.2693	15.7852	99.6	0.2607	11.8110	99.6	0.2545	-40	
-30	48.7185	101.2	0.2874	24.3059	101.2	0.2727	16.1683	101.1	0.2641	12.0993	101.1	0.2580	-30	
-20	49.8589	102.7	0.2909	24.8781	102.7	0.2762	16.5511	102.6	0.2676	12.3875	102.6	0.2615	-20	
-10	50.9990	104.2	0.2943	25.4501	104.2	0.2796	16.9337	104.1	0.2710	12.6754	104.1	0.2649	-10	
0	52.1389	105.8	0.2977	26.0219	105.7	0.2830	17.3161	105.7	0.2744	12.9631	105.6	0.2683	0	
10	53.2787	107.4	0.3011	26.5935	107.3	0.2864	17.6983	107.3	0.2778	13.2507	107.2	0.2717	10	
20	54.4182	109.0	0.3044	27.1649	108.9	0.2898	18.0804	108.9	0.2812	13.5381	108.8	0.2751	20	
30	55.5577	110.6	0.3077	27.7362	110.5	0.2931	18.4623	110.5	0.2845	13.8253	110.4	0.2784	30	
40	56.6970	112.2	0.3111	28.3073	112.2	0.2964	18.8440	112.1	0.2878	14.1123	112.1	0.2817	40	
50	57.8361	113.9	0.3143	28.8783	113.8	0.2997	19.2256	113.8	0.2911	14.3993	113.7	0.2850	50	
60	58.9751	115.5	0.3176	29.4492	115.5	0.3030	19.6071	115.5	0.2944	14.6861	115.4	0.2883	60	
70	60.1141	117.2	0.3208	30.0199	117.2	0.3062	19.9885	117.2	0.2976	14.9727	117.1	0.2915	70	
80	61.2529	119.0	0.3241	30.5906	118.9	0.3094	20.3697	118.9	0.3008	15.2593	118.8	0.2948	80	
90	62.3916	120.7	0.3273	31.1611	120.7	0.3126	20.7509	120.6	0.3040	15.5458	120.6	0.2980	90	
100	63.5301	122.5	0.3304	31.7315	122.4	0.3158	21.1320	122.4	0.3072	15.8321	122.4	0.3011	100	
110	64.6687	124.2	0.3336	32.3019	124.2	0.3190	21.5129	124.2	0.3104	16.1184	124.1	0.3043	110	
120	65.8071	126.0	0.3367	32.8721	126.0	0.3221	21.8938	126.0	0.3135	16.4046	125.9	0.3074	120	
130	66.9454	127.9	0.3398	33.4423	127.8	0.3252	22.2746	127.8	0.3166	16.6907	127.8	0.3105	130	
140	68.0837	129.7	0.3429	34.0124	129.7	0.3283	22.6553	129.6	0.3197	16.9767	129.6	0.3136	140	
150	69.2219	131.6	0.3460	34.5824	131.5	0.3314	23.0359	131.5	0.3228	17.2627	131.5	0.3167	150	
160	70.3600	133.4	0.3490	35.1524	133.4	0.3344	23.4165	133.4	0.3259	17.5485	133.3	0.3198	160	
170	71.4980	135.3	0.3521	35.7223	135.3	0.3374	23.7970	135.3	0.3289	17.8343	135.2	0.3228	170	
180	72.6360	137.2	0.3551	36.2921	137.2	0.3405	24.1774	137.2	0.3319	18.1201	137.1	0.3258	180	
190	73.7739	139.2	0.3581	36.8618	139.1	0.3435	24.5578	139.1	0.3349	18.4058	139.1	0.3288	190	
200	74.9118	141.1	0.3610	37.4316	141.1	0.3464	24.9381	141.1	0.3379	18.6914	141.0	0.3318	200	
210	76.0496	143.1	0.3640	38.0012	143.0	0.3494	25.3184	143.0	0.3408	18.9770	143.0	0.3347	210	
220	—	—	—	38.5708	145.0	0.3523	25.6986	145.0	0.3438	19.2625	145.0	0.3377	220	
230	—	—	—	—	—	—	26.0788	147.0	0.3467	19.5480	147.0	0.3406	230	
240	—	—	—	—	—	—	—	—	—	19.8334	149.0	0.3435	240	

TEMP. °F	5.00						6.00						7.00						TEMP. °F	
	(-54.62°F)			(-48.67°F)			(-43.46°F)			(-38.83°F)			(-33.77°F)			(-29.67°F)				
	V	H	S	V	H	S	V	H	S	V	H	S	V	H	S	V	H	S		
	(9.0873)	(97.4)	(0.2446)	(7.6684)	(98.2)	(0.2428)	(6.6430)	(98.9)	(0.2413)	(5.8662)	(99.5)	(0.2400)								
-50	9.1945	98.1	0.2462	—	—	—	6.7008	99.4	0.2425	—	—	—	—	—	—	—	—	—	-50	
-40	9.4263	99.5	0.2497	7.8365	99.5	0.2458	6.8675	100.9	0.2460	5.9955	100.9	0.2431	—	—	—	—	—	—	-40	
-30	9.6579	101.0	0.2532	8.0302	101.0	0.2493	7.0340	102.4	0.2495	6.1416	102.4	0.2466	—	—	—	—	—	—	-30	
-20	9.8893	102.5	0.2567	8.2237	102.5	0.2528	7.2002	103.9	0.2529	6.2876	103.9	0.2500	—	—	—	—	—	—	-20	
-10	10.1204	104.0	0.2601	8.4170	104.0	0.2562	7.3662	105.5	0.2563	6.4334	105.5	0.2535	—	—	—	—	—	—	-10	
0	10.3513	105.6	0.2636	8.6101	105.6	0.2596	7.5321	107.1	0.2597	6.5789	107.0	0.2569	—	—	—	—	—	—	0	
10	10.5821	107.2	0.2669	8.8029	107.1	0.2630	7.6977	108.7	0.2631	6.7243	108.6	0.2602	—	—	—	—	—	—	10	
20	10.8126	108.8	0.2703	8.9956	108.7	0.2664	7.8632	110.3	0.2665	6.8695	110.3	0.2636	—	—	—	—	—	—	20	
30	11.0430	110.4	0.2737	9.1882	110.3	0.2698	8.0286	111.9	0.2698	7.0146	111.9	0.2669	—	—	—	—	—	—	30	
40	11.2733	112.0	0.2770	9.3806	112.0	0.2731	8.1938	113.6	0.2731	7.1595	113.6	0.2702	—	—	—	—	—	—	40	
50	11.5034	113.7	0.2803	9.5728	113.7	0.2764	8.3589	115.3	0.2764	7.3043	115.3	0.2735	—	—	—	—	—	—	50	
60	11.7334	115.4	0.2835	9.7649	115.3	0.2797	8.5238	117.0	0.2796	7.4490	117.0	0.2768	—	—	—	—	—	—	60	
70	11.9633	117.1	0.2868	9.9569	117.0	0.2829	8.6887	118.7	0.2828	7.5935	118.7	0.2800	—	—	—	—	—	—	70	
80	12.1930	118.8	0.2900	10.1488	118.8	0.2861	8.8436	120.5	0.2860	7.7380	120.4	0.2832	—	—	—	—	—	—	80	
90	12.4227	120.6	0.2932	10.3406	120.5	0.2893	8.9756	122.2	0.2892	7.8823	122.2	0.2864	—	—	—	—	—	—	90	
100	12.6522	122.3	0.2964	10.5323	122.3	0.2925	9.1826	124.0	0.2924	8.0266	124.0	0.2895	—	—	—	—	—	—	100	
110	12.8817	124.1	0.2996	10.7239	124.1	0.2957	9.3470	125.8	0.2955	8.1707	125.8	0.2927	—	—	—	—	—	—	110	
120	13.1111	125.9	0.3027	10.9154	125.9	0.2988	9.5114	127.7	0.2987	8.3148	127.6	0.2958	—	—	—	—	—	—	120	
130	13.3404	127.7	0.3058	11.1068	127.7	0.3019	9.6756	129.5	0.3018	8.4588	129.5	0.2989	—	—	—	—	—	—	130	
140	13.5696	129.6	0.3089	11.2981	129.5	0.3050	9.8398	131.4	0.3048	8.6027	131.3	0.3020	—	—	—	—	—	—	140	
150	13.7987	131.4	0.3120	11.4894	131.4	0.3081	9.9839	133.4	0.3079	8.7465	133.2	0.3050	—	—	—	—	—	—	150	
160	14.0278	133.3	0.3150	11.6806	133.3	0.3112	10.0400	133.2												

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, psia														
TEMP. °F	9.00			10.00			11.00			12.00			TEMP. °F	
	(-34.64°F)			(-30.81°F)			(-27.28°F)			(-23.99°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(5.2565)	(100.1)	(0.2389)	(4.7649)	(100.6)	(0.2380)	(4.3597)	(101.1)	(0.2371)	(4.0198)	(101.5)	(0.2364)		
-30	5.3171	100.8	0.2406	4.7744	100.7	0.2383	—	—	—	—	—	—	-30	
-20	5.4476	102.3	0.2440	4.8923	102.3	0.2417	4.4379	102.2	0.2397	4.0592	102.2	0.2378	-20	
-10	5.5778	103.8	0.2475	5.0099	103.8	0.2452	4.5452	103.7	0.2431	4.1579	103.7	0.2412	-10	
0	5.7078	105.4	0.2509	5.1272	105.4	0.2486	4.6522	105.3	0.2466	4.2564	105.3	0.2447	0	
10	5.8375	107.0	0.2543	5.2444	106.9	0.2520	4.7591	106.9	0.2500	4.3547	106.8	0.2481	10	
20	5.9672	108.6	0.2577	5.3614	108.5	0.2554	4.8658	108.5	0.2534	4.4527	108.5	0.2515	20	
30	6.0966	110.2	0.2611	5.4782	110.2	0.2588	4.9723	110.1	0.2567	4.5507	110.1	0.2548	30	
40	6.2259	111.9	0.2644	5.5949	111.8	0.2621	5.0787	111.8	0.2601	4.6484	111.7	0.2582	40	
50	6.3550	113.5	0.2677	5.7115	113.5	0.2654	5.1849	113.4	0.2634	4.7460	113.4	0.2615	50	
60	6.4841	115.2	0.2710	5.8279	115.2	0.2687	5.2909	115.1	0.2666	4.8435	115.1	0.2648	60	
70	6.6130	116.9	0.2742	5.9441	116.9	0.2720	5.3969	116.9	0.2699	4.9409	116.8	0.2680	70	
80	6.7417	118.7	0.2775	6.0603	118.6	0.2752	5.5027	118.6	0.2731	5.0381	118.5	0.2713	80	
90	6.8704	120.4	0.2807	6.1763	120.4	0.2784	5.6085	120.3	0.2764	5.1352	120.3	0.2745	90	
100	6.9990	122.2	0.2839	6.2923	122.1	0.2816	5.7141	122.1	0.2796	5.2322	122.1	0.2777	100	
110	7.1274	124.0	0.2870	6.4081	123.9	0.2848	5.8196	123.9	0.2827	5.3292	123.9	0.2809	110	
120	7.2558	125.8	0.2902	6.5239	125.7	0.2879	5.9250	125.7	0.2859	5.4260	125.7	0.2840	120	
130	7.3841	127.6	0.2933	6.6396	127.6	0.2910	6.0304	127.5	0.2890	5.5227	127.5	0.2871	130	
140	7.5123	129.4	0.2964	6.7552	129.4	0.2941	6.1356	129.4	0.2921	5.6194	129.3	0.2902	140	
150	7.6405	131.3	0.2995	6.8707	131.3	0.2972	6.2408	131.2	0.2952	5.7160	131.2	0.2933	150	
160	7.7685	133.2	0.3025	6.9861	133.2	0.3003	6.3459	133.1	0.2982	5.8125	133.1	0.2964	160	
170	7.8965	135.1	0.3056	7.1015	135.1	0.3033	6.4510	135.0	0.3013	5.9089	135.0	0.2994	170	
180	8.0245	137.0	0.3086	7.2168	137.0	0.3064	6.5560	136.9	0.3043	6.0053	136.9	0.3025	180	
190	8.1523	138.9	0.3116	7.3320	138.9	0.3094	6.6609	138.9	0.3073	6.1016	138.9	0.3055	190	
200	8.2801	140.9	0.3146	7.4472	140.9	0.3123	6.7658	140.8	0.3103	6.1979	140.8	0.3084	200	
210	8.4079	142.9	0.3175	7.5624	142.8	0.3153	6.8706	142.8	0.3133	6.2940	142.8	0.3114	210	
220	8.5356	144.8	0.3205	7.6774	144.8	0.3182	6.9753	144.8	0.3162	6.3902	144.8	0.3144	220	
230	8.6633	146.8	0.3234	7.7925	146.8	0.3212	7.0800	146.8	0.3191	6.4863	146.8	0.3173	230	
240	8.7909	148.9	0.3263	7.9074	148.8	0.3241	7.1847	148.8	0.3221	6.5823	148.8	0.3202	240	
250	8.9184	150.9	0.3292	8.0224	150.9	0.3270	7.2893	150.9	0.3249	6.6783	150.8	0.3231	250	
260	9.0459	153.0	0.3321	8.1373	152.9	0.3299	7.3938	152.9	0.3278	6.7743	152.9	0.3260	260	
270	9.1734	155.0	0.3349	8.2521	155.0	0.3327	7.4983	155.0	0.3307	6.8702	155.0	0.3288	270	
280	—	—	—	—	—	—	7.6028	157.1	0.3335	6.9661	157.0	0.3317	280	

TEMP. °F	13.00			14.00			14.696			15.00			TEMP. °F	
	(-20.91°F)			(-18.02°F)			(-16.10°F)			(-15.28°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(3.7304)	(102.0)	(0.2357)	(3.4810)	(102.4)	(0.2350)	(3.3267)	(102.6)	(0.2346)	(3.2637)	(102.7)	(0.2345)		
-20	3.7388	102.1	0.2360	—	—	—	3.3763	103.6	0.2368	3.3058	103.5	0.2363	-20	
-10	3.8302	103.6	0.2395	3.5493	103.6	0.2378	3.3763	103.6	0.2368	3.3058	103.5	0.2363	-10	
0	3.9214	105.2	0.2429	3.6343	105.2	0.2413	3.4575	105.1	0.2402	3.3854	105.1	0.2398	0	
10	4.0124	106.8	0.2463	3.7190	106.8	0.2447	3.5384	106.7	0.2436	3.4648	106.7	0.2432	10	
20	4.1032	108.4	0.2497	3.8036	108.4	0.2481	3.6192	108.3	0.2470	3.5439	108.3	0.2466	20	
30	4.1939	110.0	0.2531	3.8880	110.0	0.2515	3.6997	110.0	0.2504	3.6230	109.9	0.2500	30	
40	4.2844	111.7	0.2564	3.9723	111.6	0.2548	3.7802	111.6	0.2538	3.7018	111.6	0.2533	40	
50	4.3747	113.4	0.2597	4.0564	113.3	0.2581	3.8604	113.3	0.2571	3.7805	113.3	0.2566	50	
60	4.4649	115.1	0.2630	4.1404	115.0	0.2614	3.9405	115.0	0.2604	3.8591	115.0	0.2599	60	
70	4.5550	116.8	0.2663	4.2242	116.7	0.2647	4.0205	116.7	0.2636	3.9375	116.7	0.2632	70	
80	4.6449	118.5	0.2695	4.3079	118.5	0.2679	4.1004	118.4	0.2669	4.0158	118.4	0.2664	80	
90	4.7348	120.3	0.2728	4.3915	120.2	0.2712	4.1802	120.2	0.2701	4.0940	120.2	0.2697	90	
100	4.8245	122.0	0.2760	4.4750	122.0	0.2744	4.2599	122.0	0.2733	4.1721	122.0	0.2729	100	
110	4.9142	123.8	0.2791	4.5584	123.8	0.2775	4.3394	123.8	0.2765	4.2501	123.8	0.2760	110	
120	5.0037	125.6	0.2823	4.6417	125.6	0.2807	4.4189	125.6	0.2796	4.3280	125.6	0.2792	120	
130	5.0932	127.5	0.2854	4.7250	127.4	0.2838	4.4983	127.4	0.2828	4.4058	127.4	0.2823	130	
140	5.1825	129.3	0.2885	4.8081	129.3	0.2869	4.5776	129.3	0.2859	4.4836	129.2	0.2854	140	
150	5.2718	131.2	0.2916	4.8912	131.1	0.2900	4.6568	131.1	0.2890	4.5612	131.1	0.2885	150	
160	5.3611	133.1	0.2947	4.9741	133.0	0.2931	4.7359	133.0	0.2920	4.6388	133.0	0.2916	160	
170	5.4502	135.0	0.2977	5.0571	134.9	0.2961	4.8150	134.9	0.2951	4.7163	134.9	0.2946	170	
180	5.5393	136.9	0.3007	5.1399	136.9	0.2991	4.8940	136.8	0.2981	4.7938	136.8	0.2977	180	
190	5.6283	138.8	0.3037	5.2227	138.8	0.3022	4.9730	138.8	0.3011	4.8711	138.8	0.3007	190	
200	5.7173	140.8	0.3067	5.3054	140.8	0.3051	5.0518	140.7	0.3041	4.9485	140.7	0.3037	200	
210	5.8062	142.8	0.3097	5.3881	142.7	0.3081	5.1307	142.7	0.3071	5.0257	142.7	0.3066	210	
220	5.8951	144.7	0.3126	5.4707	144.7	0.3111	5.2094	144.7	0.3100	5.1029	144.7	0.3096	220	
230	5.9839	146.7	0.3156	5.5533	146.7	0.3140	5.2882	146.7	0.3130	5.1801	146.7	0.3125	230	
240	6.0727	148.8	0.3185	5.6358	148.7	0.3169	5.3669	148.7	0.3159	5.2572	148.7	0.3154	240	
250	6.1614	150.8	0.3214	5.7183	150.8	0.3198	5.4455	150.8	0.3188	5.3343	150.8	0.3183	250	
260	6.2501	152.9	0.3243	5.8007	152.8	0.3227	5.5241	152.8	0.3216	5.4113	152.8	0.3212	260	
270	6.3387	154.9	0.3271	5.8831	154.9	0.3255	5.6026	154.9	0.3245	5.4883	154.9	0.3241	270	
280	6.4273	157.0	0.3300											

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb

H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	16.00			17.00			18.00			19.00				
	(-12.69°F)			(-10.22°F)			(-7.86°F)			(-5.60°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(3.0726)	(103.1)	(0.2339)	(2.9032)	(103.4)	(0.2335)	(2.7519)	(103.7)	(0.2330)	(2.6160)	(104.0)	(0.2326)			
-10	3.0927	103.5	0.2349	2.9047	103.4	0.2335	—	—	—	—	—	—	-10	
0	3.1676	105.1	0.2383	2.9754	105.0	0.2370	2.8046	105.0	0.2357	2.6517	104.9	0.2345	0	
10	3.2423	106.7	0.2418	3.0459	106.6	0.2404	2.8714	106.6	0.2392	2.7152	106.5	0.2380	10	
20	3.3167	108.3	0.2452	3.1162	108.2	0.2438	2.9380	108.2	0.2426	2.7785	108.1	0.2414	20	
30	3.3910	109.9	0.2485	3.1863	109.9	0.2472	3.0044	109.8	0.2459	2.8416	109.8	0.2447	30	
40	3.4651	111.6	0.2519	3.2563	111.5	0.2506	3.0707	111.5	0.2493	2.9045	111.4	0.2481	40	
50	3.5391	113.2	0.2552	3.3261	113.2	0.2539	3.1368	113.2	0.2526	2.9673	113.1	0.2514	50	
60	3.6130	114.9	0.2585	3.3958	114.9	0.2572	3.2027	114.9	0.2559	3.0300	114.8	0.2547	60	
70	3.6867	116.7	0.2618	3.4653	116.6	0.2605	3.2686	116.6	0.2592	3.0925	116.5	0.2580	70	
80	3.7603	118.4	0.2650	3.5347	118.4	0.2637	3.3343	118.3	0.2625	3.1549	118.3	0.2613	80	
90	3.8337	120.1	0.2683	3.6040	120.1	0.2669	3.3999	120.1	0.2657	3.2172	120.0	0.2645	90	
100	3.9071	121.9	0.2715	3.6732	121.9	0.2701	3.4653	121.8	0.2689	3.2793	121.8	0.2677	100	
110	3.9804	123.7	0.2746	3.7423	123.7	0.2733	3.5307	123.6	0.2721	3.3414	123.6	0.2709	110	
120	4.0535	125.5	0.2778	3.8113	125.5	0.2765	3.5960	125.5	0.2752	3.4034	125.4	0.2741	120	
130	4.1266	127.4	0.2809	3.8802	127.3	0.2796	3.6612	127.3	0.2784	3.4653	127.3	0.2772	130	
140	4.1996	129.2	0.2840	3.9491	129.2	0.2827	3.7263	129.1	0.2815	3.5271	129.1	0.2803	140	
150	4.2725	131.1	0.2871	4.0178	131.1	0.2858	3.7914	131.0	0.2846	3.5888	131.0	0.2834	150	
160	4.3454	133.0	0.2902	4.0865	132.9	0.2889	3.8563	132.9	0.2877	3.6504	132.9	0.2865	160	
170	4.4182	134.9	0.2932	4.1551	134.8	0.2919	3.9212	134.8	0.2907	3.7120	134.8	0.2895	170	
180	4.4909	136.8	0.2963	4.2236	136.8	0.2950	3.9861	136.7	0.2937	3.7735	136.7	0.2926	180	
190	4.5635	138.7	0.2993	4.2921	138.7	0.2980	4.0508	138.7	0.2968	3.8349	138.7	0.2956	190	
200	4.6361	140.7	0.3023	4.3605	140.7	0.3010	4.1155	140.6	0.2997	3.8963	140.6	0.2986	200	
210	4.7086	142.7	0.3052	4.4289	142.6	0.3039	4.1802	142.6	0.3027	3.9576	142.6	0.3015	210	
220	4.7811	144.7	0.3082	4.4972	144.6	0.3069	4.2447	144.6	0.3057	4.0189	144.6	0.3045	220	
230	4.8535	146.7	0.3111	4.5654	146.6	0.3098	4.3093	146.6	0.3086	4.0801	146.6	0.3074	230	
240	4.9259	148.7	0.3140	4.6336	148.7	0.3127	4.3738	148.6	0.3115	4.1413	148.6	0.3104	240	
250	4.9982	150.7	0.3169	4.7018	150.7	0.3156	4.4382	150.7	0.3144	4.2024	150.7	0.3133	250	
260	5.0705	152.8	0.3198	4.7699	152.8	0.3185	4.5026	152.7	0.3173	4.2635	152.7	0.3161	260	
270	5.1428	154.9	0.3227	4.8379	154.8	0.3214	4.5670	154.8	0.3202	4.3245	154.8	0.3190	270	
280	5.2150	157.0	0.3255	4.9060	156.9	0.3242	4.6313	156.9	0.3230	4.3855	156.9	0.3218	280	
290	5.2871	159.1	0.3284	4.9740	159.0	0.3271	4.6956	159.0	0.3258	4.4465	159.0	0.3247	290	
300	—	—	—	—	—	—	4.7598	161.1	0.3286	4.5074	161.1	0.3275	300	

TEMP. °F	20.00			21.00			22.00			23.00			TEMP. °F	
	(-3.44°F)			(-1.36°F)			(0.65°F)			(2.58°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(2.4932)	(104.3)	(0.2322)	(2.3817)	(104.6)	(0.2318)	(2.2799)	(104.9)	(0.2314)	(2.1867)	(105.1)	(0.2311)			
0	2.5141	104.9	0.2334	2.3895	104.8	0.2323	—	—	—	—	—	—	0	
10	2.5746	106.5	0.2368	2.4474	106.4	0.2357	2.3317	106.4	0.2347	2.2261	106.3	0.2337	10	
20	2.6349	108.1	0.2402	2.5050	108.0	0.2391	2.3869	108.0	0.2381	2.2791	107.9	0.2371	20	
30	2.6950	109.7	0.2436	2.5625	109.7	0.2425	2.4419	109.6	0.2415	2.3318	109.6	0.2405	30	
40	2.7550	111.4	0.2470	2.6197	111.3	0.2459	2.4967	111.3	0.2448	2.3844	111.3	0.2439	40	
50	2.8148	113.1	0.2503	2.6769	113.0	0.2492	2.5514	113.0	0.2482	2.4369	112.9	0.2472	50	
60	2.8745	114.8	0.2536	2.7338	114.7	0.2525	2.6059	114.7	0.2515	2.4891	114.6	0.2505	60	
70	2.9340	116.5	0.2569	2.7907	116.5	0.2558	2.6603	116.4	0.2548	2.5413	116.4	0.2538	70	
80	2.9935	118.2	0.2601	2.8474	118.2	0.2591	2.7146	118.2	0.2580	2.5933	118.1	0.2571	80	
90	3.0527	120.0	0.2634	2.9040	120.0	0.2623	2.7687	119.9	0.2613	2.6452	119.9	0.2603	90	
100	3.1119	121.8	0.2666	2.9605	121.7	0.2655	2.8228	121.7	0.2645	2.6970	121.7	0.2635	100	
110	3.1710	123.6	0.2698	3.0168	123.5	0.2687	2.8767	123.5	0.2677	2.7487	123.5	0.2667	110	
120	3.2300	125.4	0.2729	3.0731	125.4	0.2719	2.9305	125.3	0.2709	2.8003	125.3	0.2699	120	
130	3.2889	127.2	0.2761	3.1293	127.2	0.2750	2.9842	127.2	0.2740	2.8518	127.1	0.2730	130	
140	3.3477	129.1	0.2792	3.1854	129.1	0.2781	3.0379	129.0	0.2771	2.9032	129.0	0.2762	140	
150	3.4064	131.0	0.2823	3.2415	130.9	0.2812	3.0915	130.9	0.2802	2.9545	130.9	0.2793	150	
160	3.4651	132.8	0.2854	3.2974	132.8	0.2843	3.1450	132.8	0.2833	3.0058	132.8	0.2823	160	
170	3.5237	134.8	0.2884	3.3533	134.7	0.2874	3.1984	134.7	0.2864	3.0570	134.7	0.2854	170	
180	3.5822	136.7	0.2915	3.4091	136.7	0.2904	3.2518	136.6	0.2894	3.1081	136.6	0.2884	180	
190	3.6406	138.6	0.2945	3.4649	138.6	0.2934	3.3050	138.6	0.2924	3.1591	138.5	0.2914	190	
200	3.6990	140.6	0.2975	3.5205	140.6	0.2964	3.3583	140.5	0.2954	3.2101	140.5	0.2944	200	
210	3.7574	142.6	0.3004	3.5762	142.5	0.2994	3.4114	142.5	0.2984	3.2610	142.5	0.2974	210	
220	3.8157	144.6	0.3034	3.6317	144.5	0.3023	3.4646	144.5	0.3013	3.3119	144.5	0.3004	220	
230	3.8739	146.6	0.3063	3.6873	146.5	0.3053	3.5176	146.5	0.3043	3.3627	146.5	0.3033	230	
240	3.9321	148.6	0.3093	3.7427	148.6	0.3082	3.5706	148.5	0.3072	3.4135	148.5	0.3062	240	
250	3.9902	150.6	0.3122	3.7982	150.6	0.3111	3.6236	150.6	0.3101	3.4642	150.6	0.3091	250	
260	4.0483	152.7	0.3150	3.8536	152.7	0.3140	3.6765	152.6	0.3130	3.5149	152.6	0.3120	260	
270	4.1063	154.8	0.3179	3.9089	154.7	0.3169	3.7294	154.7	0.3159	3.5655	154.7	0.3149	270	
280	4.1643	156.9	0.3207	3.9642	156.8	0.3197	3.7823	156.8	0.3187	3.6161	156.8	0.3177	280	
290	4.2223	159.0	0.3236	4.0195	158.9	0.3225	3.8351	158.9	0.3215	3.6667	158.9	0.3206	290	
300	4.2802	161.1	0.32											

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	24.00			25.00			26.00			27.00				
	(4.45°F)			(6.27°F)			(8.03°F)			(9.73°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(2.1010)	(105.4)	(0.2308)	(2.0218)	(105.6)	(0.2305)	(1.9486)	(105.8)	(0.2302)	(1.8806)	(106.1)	(0.2299)			
10	2.1293	106.3	0.2327	2.0402	106.2	0.2318	1.9579	106.2	0.2309	1.8818	106.1	0.2300	10	
20	2.1802	107.9	0.2361	2.0892	107.8	0.2352	2.0052	107.8	0.2343	1.9275	107.8	0.2335	20	
30	2.2309	109.5	0.2395	2.1381	109.5	0.2386	2.0524	109.4	0.2377	1.9730	109.4	0.2369	30	
40	2.2815	111.2	0.2429	2.1867	111.2	0.2420	2.0993	111.1	0.2411	2.0183	111.1	0.2403	40	
50	2.3319	112.9	0.2462	2.2352	112.9	0.2453	2.1461	112.8	0.2445	2.0635	112.8	0.2436	50	
60	2.3821	114.6	0.2496	2.2836	114.6	0.2487	2.1927	114.5	0.2478	2.1085	114.5	0.2469	60	
70	2.4322	116.3	0.2529	2.3318	116.3	0.2519	2.2391	116.3	0.2511	2.1533	116.2	0.2502	70	
80	2.4822	118.1	0.2561	2.3799	118.0	0.2552	2.2855	118.0	0.2543	2.1981	118.0	0.2535	80	
90	2.5320	119.8	0.2594	2.4279	119.8	0.2585	2.3317	119.8	0.2576	2.2427	119.7	0.2568	90	
100	2.5818	121.6	0.2626	2.4757	121.6	0.2617	2.3778	121.6	0.2608	2.2872	121.5	0.2600	100	
110	2.6314	123.4	0.2658	2.5234	123.4	0.2649	2.4238	123.4	0.2640	2.3316	123.3	0.2632	110	
120	2.6809	125.3	0.2689	2.5711	125.2	0.2680	2.4697	125.2	0.2672	2.3758	125.2	0.2663	120	
130	2.7304	127.1	0.2721	2.6187	127.1	0.2712	2.5155	127.0	0.2703	2.4200	127.0	0.2695	130	
140	2.7797	129.0	0.2752	2.6661	128.9	0.2743	2.5612	128.9	0.2735	2.4641	128.9	0.2726	140	
150	2.8290	130.8	0.2783	2.7135	130.8	0.2774	2.6069	130.8	0.2766	2.5082	130.7	0.2757	150	
160	2.8782	132.7	0.2814	2.7608	132.7	0.2805	2.6525	132.7	0.2797	2.5521	132.6	0.2788	160	
170	2.9273	134.6	0.2845	2.8080	134.6	0.2836	2.6979	134.6	0.2827	2.5960	134.5	0.2819	170	
180	2.9764	136.6	0.2875	2.8552	136.5	0.2866	2.7434	136.5	0.2858	2.6398	136.5	0.2849	180	
190	3.0254	138.5	0.2905	2.9023	138.5	0.2896	2.7887	138.5	0.2888	2.6835	138.4	0.2880	190	
200	3.0743	140.5	0.2935	2.9493	140.4	0.2926	2.8340	140.4	0.2918	2.7272	140.4	0.2910	200	
210	3.1232	142.5	0.2965	2.9963	142.4	0.2956	2.8792	142.4	0.2948	2.7708	142.4	0.2939	210	
220	3.1720	144.4	0.2995	3.0433	144.4	0.2986	2.9244	144.4	0.2977	2.8144	144.4	0.2969	220	
230	3.2208	146.5	0.3024	3.0901	146.4	0.3015	2.9695	146.4	0.3007	2.8579	146.4	0.2998	230	
240	3.2695	148.5	0.3053	3.1369	148.5	0.3044	3.0146	148.4	0.3036	2.9014	148.4	0.3028	240	
250	3.3181	150.5	0.3082	3.1837	150.5	0.3073	3.0596	150.5	0.3065	2.9448	150.5	0.3057	250	
260	3.3668	152.6	0.3111	3.2304	152.6	0.3102	3.1046	152.6	0.3094	2.9881	152.5	0.3086	260	
270	3.4153	154.7	0.3140	3.2771	154.7	0.3131	3.1496	154.6	0.3122	3.0314	154.6	0.3114	270	
280	3.4639	156.8	0.3168	3.3238	156.7	0.3159	3.1945	156.7	0.3151	3.0747	156.7	0.3143	280	
290	3.5124	158.9	0.3197	3.3704	158.9	0.3188	3.2393	158.8	0.3179	3.1180	158.8	0.3171	290	
300	3.5608	161.0	0.3225	3.4170	161.0	0.3216	3.2841	161.0	0.3208	3.1612	160.9	0.3199	300	
310	3.6093	163.1	0.3253	3.4635	163.1	0.3244	3.3289	163.1	0.3236	3.2043	163.1	0.3227	310	

TEMP. °F	28.00			29.00			30.00			31.00			TEMP. °F	
	(11.39°F)			(13.00°F)			(14.57°F)			(16.10°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(1.8172)	(106.3)	(0.2297)	(1.7581)	(106.5)	(0.2294)	(1.7027)	(106.7)	(0.2292)	(1.6508)	(106.9)	(0.2289)			
20	1.8552	107.7	0.2326	1.7880	107.7	0.2318	1.7252	107.6	0.2310	1.6665	107.6	0.2303	20	
30	1.8993	109.4	0.2360	1.8306	109.3	0.2352	1.7665	109.3	0.2345	1.7066	109.2	0.2337	30	
40	1.9431	111.0	0.2394	1.8731	111.0	0.2386	1.8077	110.9	0.2379	1.7466	110.9	0.2371	40	
50	1.9868	112.7	0.2428	1.9153	112.7	0.2420	1.8487	112.6	0.2412	1.7863	112.6	0.2405	50	
60	2.0303	114.4	0.2461	1.9575	114.4	0.2453	1.8895	114.4	0.2446	1.8259	114.3	0.2438	60	
70	2.0736	116.2	0.2494	1.9944	116.1	0.2486	1.9302	116.1	0.2479	1.8654	116.0	0.2471	70	
80	2.1169	117.9	0.2527	2.0413	117.9	0.2519	1.9707	117.8	0.2511	1.9047	117.8	0.2504	80	
90	2.1600	119.7	0.2559	2.0830	119.7	0.2552	2.0112	119.6	0.2544	1.9439	119.6	0.2537	90	
100	2.2030	121.5	0.2592	2.1246	121.4	0.2584	2.0515	121.4	0.2576	1.9830	121.4	0.2569	100	
110	2.2459	123.3	0.2624	2.1661	123.3	0.2616	2.0917	123.2	0.2608	2.0220	123.2	0.2601	110	
120	2.2887	125.1	0.2655	2.2075	125.1	0.2648	2.1318	125.0	0.2640	2.0609	125.0	0.2633	120	
130	2.3314	127.0	0.2687	2.2488	126.9	0.2679	2.1718	126.9	0.2672	2.0997	126.9	0.2664	130	
140	2.3740	128.8	0.2718	2.2900	128.8	0.2711	2.2117	128.8	0.2703	2.1384	128.7	0.2696	140	
150	2.4165	130.7	0.2749	2.3312	130.7	0.2742	2.2515	130.6	0.2734	2.1770	130.6	0.2727	150	
160	2.4590	132.6	0.2780	2.3722	132.6	0.2773	2.2912	132.5	0.2765	2.2155	132.5	0.2758	160	
170	2.5013	134.5	0.2811	2.4132	134.5	0.2803	2.3309	134.5	0.2796	2.2540	134.4	0.2788	170	
180	2.5436	136.4	0.2841	2.4541	136.4	0.2834	2.3705	136.4	0.2826	2.2923	136.4	0.2819	180	
190	2.5859	138.4	0.2872	2.4949	138.4	0.2864	2.4101	138.3	0.2856	2.3307	138.3	0.2849	190	
200	2.6280	140.4	0.2902	2.5357	140.3	0.2894	2.4495	140.3	0.2886	2.3689	140.3	0.2879	200	
210	2.6702	142.3	0.2931	2.5764	142.3	0.2924	2.4889	142.3	0.2916	2.4071	142.3	0.2909	210	
220	2.7122	144.3	0.2961	2.6171	144.3	0.2953	2.5283	144.3	0.2946	2.4452	144.3	0.2939	220	
230	2.7542	146.4	0.2990	2.6577	146.3	0.2983	2.5676	146.3	0.2975	2.4833	146.3	0.2968	230	
240	2.7962	148.4	0.3020	2.6983	148.4	0.3012	2.6069	148.3	0.3005	2.5214	148.3	0.2998	240	
250	2.8381	150.4	0.3049	2.7388	150.4	0.3041	2.6461	150.4	0.3034	2.5593	150.4	0.3027	250	
260	2.8799	152.5	0.3078	2.7792	152.5	0.3070	2.6852	152.5	0.3063	2.5973	152.4	0.3056	260	
270	2.9218	154.6	0.3106	2.8196	154.6	0.3099	2.7243	154.5	0.3091	2.6352	154.5	0.3084	270	
280	2.9635	156.7	0.3135	2.8600	156.7	0.3127	2.7634	156.6	0.3120	2.6730	156.6	0.3113	280	
290	3.0053	158.8	0.3163	2.9004	158.8	0.3156	2.8024	158.7	0.3148	2.7108	158.7	0.3141	290	
300	3.0470	160.9	0.3192	2.9407	160.9	0.3184	2.8414	160.9	0.3177	2.7486	160.9	0.3169	300	
310	3.0886	163.1	0.3220	2.9809	163.0	0.3212	2.8804	163.0	0.3205	2.7863	163.0	0.3198	310	
320	3.1303	165.2	0.3247	3.0212	165.2	0.3240	2.9193	165.2	0.3232	2.8241	165.2			

**Table 2** (continued)  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb

H = Enthalpy in Btu/lb

S = Entropy in Btu/(lb) (°R)

(Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	32.00 (17.60°F)			33.00 (19.05°F)			34.00 (20.47°F)			35.00 (21.86°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(1.6020)	(107.1)	(0.2287)	(1.5560)	(107.3)	(0.2285)	(1.5127)	(107.5)	(0.2283)	(1.4717)	(107.7)	(0.2281)		
20	1.6114	107.5	0.2296	1.5596	107.5	0.2288	—	—	—	—	—	—	20	
30	1.6504	109.2	0.2330	1.5976	109.1	0.2323	1.5479	109.1	0.2316	1.5010	109.0	0.2309	30	
40	1.6892	110.9	0.2364	1.6353	110.8	0.2357	1.5846	110.8	0.2350	1.5368	110.7	0.2343	40	
50	1.7278	112.6	0.2397	1.6729	112.5	0.2390	1.6212	112.5	0.2384	1.5724	112.4	0.2377	50	
60	1.7663	114.3	0.2431	1.7103	114.2	0.2424	1.6576	114.2	0.2417	1.6079	114.1	0.2410	60	
70	1.8047	116.0	0.2464	1.7476	116.0	0.2457	1.6939	115.9	0.2450	1.6432	115.9	0.2444	70	
80	1.8428	117.8	0.2497	1.7847	117.7	0.2490	1.7300	117.7	0.2483	1.6784	117.6	0.2477	80	
90	1.8809	119.5	0.2529	1.8217	119.5	0.2523	1.7660	119.5	0.2516	1.7134	119.4	0.2509	90	
100	1.9189	121.3	0.2562	1.8586	121.3	0.2555	1.8019	121.3	0.2548	1.7484	121.2	0.2542	100	
110	1.9567	123.1	0.2594	1.8954	123.1	0.2587	1.8376	123.1	0.2580	1.7832	123.0	0.2574	110	
120	1.9944	125.0	0.2626	1.9320	124.9	0.2619	1.8733	124.9	0.2612	1.8179	124.9	0.2606	120	
130	2.0321	126.8	0.2657	1.9686	126.8	0.2650	1.9088	126.8	0.2644	1.8525	126.7	0.2637	130	
140	2.0696	128.7	0.2689	2.0051	128.7	0.2682	1.9443	128.6	0.2675	1.8870	128.6	0.2669	140	
150	2.1071	130.6	0.2720	2.0415	130.5	0.2713	1.9797	130.5	0.2706	1.9214	130.5	0.2700	150	
160	2.1445	132.5	0.2751	2.0778	132.4	0.2744	2.0150	132.4	0.2737	1.9558	132.4	0.2731	160	
170	2.1818	134.4	0.2781	2.1140	134.4	0.2775	2.0502	134.3	0.2768	1.9901	134.3	0.2762	170	
180	2.2190	136.3	0.2812	2.1502	136.3	0.2805	2.0854	136.3	0.2799	2.0243	136.2	0.2792	180	
190	2.2562	138.3	0.2842	2.1863	138.2	0.2835	2.1205	138.2	0.2829	2.0584	138.2	0.2822	190	
200	2.2933	140.2	0.2872	2.2223	140.2	0.2866	2.1555	140.2	0.2859	2.0925	140.2	0.2853	200	
210	2.3304	142.2	0.2902	2.2583	142.2	0.2895	2.1905	142.2	0.2889	2.1265	142.1	0.2883	210	
220	2.3674	144.2	0.2932	2.2942	144.2	0.2925	2.2254	144.2	0.2919	2.1605	144.2	0.2912	220	
230	2.4043	146.3	0.2961	2.3301	146.2	0.2955	2.2602	146.2	0.2948	2.1944	146.2	0.2942	230	
240	2.4412	148.3	0.2991	2.3659	148.3	0.2984	2.2950	148.2	0.2977	2.2282	148.2	0.2971	240	
250	2.4780	150.3	0.3020	2.4017	150.3	0.3013	2.3298	150.3	0.3007	2.2620	150.3	0.3000	250	
260	2.5148	152.4	0.3049	2.4374	152.4	0.3042	2.3645	152.4	0.3035	2.2958	152.3	0.3029	260	
270	2.5516	154.5	0.3077	2.4731	154.5	0.3071	2.3992	154.4	0.3064	2.3295	154.4	0.3058	270	
280	2.5883	156.6	0.3106	2.5087	156.6	0.3099	2.4338	156.5	0.3093	2.3631	156.5	0.3086	280	
290	2.6250	158.7	0.3134	2.5443	158.7	0.3128	2.4684	158.7	0.3121	2.3968	158.6	0.3115	290	
300	2.6616	160.8	0.3163	2.5798	160.8	0.3156	2.5029	160.8	0.3149	2.4303	160.8	0.3143	300	
310	2.6982	163.0	0.3191	2.6154	163.0	0.3184	2.5374	162.9	0.3177	2.4639	162.9	0.3171	310	
320	2.7347	165.1	0.3219	2.6508	165.1	0.3212	2.5719	165.1	0.3205	2.4974	165.1	0.3199	320	
330	—	—	—	—	—	—	2.6063	167.3	0.3233	2.5309	167.2	0.3227	330	

TEMP. °F	36.00 (23.22°F)			37.00 (24.56°F)			38.00 (25.86°F)			39.00 (27.14°F)			TEMP. °F
	V	H	S	V	H	S	V	H	S	V	H	S	
	(1.4329)	(107.8)	(0.2279)	(1.3962)	(108.0)	(0.2277)	(1.3613)	(108.2)	(0.2276)	(1.3281)	(108.4)	(0.2274)	
30	1.4567	109.0	0.2302	1.4148	108.9	0.2296	1.3751	108.9	0.2290	1.3375	108.8	0.2284	30
40	1.4916	110.7	0.2337	1.4489	110.6	0.2330	1.4084	110.6	0.2324	1.3700	110.5	0.2318	40
50	1.5264	112.4	0.2370	1.4828	112.3	0.2364	1.4415	112.3	0.2358	1.4023	112.2	0.2352	50
60	1.5609	114.1	0.2404	1.5165	114.1	0.2398	1.4744	114.0	0.2391	1.4345	114.0	0.2385	60
70	1.5954	115.8	0.2437	1.5501	115.8	0.2431	1.5072	115.8	0.2425	1.4665	115.7	0.2419	70
80	1.6296	117.6	0.2470	1.5835	117.6	0.2464	1.5399	117.5	0.2458	1.4984	117.5	0.2452	80
90	1.6638	119.4	0.2503	1.6168	119.3	0.2497	1.5724	119.3	0.2491	1.5302	119.3	0.2485	90
100	1.6978	121.2	0.2535	1.6500	121.1	0.2529	1.6047	121.1	0.2523	1.5618	121.1	0.2517	100
110	1.7317	123.0	0.2567	1.6831	123.0	0.2561	1.6370	122.9	0.2555	1.5933	122.9	0.2549	110
120	1.7656	124.8	0.2599	1.7161	124.8	0.2593	1.6692	124.8	0.2587	1.6247	124.7	0.2581	120
130	1.7993	126.7	0.2631	1.7489	126.7	0.2625	1.7012	126.6	0.2619	1.6560	126.6	0.2613	130
140	1.8329	128.6	0.2662	1.7817	128.5	0.2656	1.7332	128.5	0.2650	1.6872	128.5	0.2644	140
150	1.8664	130.4	0.2694	1.8144	130.4	0.2688	1.7651	130.4	0.2682	1.7183	130.3	0.2676	150
160	1.8999	132.3	0.2725	1.8470	132.3	0.2719	1.7969	132.3	0.2713	1.7493	132.3	0.2707	160
170	1.9333	134.3	0.2755	1.8795	134.2	0.2749	1.8286	134.2	0.2743	1.7803	134.2	0.2738	170
180	1.9666	136.2	0.2786	1.9120	136.2	0.2780	1.8603	136.1	0.2774	1.8112	136.1	0.2768	180
190	1.9998	138.2	0.2816	1.9444	138.1	0.2810	1.8918	138.1	0.2804	1.8420	138.1	0.2799	190
200	2.0330	140.1	0.2846	1.9767	140.1	0.2840	1.9234	140.1	0.2834	1.8728	140.0	0.2829	200
210	2.0661	142.1	0.2876	2.0089	142.1	0.2870	1.9548	142.1	0.2864	1.9034	142.0	0.2859	210
220	2.0991	144.1	0.2906	2.0411	144.1	0.2900	1.9862	144.1	0.2894	1.9341	144.0	0.2888	220
230	2.1321	146.1	0.2936	2.0733	146.1	0.2930	2.0175	146.1	0.2924	1.9647	146.1	0.2918	230
240	2.1651	148.2	0.2965	2.1054	148.2	0.2959	2.0488	148.1	0.2953	1.9952	148.1	0.2947	240
250	2.1980	150.2	0.2994	2.1374	150.2	0.2988	2.0801	150.2	0.2982	2.0257	150.2	0.2976	250
260	2.2308	152.3	0.3023	2.1694	152.3	0.3017	2.1113	152.3	0.3011	2.0561	152.2	0.3005	260
270	2.2637	154.4	0.3052	2.2014	154.4	0.3046	2.1424	154.3	0.3040	2.0865	154.3	0.3034	270
280	2.2964	156.5	0.3080	2.2333	156.5	0.3074	2.1735	156.4	0.3069	2.1168	156.4	0.3063	280
290	2.3291	158.6	0.3109	2.2652	158.6	0.3103	2.2046	158.6	0.3097	2.1471	158.5	0.3091	290
300	2.3618	160.7	0.3137	2.2970	160.7	0.3131	2.2356	160.7	0.3125	2.1774	160.7	0.3120	300
310	2.3945	162.9	0.3165	2.3288	162.9	0.3159	2.2666	162.8	0.3153	2.2076	162.8	0.3148	310
320	2.4271	165.1	0.3193	2.3606	165.0	0.3187	2.2976	165.0	0.3181	2.2378	165.0	0.3176	320
330	2.4597	167.2	0.3221	2.3923	167.2	0.3215	2.3285	167.2	0.3209	2.2679	167.2	0.3203	330

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	40.00			41.00			42.00			43.00				
	(28.39°F)			(29.61°F)			(30.81°F)			(32.00°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(1.2965)	(108.5)	(0.2272)	(1.2664)	(108.7)	(0.2271)	(1.2377)	(108.8)	(0.2269)	(1.2102)	(109.0)	(0.2267)			
30	1.3017	108.8	0.2278	1.2676	108.7	0.2272	—	—	—	—	—	—	30	
40	1.3335	110.5	0.2312	1.2988	110.4	0.2306	1.2657	110.4	0.2301	1.2341	110.3	0.2295	40	
50	1.3651	112.2	0.2346	1.3297	112.2	0.2340	1.2960	112.1	0.2335	1.2638	112.1	0.2329	50	
60	1.3966	113.9	0.2380	1.3605	113.9	0.2374	1.3261	113.8	0.2368	1.2933	113.8	0.2363	60	
70	1.4279	115.7	0.2413	1.3911	115.6	0.2407	1.3561	115.6	0.2402	1.3227	115.5	0.2396	70	
80	1.4590	117.4	0.2446	1.4216	117.4	0.2440	1.3859	117.4	0.2435	1.3519	117.3	0.2429	80	
90	1.4901	119.2	0.2479	1.4519	119.2	0.2473	1.4156	119.1	0.2468	1.3809	119.1	0.2462	90	
100	1.5210	121.0	0.2511	1.4821	121.0	0.2506	1.4451	121.0	0.2500	1.4099	120.9	0.2495	100	
110	1.5517	122.9	0.2544	1.5122	122.8	0.2538	1.4746	122.8	0.2532	1.4387	122.7	0.2527	110	
120	1.5824	124.7	0.2576	1.5422	124.7	0.2570	1.5039	124.6	0.2564	1.4674	124.6	0.2559	120	
130	1.6130	126.5	0.2607	1.5721	126.5	0.2602	1.5331	126.5	0.2596	1.4960	126.4	0.2591	130	
140	1.6435	128.4	0.2639	1.6019	128.4	0.2633	1.5623	128.4	0.2628	1.5245	128.3	0.2622	140	
150	1.6739	130.3	0.2670	1.6316	130.3	0.2664	1.5913	130.2	0.2659	1.5529	130.2	0.2654	150	
160	1.7042	132.2	0.2701	1.6612	132.2	0.2696	1.6203	132.2	0.2690	1.5813	132.1	0.2685	160	
170	1.7344	134.1	0.2732	1.6908	134.1	0.2726	1.6492	134.1	0.2721	1.6095	134.1	0.2716	170	
180	1.7646	136.1	0.2762	1.7202	136.1	0.2757	1.6780	136.0	0.2752	1.6377	136.0	0.2746	180	
190	1.7947	138.0	0.2793	1.7496	138.0	0.2787	1.7067	138.0	0.2782	1.6658	138.0	0.2777	190	
200	1.8247	140.0	0.2823	1.7790	140.0	0.2818	1.7354	140.0	0.2812	1.6939	139.9	0.2807	200	
210	1.8546	142.0	0.2853	1.8082	142.0	0.2848	1.7640	142.0	0.2842	1.7219	141.9	0.2837	210	
220	1.8846	144.0	0.2883	1.8374	144.0	0.2877	1.7926	144.0	0.2872	1.7498	143.9	0.2867	220	
230	1.9144	146.0	0.2912	1.8666	146.0	0.2907	1.8211	146.0	0.2902	1.7777	146.0	0.2896	230	
240	1.9442	148.1	0.2942	1.8957	148.1	0.2936	1.8495	148.0	0.2931	1.8055	148.0	0.2926	240	
250	1.9740	150.1	0.2971	1.9248	150.1	0.2965	1.8779	150.1	0.2960	1.8333	150.1	0.2955	250	
260	2.0037	152.2	0.3000	1.9538	152.2	0.2994	1.9063	152.2	0.2989	1.8610	152.1	0.2984	260	
270	2.0333	154.3	0.3029	1.9827	154.3	0.3023	1.9346	154.2	0.3018	1.8887	154.2	0.3013	270	
280	2.0629	156.4	0.3057	2.0117	156.4	0.3052	1.9628	156.4	0.3047	1.9163	156.3	0.3041	280	
290	2.0925	158.5	0.3086	2.0405	158.5	0.3080	1.9911	158.5	0.3075	1.9439	158.5	0.3070	290	
300	2.1220	160.7	0.3114	2.0694	160.6	0.3109	2.0193	160.6	0.3103	1.9715	160.6	0.3098	300	
310	2.1515	162.8	0.3142	2.0982	162.8	0.3137	2.0474	162.8	0.3131	1.9990	162.7	0.3126	310	
320	2.1810	165.0	0.3170	2.1270	164.9	0.3165	2.0755	164.9	0.3159	2.0264	164.9	0.3154	320	
330	2.2104	167.1	0.3198	2.1557	167.1	0.3192	2.1036	167.1	0.3187	2.0539	167.1	0.3182	330	
340	—	—	—	—	—	—	2.1316	169.3	0.3215	2.0813	169.3	0.3210	340	

TEMP. °F	44.00			45.00			46.00			47.00			TEMP. °F	
	(33.16°F)			(34.30°F)			(35.42°F)			(36.52°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(1.1840)	(109.1)	(0.2266)	(1.1589)	(109.3)	(0.2264)	(1.1348)	(109.4)	(0.2263)	(1.1117)	(109.6)	(0.2262)		
40	1.2040	110.3	0.2290	1.1752	110.2	0.2284	1.1477	110.2	0.2279	1.1213	110.2	0.2274	40	
50	1.2331	112.0	0.2324	1.2037	112.0	0.2318	1.1757	111.9	0.2313	1.1488	111.9	0.2308	50	
60	1.2620	113.8	0.2357	1.2321	113.7	0.2352	1.2035	113.7	0.2347	1.1761	113.6	0.2342	60	
70	1.2908	115.5	0.2391	1.2603	115.5	0.2386	1.2311	115.4	0.2380	1.2032	115.4	0.2375	70	
80	1.3194	117.3	0.2424	1.2883	117.2	0.2419	1.2586	117.2	0.2414	1.2302	117.2	0.2409	80	
90	1.3479	119.1	0.2457	1.3162	119.0	0.2452	1.2860	119.0	0.2447	1.2571	119.0	0.2441	90	
100	1.3762	120.9	0.2489	1.3440	120.8	0.2484	1.3132	120.8	0.2479	1.2838	120.8	0.2474	100	
110	1.4044	122.7	0.2522	1.3717	122.7	0.2517	1.3404	122.6	0.2512	1.3104	122.6	0.2507	110	
120	1.4325	124.5	0.2554	1.3992	124.5	0.2549	1.3674	124.5	0.2544	1.3368	124.4	0.2539	120	
130	1.4605	126.4	0.2586	1.4267	126.4	0.2581	1.3943	126.3	0.2575	1.3632	126.3	0.2571	130	
140	1.4885	128.3	0.2617	1.4540	128.3	0.2612	1.4211	128.2	0.2607	1.3895	128.2	0.2602	140	
150	1.5163	130.2	0.2649	1.4813	130.1	0.2643	1.4478	130.1	0.2638	1.4157	130.1	0.2634	150	
160	1.5440	132.1	0.2680	1.5084	132.1	0.2675	1.4744	132.0	0.2670	1.4418	132.0	0.2665	160	
170	1.5717	134.0	0.2711	1.5355	134.0	0.2705	1.5009	134.0	0.2700	1.4678	133.9	0.2696	170	
180	1.5993	136.0	0.2741	1.5625	135.9	0.2736	1.5274	135.9	0.2731	1.4938	135.9	0.2726	180	
190	1.6268	137.9	0.2772	1.5895	137.9	0.2767	1.5538	137.9	0.2762	1.5196	137.8	0.2757	190	
200	1.6542	139.9	0.2802	1.6164	139.9	0.2797	1.5801	139.8	0.2792	1.5455	139.8	0.2787	200	
210	1.6816	141.9	0.2832	1.6432	141.9	0.2827	1.6064	141.8	0.2822	1.5712	141.8	0.2817	210	
220	1.7090	143.9	0.2862	1.6699	143.9	0.2857	1.6326	143.9	0.2852	1.5969	143.8	0.2847	220	
230	1.7362	145.9	0.2891	1.6967	145.9	0.2886	1.6588	145.9	0.2881	1.6225	145.9	0.2877	230	
240	1.7635	148.0	0.2921	1.7233	148.0	0.2916	1.6849	147.9	0.2911	1.6481	147.9	0.2906	240	
250	1.7906	150.0	0.2950	1.7499	150.0	0.2945	1.7109	150.0	0.2940	1.6736	150.0	0.2935	250	
260	1.8178	152.1	0.2979	1.7764	152.1	0.2974	1.7369	152.1	0.2969	1.6991	152.0	0.2964	260	
270	1.8448	154.2	0.3008	1.8030	154.2	0.3003	1.7629	154.2	0.2998	1.7245	154.1	0.2993	270	
280	1.8719	156.3	0.3036	1.8294	156.3	0.3031	1.7888	156.3	0.3027	1.7499	156.2	0.3022	280	
290	1.8989	158.4	0.3065	1.8558	158.4	0.3060	1.8147	158.4	0.3055	1.7753	158.4	0.3050	290	
300	1.9258	160.6	0.3093	1.8822	160.5	0.3088	1.8405	160.5	0.3083	1.8006	160.5	0.3079	300	
310	1.9527	162.7	0.3121	1.9086	162.7	0.3116	1.8663	162.7	0.3112	1.8259	162.6	0.3107	310	
320	1.9796	164.9	0.3149	1.9349	164.9	0.3144	1.8921	164.8	0.3139	1.8511	164.8	0.3135	320	
330	2.0065	167.1	0.3177	1.9611	167.0	0.3172	1.9178	167.0	0.3167	1.8763	167.0	0.3163	330	
340	2.03													

**Table 2** (continued)  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb

H = Enthalpy in Btu/lb

S = Entropy in Btu/(lb) (°R)

(Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	48.00 (37.60°F)			49.00 (38.67°F)			50.00 (39.73°F)			55.00 (44.77°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(1.0895)	(109.7)	(0.2260)	(1.0682)	(109.8)	(0.2259)	(1.0478)	(110)	(0.2258)	(0.9562)	(110.6)	(0.2252)		
40	1.0960	110.1	0.2269	1.0718	110.1	0.2264	1.0485	110.0	0.2259	—	—	—	40	
50	1.1230	111.8	0.2303	1.0983	111.8	0.2298	1.0745	111.7	0.2293	0.9687	111.5	0.2270	50	
60	1.1498	113.6	0.2337	1.1246	113.5	0.2332	1.1004	113.5	0.2327	0.9926	113.3	0.2304	60	
70	1.1765	115.3	0.2370	1.1508	115.3	0.2365	1.1261	115.3	0.2361	1.0163	115.0	0.2338	70	
80	1.2030	117.1	0.2404	1.1768	117.1	0.2399	1.1517	117.0	0.2394	1.0398	116.8	0.2371	80	
90	1.2293	118.9	0.2437	1.2027	118.9	0.2432	1.1771	118.8	0.2427	1.0632	118.6	0.2405	90	
100	1.2555	120.7	0.2469	1.2284	120.7	0.2464	1.2024	120.6	0.2460	1.0865	120.5	0.2437	100	
110	1.2816	122.6	0.2502	1.2540	122.5	0.2497	1.2276	122.5	0.2492	1.1096	122.3	0.2470	110	
120	1.3076	124.4	0.2534	1.2796	124.4	0.2529	1.2526	124.3	0.2524	1.1326	124.1	0.2502	120	
130	1.3335	126.3	0.2566	1.3050	126.2	0.2561	1.2776	126.2	0.2556	1.1555	126.0	0.2534	130	
140	1.3593	128.1	0.2597	1.3303	128.1	0.2593	1.3024	128.1	0.2588	1.1783	127.9	0.2566	140	
150	1.3850	130.0	0.2629	1.3555	130.0	0.2624	1.3272	130.0	0.2619	1.2010	129.8	0.2598	150	
160	1.4106	132.0	0.2660	1.3806	131.9	0.2655	1.3518	131.9	0.2651	1.2236	131.7	0.2629	160	
170	1.4361	133.9	0.2691	1.4056	133.9	0.2686	1.3764	133.8	0.2682	1.2462	133.7	0.2660	170	
180	1.4615	135.8	0.2722	1.4306	135.8	0.2717	1.4009	135.8	0.2712	1.2686	135.6	0.2691	180	
190	1.4869	137.8	0.2752	1.4555	137.8	0.2747	1.4253	137.7	0.2743	1.2910	137.6	0.2721	190	
200	1.5122	139.8	0.2782	1.4803	139.8	0.2778	1.4497	139.7	0.2773	1.3133	139.6	0.2752	200	
210	1.5375	141.8	0.2812	1.5051	141.8	0.2808	1.4740	141.7	0.2803	1.3356	141.6	0.2782	210	
220	1.5626	143.8	0.2842	1.5298	143.8	0.2838	1.4982	143.7	0.2833	1.3578	143.6	0.2812	220	
230	1.5878	145.8	0.2872	1.5544	145.8	0.2867	1.5224	145.8	0.2863	1.3799	145.6	0.2841	230	
240	1.6128	147.9	0.2901	1.5790	147.8	0.2897	1.5466	147.8	0.2892	1.4020	147.7	0.2871	240	
250	1.6379	149.9	0.2931	1.6036	149.9	0.2926	1.5706	149.9	0.2921	1.4240	149.8	0.2900	250	
260	1.6628	152.0	0.2960	1.6281	152.0	0.2955	1.5947	152.0	0.2951	1.4459	151.8	0.2929	260	
270	1.6878	154.1	0.2988	1.6525	154.1	0.2984	1.6187	154.1	0.2979	1.4679	153.9	0.2958	270	
280	1.7127	156.2	0.3017	1.6769	156.2	0.3013	1.6426	156.2	0.3008	1.4898	156.0	0.2987	280	
290	1.7375	158.3	0.3046	1.7013	158.3	0.3041	1.6665	158.3	0.3037	1.5116	158.2	0.3016	290	
300	1.7623	160.5	0.3074	1.7256	160.5	0.3069	1.6904	160.4	0.3065	1.5334	160.3	0.3044	300	
310	1.7871	162.6	0.3102	1.7499	162.6	0.3098	1.7142	162.6	0.3093	1.5552	162.5	0.3072	310	
320	1.8118	164.8	0.3130	1.7741	164.8	0.3126	1.7380	164.8	0.3121	1.5769	164.6	0.3100	320	
330	1.8365	167.0	0.3158	1.7984	167.0	0.3153	1.7617	166.9	0.3149	1.5986	166.8	0.3128	330	
340	1.8612	169.2	0.3186	1.8225	169.2	0.3181	1.7854	169.1	0.3177	1.6202	169.0	0.3156	340	
350	—	—	—	—	—	—	—	—	—	1.6418	171.2	0.3183	350	

TEMP. °F	60.00 (49.48°F)			65.00 (53.89°F)			70.00 (58.05°F)			75.00 (61.99°F)			TEMP. °F	
	(49.48°F)			(53.89°F)			(58.05°F)			(61.99°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.8793)	(111.2)	(0.2247)	(0.8138)	(111.7)	(0.2242)	(0.7573)	(112.2)	(0.2238)	(0.7080)	(112.7)	(0.2234)		
50	0.8804	111.3	0.2249	—	112.8	0.2263	0.7611	112.6	0.2244	—	—	—	50	
60	0.9027	113.0	0.2283	0.8265	114.6	0.2297	0.7805	114.4	0.2279	0.7227	114.1	0.2261	60	
70	0.9247	114.8	0.2317	0.8471	116.4	0.2301	0.7998	116.2	0.2313	0.7410	116.0	0.2295	70	
80	0.9466	116.6	0.2350	0.8676	116.4	0.2331	0.8189	118.0	0.2346	0.7590	117.8	0.2329	80	
90	0.9683	118.4	0.2384	0.8879	118.2	0.2364	—	—	—	—	—	—	90	
100	0.9898	120.3	0.2417	0.9080	120.1	0.2397	0.8378	119.9	0.2379	0.7769	119.7	0.2362	100	
110	1.0113	122.1	0.2449	0.9280	121.9	0.2430	0.8566	121.7	0.2412	0.7947	121.5	0.2396	110	
120	1.0326	124.0	0.2482	0.9479	123.8	0.2463	0.8753	123.6	0.2445	0.8123	123.4	0.2428	120	
130	1.0538	125.8	0.2514	0.9677	125.7	0.2495	0.8938	125.5	0.2477	0.8298	125.3	0.2461	130	
140	1.0749	127.7	0.2546	0.9874	127.6	0.2527	0.9123	127.4	0.2509	0.8472	127.2	0.2493	140	
150	1.0959	129.6	0.2577	1.0069	129.5	0.2559	0.9306	129.3	0.2541	0.8645	129.1	0.2525	150	
160	1.1168	131.6	0.2609	1.0264	131.4	0.2590	0.9489	131.2	0.2573	0.8816	131.1	0.2556	160	
170	1.1376	133.5	0.2640	1.0458	133.4	0.2621	0.9670	133.2	0.2604	0.8987	133.0	0.2588	170	
180	1.1584	135.5	0.2671	1.0651	135.3	0.2652	0.9851	135.2	0.2635	0.9157	135.0	0.2619	180	
190	1.1791	137.5	0.2701	1.0843	137.3	0.2683	1.0031	137.2	0.2666	0.9327	137.0	0.2650	190	
200	1.1997	139.4	0.2732	1.1035	139.3	0.2713	1.0210	139.2	0.2696	0.9495	139.0	0.2680	200	
210	1.2202	141.4	0.2762	1.1226	141.3	0.2744	1.0388	141.2	0.2727	0.9663	141.0	0.2711	210	
220	1.2407	143.5	0.2792	1.1416	143.3	0.2774	1.0566	143.2	0.2757	0.9830	143.1	0.2741	220	
230	1.2611	145.5	0.2822	1.1605	145.4	0.2804	1.0744	145.2	0.2787	0.9997	145.1	0.2771	230	
240	1.2814	147.6	0.2851	1.1795	147.4	0.2833	1.0920	147.3	0.2816	1.0163	147.2	0.2800	240	
250	1.3017	149.6	0.2881	1.1983	149.5	0.2863	1.1096	149.4	0.2846	1.0328	149.2	0.2830	250	
260	1.3220	151.7	0.2910	1.2171	151.6	0.2892	1.1272	151.5	0.2875	1.0493	151.3	0.2859	260	
270	1.3422	153.8	0.2939	1.2359	153.7	0.2921	1.1447	153.6	0.2904	1.0657	153.5	0.2888	270	
280	1.3624	155.9	0.2968	1.2546	155.8	0.2950	1.1622	155.7	0.2933	1.0821	155.6	0.2917	280	
290	1.3825	158.1	0.2996	1.2733	157.9	0.2978	1.1796	157.8	0.2962	1.0985	157.7	0.2946	290	
300	1.4026	160.2	0.3025	1.2919	160.1	0.3007	1.1970	160.0	0.2990	1.1148	159.9	0.2974	300	
310	1.4226	162.4	0.3053	1.3105	162.3	0.3035	1.2143	162.1	0.3018	1.1310	162.0	0.3003	310	
320	1.4426	164.5	0.3081	1.3290	164.4	0.3063	1.2317	164.3	0.3046	1.1473	164.2	0.3031	320	
330	1.4626	166.7	0.3109	1.3475	166.6	0.3091	1.2489	166.5	0.3074	1.1635	166.4	0.3059	330	
340	1.4825	168.9	0.3136	1.3660	168.8	0.3119	1.2662	168.7	0.3102	1.1796	168.6			

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	80.00			85.00			90.00			95.00				
	(65.73°F)			(69.30°F)			(72.71°F)			(75.98°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
(0.6647)	(113.1)	(0.2230)	(0.6262)	(113.5)	(0.2227)	(0.5919)	(113.9)	(0.2223)	(0.5610)	(114.3)	(0.2220)			
70	0.6721	113.9	0.2245	0.6274	113.7	0.2229	—	—	—	—	—	—	70	
80	0.6895	115.7	0.2279	0.6439	115.5	0.2263	0.6034	115.3	0.2248	0.5671	115.1	0.2234	80	
90	0.7066	117.6	0.2313	0.6603	117.4	0.2297	0.6191	117.2	0.2283	0.5822	116.9	0.2269	90	
100	0.7236	119.4	0.2346	0.6765	119.2	0.2331	0.6346	119.0	0.2317	0.5971	118.8	0.2303	100	
110	0.7405	121.3	0.2380	0.6926	121.1	0.2364	0.6500	120.9	0.2350	0.6118	120.7	0.2336	110	
120	0.7572	123.2	0.2412	0.7085	123.0	0.2397	0.6652	122.8	0.2383	0.6264	122.6	0.2369	120	
130	0.7738	125.1	0.2445	0.7243	124.9	0.2430	0.6802	124.7	0.2416	0.6408	124.5	0.2402	130	
140	0.7902	127.0	0.2477	0.7399	126.9	0.2462	0.6952	126.7	0.2448	0.6551	126.5	0.2435	140	
150	0.8066	129.0	0.2509	0.7554	128.8	0.2495	0.7100	128.6	0.2481	0.6693	128.4	0.2467	150	
160	0.8228	130.9	0.2541	0.7709	130.7	0.2526	0.7247	130.6	0.2512	0.6834	130.4	0.2499	160	
170	0.8390	132.9	0.2572	0.7862	132.7	0.2558	0.7393	132.5	0.2544	0.6973	132.4	0.2531	170	
180	0.8550	134.9	0.2604	0.8015	134.7	0.2589	0.7538	134.5	0.2575	0.7112	134.4	0.2562	180	
190	0.8710	136.8	0.2634	0.8166	136.7	0.2620	0.7683	136.5	0.2606	0.7250	136.4	0.2593	190	
200	0.8870	138.9	0.2665	0.8317	138.7	0.2651	0.7826	138.6	0.2637	0.7387	138.4	0.2624	200	
210	0.9028	140.9	0.2696	0.8468	140.7	0.2681	0.7969	140.6	0.2668	0.7524	140.4	0.2655	210	
220	0.9186	142.9	0.2726	0.8617	142.8	0.2712	0.8112	142.6	0.2698	0.7659	142.5	0.2685	220	
230	0.9343	145.0	0.2756	0.8766	144.8	0.2742	0.8253	144.7	0.2728	0.7794	144.6	0.2715	230	
240	0.9499	147.0	0.2786	0.8914	146.9	0.2771	0.8394	146.8	0.2758	0.7929	146.6	0.2745	240	
250	0.9655	149.1	0.2815	0.9062	149.0	0.2801	0.8534	148.9	0.2788	0.8062	148.7	0.2775	250	
260	0.9811	151.2	0.2844	0.9209	151.1	0.2830	0.8674	151.0	0.2817	0.8196	150.8	0.2805	260	
270	0.9966	153.3	0.2874	0.9356	153.2	0.2860	0.8814	153.1	0.2846	0.8328	153.0	0.2834	270	
280	1.0120	155.5	0.2903	0.9502	155.3	0.2889	0.8952	155.2	0.2875	0.8460	155.1	0.2863	280	
290	1.0274	157.6	0.2931	0.9648	157.5	0.2917	0.9091	157.4	0.2904	0.8592	157.2	0.2892	290	
300	1.0428	159.8	0.2960	0.9793	159.6	0.2946	0.9229	159.5	0.2933	0.8724	159.4	0.2920	300	
310	1.0581	161.9	0.2988	0.9938	161.8	0.2974	0.9366	161.7	0.2961	0.8855	161.6	0.2949	310	
320	1.0734	164.1	0.3016	1.0083	164.0	0.3003	0.9503	163.9	0.2990	0.8985	163.8	0.2977	320	
330	1.0887	166.3	0.3044	1.0227	166.2	0.3031	0.9640	166.1	0.3018	0.9115	166.0	0.3005	330	
340	1.1039	168.5	0.3072	1.0371	168.4	0.3059	0.9776	168.3	0.3046	0.9245	168.2	0.3033	340	
350	1.1191	170.7	0.3100	1.0514	170.6	0.3086	0.9913	170.5	0.3073	0.9374	170.4	0.3061	350	
360	1.1342	173.0	0.3128	1.0657	172.9	0.3114	1.0048	172.8	0.3101	0.9504	172.7	0.3089	360	
370	1.1493	175.2	0.3155	1.0800	175.1	0.3141	1.0184	175.1	0.3128	0.9632	175.0	0.3116	370	
380	—	—	—	—	—	—	1.0319	177.3	0.3156	0.9761	177.2	0.3143	380	

TEMP. °F	100.00			110.00			120.00			130.00			TEMP. °F	
	(79.13°F)			(85.07°F)			(90.62°F)			(95.82°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.5331)	(114.7)	(0.2217)	(0.4846)	(115.3)	(0.2212)	(0.4439)	(115.9)	(0.2207)	(0.4092)	(116.4)	(0.2202)		
80	0.5344	114.8	0.2220	—	—	—	—	—	—	—	—	—	80	
90	0.5489	116.7	0.2255	0.4913	116.2	0.2229	—	—	—	—	—	—	90	
100	0.5633	118.6	0.2289	0.5047	118.2	0.2264	0.4558	117.7	0.2240	0.4142	117.2	0.2217	100	
110	0.5774	120.5	0.2323	0.5180	120.1	0.2298	0.4682	119.7	0.2274	0.4260	119.2	0.2252	110	
120	0.5914	122.4	0.2356	0.5310	122.0	0.2331	0.4805	121.6	0.2308	0.4377	121.2	0.2286	120	
130	0.6053	124.4	0.2389	0.5439	124.0	0.2365	0.4926	123.6	0.2342	0.4491	123.2	0.2320	130	
140	0.6190	126.3	0.2422	0.5567	125.9	0.2398	0.5046	125.5	0.2375	0.4604	125.2	0.2354	140	
150	0.6326	128.3	0.2454	0.5693	127.9	0.2430	0.5164	127.5	0.2408	0.4716	127.2	0.2387	150	
160	0.6461	130.2	0.2486	0.5818	129.9	0.2462	0.5281	129.5	0.2440	0.4826	129.2	0.2419	160	
170	0.6595	132.2	0.2518	0.5942	131.9	0.2494	0.5397	131.5	0.2472	0.4935	131.2	0.2452	170	
180	0.6728	134.2	0.2550	0.6065	133.9	0.2526	0.5512	133.6	0.2504	0.5043	133.2	0.2484	180	
190	0.6860	136.2	0.2581	0.6187	135.9	0.2558	0.5625	135.6	0.2536	0.5150	135.3	0.2515	190	
200	0.6992	138.3	0.2612	0.6308	137.9	0.2589	0.5738	137.6	0.2567	0.5256	137.3	0.2547	200	
210	0.7122	140.3	0.2643	0.6429	140.0	0.2619	0.5850	139.7	0.2598	0.5361	139.4	0.2578	210	
220	0.7252	142.3	0.2673	0.6548	142.1	0.2650	0.5962	141.8	0.2629	0.5465	141.5	0.2609	220	
230	0.7381	144.4	0.2703	0.6667	144.1	0.2680	0.6072	143.9	0.2659	0.5568	143.6	0.2639	230	
240	0.7509	146.5	0.2733	0.6786	146.2	0.2710	0.6182	146.0	0.2689	0.5671	145.7	0.2670	240	
250	0.7637	148.6	0.2763	0.6903	148.3	0.2740	0.6291	148.1	0.2719	0.5773	147.8	0.2700	250	
260	0.7765	150.7	0.2793	0.7020	150.5	0.2770	0.6400	150.2	0.2749	0.5875	149.9	0.2730	260	
270	0.7891	152.8	0.2822	0.7137	152.6	0.2799	0.6508	152.3	0.2779	0.5976	152.1	0.2759	270	
280	0.8018	155.0	0.2851	0.7253	154.7	0.2829	0.6616	154.5	0.2808	0.6076	154.2	0.2789	280	
290	0.8144	157.1	0.2880	0.7369	156.9	0.2858	0.6723	156.7	0.2837	0.6176	156.4	0.2818	290	
300	0.8269	159.3	0.2909	0.7484	159.1	0.2886	0.6829	158.8	0.2866	0.6276	158.6	0.2847	300	
310	0.8394	161.5	0.2937	0.7599	161.3	0.2915	0.6936	161.0	0.2895	0.6375	160.8	0.2876	310	
320	0.8519	163.7	0.2966	0.7713	163.5	0.2943	0.7041	163.2	0.2923	0.6473	163.0	0.2904	320	
330	0.8643	165.9	0.2994	0.7827	165.7	0.2972	0.7147	165.5	0.2951	0.6571	165.2	0.2933	330	
340	0.8767	168.1	0.3022	0.7940	167.9	0.3000	0.7252	167.7	0.2980	0.6669	167.5	0.2961	340	
350	0.8890	170.3	0.3049	0.8054	170.1	0.3028	0.7356	169.9	0.3007	0.6767	169.7	0.2989	350	
360	0.9013	172.6	0.3077	0.8167	172.4	0.3055	0.7461	172.2	0.3035	0.6864	172.0	0.3017	360	
370	0.9136	174.9	0.3105	0.8279	174.7	0.3083	0.7565	174.5	0.3063	0.6960	174.3	0.3044	370	
380	0.9259	177.1	0.3132	0.8391	176.9	0								

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb

H = Enthalpy in Btu/lb

S = Entropy in Btu/(lb) (°R)

(Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	140.00			150.00			160.00			170.00				
	(100.73°F)			(105.39°F)			-109.8			(114.03°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.3792)	(116.9)	(0.2198)	(0.3531)	(117.4)	(0.2194)	(0.3301)	(117.8)	(0.2190)	(0.3097)	(118.1)	(0.2186)		
110	0.3897	118.8	0.2231	0.3581	118.3	0.2210	0.3303	117.8	0.2190	—	—	—	110	
120	0.4009	120.7	0.2265	0.3688	120.3	0.2245	0.3407	119.8	0.2226	0.3157	119.4	0.2207	120	
130	0.4118	122.8	0.2299	0.3793	122.3	0.2280	0.3508	121.9	0.2261	0.3255	121.4	0.2243	130	
140	0.4225	124.8	0.2333	0.3896	124.4	0.2314	0.3606	123.9	0.2295	0.3350	123.5	0.2278	140	
150	0.4331	126.8	0.2367	0.3997	126.4	0.2348	0.3704	126.0	0.2329	0.3444	125.6	0.2312	150	
160	0.4436	128.8	0.2400	0.4096	128.4	0.2381	0.3799	128.0	0.2363	0.3536	127.7	0.2346	160	
170	0.4539	130.8	0.2432	0.4195	130.5	0.2414	0.3893	130.1	0.2396	0.3627	129.7	0.2379	170	
180	0.4641	132.9	0.2464	0.4292	132.5	0.2446	0.3986	132.2	0.2429	0.3716	131.8	0.2412	180	
190	0.4742	134.9	0.2496	0.4388	134.6	0.2478	0.4077	134.3	0.2461	0.3803	133.9	0.2444	190	
200	0.4842	137.0	0.2528	0.4482	136.7	0.2510	0.4168	136.4	0.2493	0.3890	136.0	0.2477	200	
210	0.4941	139.1	0.2559	0.4576	138.8	0.2541	0.4257	138.5	0.2525	0.3976	138.1	0.2508	210	
220	0.5039	141.2	0.2590	0.4669	140.9	0.2573	0.4346	140.6	0.2556	0.4060	140.3	0.2540	220	
230	0.5136	143.3	0.2621	0.4762	143.0	0.2603	0.4434	142.7	0.2587	0.4144	142.4	0.2571	230	
240	0.5233	145.4	0.2651	0.4853	145.1	0.2634	0.4521	144.8	0.2618	0.4227	144.6	0.2602	240	
250	0.5329	147.5	0.2682	0.4944	147.3	0.2664	0.4607	147.0	0.2648	0.4309	146.7	0.2633	250	
260	0.5425	149.7	0.2712	0.5034	149.4	0.2694	0.4693	149.1	0.2678	0.4391	148.9	0.2663	260	
270	0.5519	151.8	0.2741	0.5124	151.6	0.2724	0.4778	151.3	0.2708	0.4472	151.1	0.2693	270	
280	0.5614	154.0	0.2771	0.5213	153.7	0.2754	0.4862	153.5	0.2738	0.4552	153.2	0.2723	280	
290	0.5708	156.2	0.2800	0.5301	155.9	0.2783	0.4946	155.7	0.2767	0.4632	155.4	0.2752	290	
300	0.5801	158.4	0.2829	0.5389	158.1	0.2812	0.5029	157.9	0.2797	0.4711	157.7	0.2782	300	
310	0.5894	160.6	0.2858	0.5477	160.3	0.2841	0.5112	160.1	0.2826	0.4790	159.9	0.2811	310	
320	0.5986	162.8	0.2887	0.5564	162.6	0.2870	0.5194	162.3	0.2854	0.4868	162.1	0.2840	320	
330	0.6078	165.0	0.2915	0.5651	164.8	0.2899	0.5276	164.6	0.2883	0.4946	164.4	0.2868	330	
340	0.6170	167.3	0.2943	0.5737	167.1	0.2927	0.5358	166.8	0.2911	0.5024	166.6	0.2897	340	
350	0.6261	169.5	0.2971	0.5823	169.3	0.2955	0.5439	169.1	0.2940	0.5101	168.9	0.2925	350	
360	0.6352	171.8	0.2999	0.5908	171.6	0.2983	0.5520	171.4	0.2968	0.5178	171.2	0.2953	360	
370	0.6442	174.1	0.3027	0.5993	173.9	0.3011	0.5601	173.7	0.2995	0.5254	173.5	0.2981	370	
380	0.6533	176.4	0.3054	0.6078	176.2	0.3038	0.5681	176.0	0.3023	0.5330	175.8	0.3009	380	
390	0.6623	178.7	0.3082	0.6163	178.5	0.3066	0.5761	178.3	0.3051	0.5406	178.1	0.3036	390	
400	0.6712	181.0	0.3109	0.6247	180.8	0.3093	0.5840	180.6	0.3078	0.5481	180.5	0.3063	400	
410	0.6802	183.3	0.3136	0.6331	183.2	0.3120	0.5920	183.0	0.3105	0.5556	182.8	0.3091	410	
420	—	—	—	—	—	—	—	—	—	0.5631	185.2	0.3118	420	

TEMP. °F	180.00			190.00			200.00			220.00			TEMP. °F	
	(118.06°F)			(121.93°F)			(125.65°F)			(132.68°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.2915)	(118.5)	(0.2182)	(0.2751)	(118.8)	(0.2179)	(0.2603)	(119.1)	(0.2175)	(0.2344)	(119.6)	(0.2168)		
120	0.2934	118.9	0.2189	—	—	—	0.2642	120.0	0.2191	—	—	—	120	
130	0.3029	121.0	0.2225	0.2826	120.5	0.2208	0.2731	122.2	0.2227	0.2407	121.2	0.2195	140	
140	0.3122	123.1	0.2260	0.2917	122.6	0.2244	0.2731	122.2	0.2227	0.2407	121.2	0.2195	140	
150	0.3213	125.2	0.2295	0.3005	124.7	0.2279	0.2817	124.3	0.2263	0.2491	123.4	0.2232	150	
160	0.3302	127.3	0.2329	0.3091	126.9	0.2313	0.2902	126.4	0.2297	0.2572	125.6	0.2267	160	
170	0.3389	129.4	0.2363	0.3176	129.0	0.2347	0.2984	128.6	0.2332	0.2650	127.8	0.2302	170	
180	0.3475	131.5	0.2396	0.3259	131.1	0.2380	0.3064	130.7	0.2365	0.2727	130.0	0.2337	180	
190	0.3559	133.6	0.2429	0.3341	133.2	0.2413	0.3143	132.9	0.2399	0.2802	132.1	0.2370	190	
200	0.3643	135.7	0.2461	0.3421	135.4	0.2446	0.3221	135.0	0.2431	0.2875	134.3	0.2404	200	
210	0.3725	137.8	0.2493	0.3500	137.5	0.2478	0.3298	137.2	0.2464	0.2947	136.5	0.2437	210	
220	0.3806	140.0	0.2525	0.3578	139.6	0.2510	0.3373	139.3	0.2496	0.3018	138.7	0.2469	220	
230	0.3886	142.1	0.2556	0.3656	141.8	0.2541	0.3448	141.5	0.2528	0.3088	140.9	0.2501	230	
240	0.3966	144.3	0.2587	0.3732	144.0	0.2573	0.3522	143.7	0.2559	0.3157	143.1	0.2533	240	
250	0.4045	146.4	0.2618	0.3808	146.1	0.2603	0.3594	145.9	0.2590	0.3225	145.3	0.2564	250	
260	0.4123	148.6	0.2648	0.3883	148.3	0.2634	0.3666	148.1	0.2621	0.3293	147.5	0.2595	260	
270	0.4200	150.8	0.2678	0.3957	150.5	0.2664	0.3738	150.3	0.2651	0.3359	149.7	0.2626	270	
280	0.4277	153.0	0.2708	0.4030	152.7	0.2694	0.3808	152.5	0.2681	0.3425	152.0	0.2656	280	
290	0.4353	155.2	0.2738	0.4103	154.9	0.2724	0.3879	154.7	0.2711	0.3490	154.2	0.2686	290	
300	0.4429	157.4	0.2767	0.4176	157.2	0.2754	0.3948	156.9	0.2741	0.3555	156.4	0.2716	300	
310	0.4504	159.6	0.2797	0.4248	159.4	0.2783	0.4017	159.2	0.2770	0.3619	158.7	0.2745	310	
320	0.4579	161.9	0.2825	0.4319	161.7	0.2812	0.4086	161.4	0.2799	0.3682	161.0	0.2775	320	
330	0.4653	164.1	0.2854	0.4390	163.9	0.2841	0.4154	163.7	0.2828	0.3745	163.3	0.2804	330	
340	0.4727	166.4	0.2883	0.4461	166.2	0.2869	0.4221	166.0	0.2857	0.3808	165.5	0.2833	340	
350	0.4800	168.7	0.2911	0.4531	168.5	0.2898	0.4289	168.3	0.2885	0.3870	167.9	0.2861	350	
360	0.4873	171.0	0.2939	0.4601	170.8	0.2926	0.4355	170.6	0.2913	0.3932	170.2	0.2890	360	
370	0.4946	173.3	0.2967	0.4670	173.1	0.2954	0.4422	172.9	0.2941	0.3993	172.5	0.2918	370	
380	0.5018	175.6	0.2995	0.4739	175.4	0.2982	0.4488	175.2	0.2969	0.4054	174.8	0.2946	380	
390	0.5090	177.9	0.3022	0.4808	177.7	0.3009	0.4554	177.6	0.2997	0.4115	177.2	0.2974	390	
400	0.5162	180.3	0.3050	0.4876	180.1	0.3037	0.4619	179.9	0.3025	0.4176	179.5	0.3001	400	
410	0.5234	182.6	0.3077	0.49										

**Table 2 (continued)**  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

ABSOLUTE PRESSURE, psia													TEMP. °F	
TEMP. °F	240.00			260.00			280.00			300.00			TEMP. °F	
	(139.25°F)			(145.41°F)			(151.22°F)			(156.73°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.2127)	(120.0)	(0.2161)	(0.1942)	(120.3)	(0.2154)	(0.1782)	(120.6)	(0.2148)	(0.1642)	(120.8)	(0.2141)		
140	0.2134	120.2	0.2164	—	—	—	—	—	—	—	—	—	140	
150	0.2215	122.4	0.2202	0.1979	121.4	0.2172	—	—	—	—	—	—	150	
160	0.2294	124.7	0.2238	0.2056	123.7	0.2210	0.1850	122.7	0.2182	0.1667	121.6	0.2154	160	
170	0.2370	126.9	0.2274	0.2131	126.0	0.2247	0.1923	125.1	0.2220	0.1741	124.1	0.2193	170	
180	0.2444	129.2	0.2309	0.2203	128.3	0.2283	0.1994	127.4	0.2257	0.1811	126.5	0.2231	180	
190	0.2516	131.4	0.2344	0.2272	130.6	0.2318	0.2062	129.8	0.2293	0.1878	128.9	0.2268	190	
200	0.2586	133.6	0.2377	0.2340	132.8	0.2352	0.2127	132.1	0.2328	0.1942	131.3	0.2304	200	
210	0.2655	135.8	0.2411	0.2406	135.1	0.2386	0.2191	134.4	0.2362	0.2004	133.6	0.2339	210	
220	0.2722	138.0	0.2444	0.2470	137.3	0.2419	0.2254	136.6	0.2396	0.2065	135.9	0.2374	220	
230	0.2788	140.2	0.2476	0.2533	139.6	0.2452	0.2314	138.9	0.2430	0.2124	138.2	0.2408	230	
240	0.2853	142.5	0.2508	0.2595	141.8	0.2485	0.2374	141.2	0.2462	0.2181	140.5	0.2441	240	
250	0.2917	144.7	0.2540	0.2656	144.1	0.2517	0.2432	143.5	0.2495	0.2237	142.9	0.2474	250	
260	0.2981	146.9	0.2571	0.2717	146.3	0.2548	0.2490	145.8	0.2527	0.2293	145.2	0.2506	260	
270	0.3043	149.2	0.2602	0.2776	148.6	0.2579	0.2546	148.0	0.2558	0.2347	147.5	0.2538	270	
280	0.3105	151.4	0.2632	0.2834	150.9	0.2610	0.2602	150.3	0.2589	0.2400	149.8	0.2569	280	
290	0.3166	153.7	0.2663	0.2892	153.2	0.2641	0.2657	152.6	0.2620	0.2453	152.1	0.2600	290	
300	0.3227	155.9	0.2693	0.2949	155.4	0.2671	0.2711	154.9	0.2651	0.2504	154.4	0.2631	300	
310	0.3287	158.2	0.2723	0.3006	157.7	0.2701	0.2764	157.2	0.2681	0.2555	156.7	0.2662	310	
320	0.3346	160.5	0.2752	0.3062	160.0	0.2731	0.2817	159.6	0.2711	0.2606	159.1	0.2692	320	
330	0.3405	162.8	0.2781	0.3117	162.3	0.2760	0.2870	161.9	0.2740	0.2656	161.4	0.2722	330	
340	0.3463	165.1	0.2810	0.3172	164.7	0.2789	0.2922	164.2	0.2770	0.2705	163.8	0.2751	340	
350	0.3521	167.4	0.2839	0.3226	167.0	0.2818	0.2973	166.6	0.2799	0.2754	166.1	0.2780	350	
360	0.3579	169.7	0.2868	0.3280	169.3	0.2847	0.3024	168.9	0.2828	0.2803	168.5	0.2809	360	
370	0.3636	172.1	0.2896	0.3334	171.7	0.2876	0.3075	171.3	0.2856	0.2851	170.9	0.2838	370	
380	0.3693	174.4	0.2924	0.3387	174.0	0.2904	0.3125	173.6	0.2885	0.2898	173.2	0.2867	380	
390	0.3750	176.8	0.2952	0.3440	176.4	0.2932	0.3175	176.0	0.2913	0.2945	175.6	0.2895	390	
400	0.3806	179.2	0.2980	0.3493	178.8	0.2960	0.3225	178.4	0.2941	0.2992	178.0	0.2923	400	
410	0.3862	181.5	0.3007	0.3545	181.2	0.2987	0.3274	180.8	0.2969	0.3039	180.4	0.2951	410	
420	0.3917	183.9	0.3035	0.3597	183.6	0.3015	0.3323	183.2	0.2996	0.3085	182.9	0.2979	420	
430	0.3973	186.3	0.3062	0.3649	186.0	0.3042	0.3371	185.6	0.3024	0.3131	185.3	0.3006	430	
440	0.4028	188.8	0.3089	0.3700	188.4	0.3069	0.3420	188.1	0.3051	0.3177	187.7	0.3033	440	
450	—	—	—	0.3751	190.9	0.3096	0.3468	190.5	0.3078	0.3222	190.2	0.3061	450	
460	—	—	—	—	—	—	0.3516	193.0	0.3105	0.3267	192.7	0.3087	460	

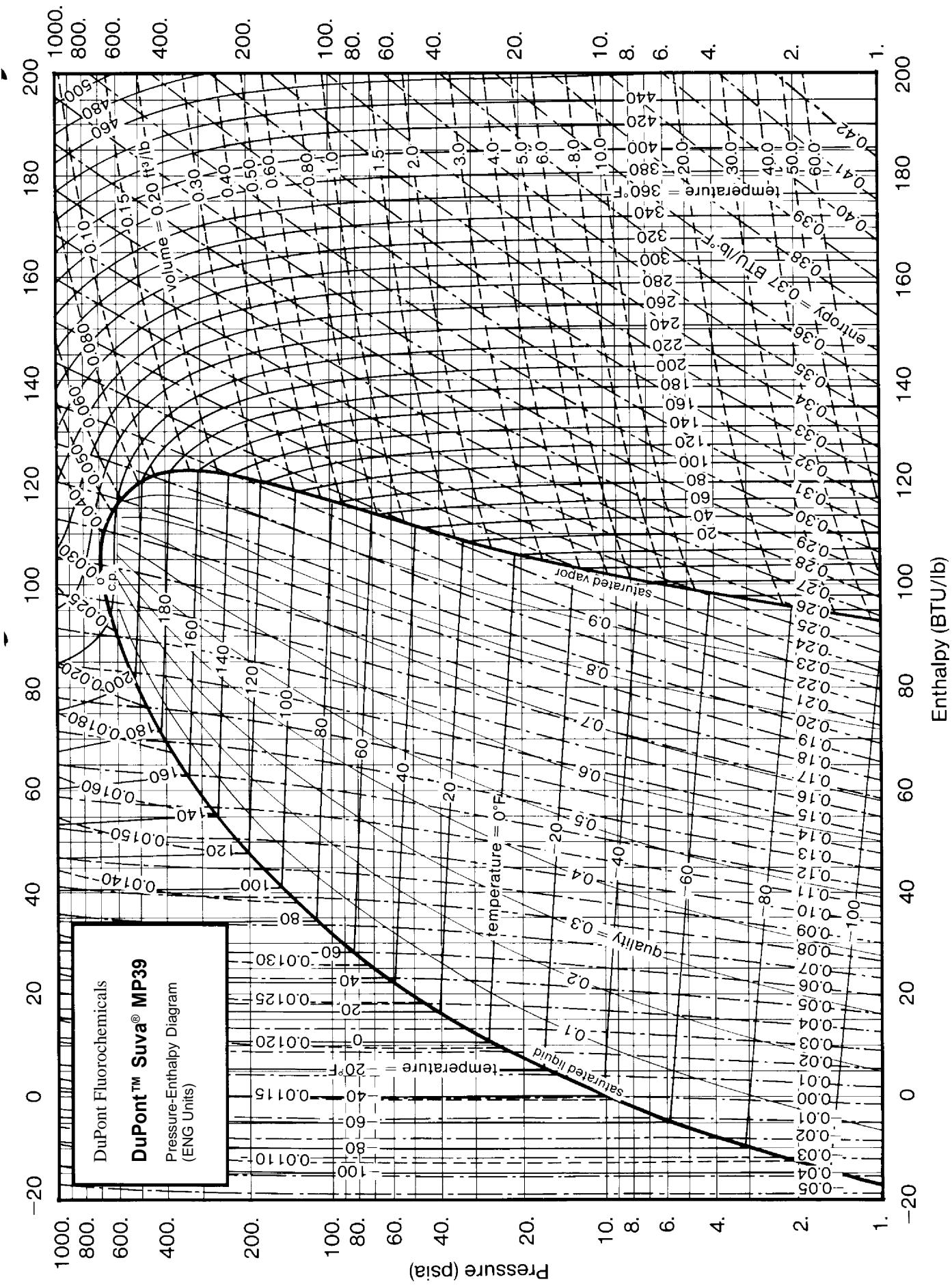
TEMP. °F	320.00			340.00			360.00			380.00			TEMP. °F	
	(161.96°F)			(166.94°F)			(171.71°F)			(176.27°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.1518)	(121.0)	(0.2134)	(0.1408)	(121.1)	(0.2126)	(0.1309)	(121.1)	(0.2119)	(0.1219)	(121.0)	(0.2111)		
170	0.1578	123.0	0.2167	0.1431	121.9	0.2139	—	—	—	—	—	—	170	
180	0.1649	125.5	0.2206	0.1503	124.5	0.2181	0.1370	123.4	0.2155	0.1247	122.1	0.2128	180	
190	0.1715	128.0	0.2244	0.1570	127.0	0.2220	0.1438	126.0	0.2196	0.1318	124.9	0.2171	190	
200	0.1779	130.4	0.2281	0.1633	129.5	0.2258	0.1502	128.6	0.2235	0.1383	127.6	0.2212	200	
210	0.1840	132.8	0.2317	0.1694	132.0	0.2295	0.1562	131.1	0.2273	0.1444	130.2	0.2251	210	
220	0.1899	135.2	0.2352	0.1752	134.4	0.2331	0.1620	133.6	0.2310	0.1501	132.8	0.2289	220	
230	0.1956	137.5	0.2386	0.1808	136.8	0.2366	0.1675	136.0	0.2345	0.1556	135.3	0.2325	230	
240	0.2012	139.9	0.2420	0.1862	139.2	0.2400	0.1729	138.5	0.2380	0.1608	137.7	0.2361	240	
250	0.2067	142.2	0.2453	0.1915	141.6	0.2434	0.1780	140.9	0.2415	0.1659	140.2	0.2396	250	
260	0.2120	144.5	0.2486	0.1967	143.9	0.2467	0.1831	143.3	0.2448	0.1709	142.6	0.2430	260	
270	0.2172	146.9	0.2518	0.2018	146.3	0.2500	0.1880	145.7	0.2481	0.1757	145.0	0.2463	270	
280	0.2223	149.2	0.2550	0.2067	148.6	0.2532	0.1928	148.1	0.2514	0.1803	147.5	0.2496	280	
290	0.2274	151.6	0.2582	0.2116	151.0	0.2563	0.1975	150.4	0.2546	0.1849	149.9	0.2529	290	
300	0.2323	153.9	0.2613	0.2164	153.4	0.2595	0.2021	152.8	0.2577	0.1894	152.3	0.2561	300	
310	0.2372	156.2	0.2643	0.2211	155.7	0.2626	0.2067	155.2	0.2609	0.1938	154.7	0.2592	310	
320	0.2421	158.6	0.2674	0.2257	158.1	0.2656	0.2112	157.6	0.2639	0.1982	157.1	0.2623	320	
330	0.2468	160.9	0.2704	0.2303	160.5	0.2686	0.2156	160.0	0.2670	0.2024	159.5	0.2654	330	
340	0.2516	163.3	0.2733	0.2348	162.9	0.2716	0.2199	162.4	0.2700	0.2066	161.9	0.2684	340	
350	0.2562	165.7	0.2763	0.2393	165.2	0.2746	0.2242	164.8	0.2730	0.2108	164.3	0.2714	350	
360	0.2608	168.1	0.2792	0.2437	167.6	0.2775	0.2285	167.2	0.2759	0.2149	166.8	0.2744	360	
370	0.2654	170.4	0.2821	0.2481	170.0	0.2804	0.2327	169.6	0.2789	0.2189	169.2	0.2773	370	
380	0.2699	172.8	0.2850	0.2524	172.4	0.2833	0.2368	172.0	0.2818	0.2229	171.6	0.2803	380	
390	0.2744	175.2	0.2878	0.2567	174.8	0.2862	0.2410	174.5	0.2846	0.2269	174.1	0.2831	390	
400	0.2789	177.7	0.2906	0.2610	177.3	0.2890	0.2450	176.9	0.2875	0.2308	176.5	0.2860	400	
410	0.2833	180.1	0.2934	0.2652	179.7	0.2918	0.2491	179.3	0.2903	0.2347	179.0	0.2888	410	
420	0.2877	182.5	0.2962	0.2694	182.1	0.2946	0.2531	181.8	0.2931	0.2385	181.4	0.2917	420	
430	0.2921	184.9	0.2990	0.2735	184.6	0.2974	0.2571	184.2	0.2959	0.2423	183.9	0.2945	430	
440	0.2964	187.4	0.3017	0.2777	187.1	0.3001	0.2610	186.7	0.2987	0.2461	186.4	0.2972	440	
450	0.3007	189.9	0.3044	0.2818	189.5	0.3029	0.2649	189.2	0.3014	0.2499	188.9	0.3000	450	
460	0.3050													

**Table 2** (continued)  
**Suva® MP39 Superheated Vapor—Constant Pressure Tables**

V = Volume in ft<sup>3</sup>/lb    H = Enthalpy in Btu/lb    S = Entropy in Btu/(lb) (°R)    (Saturation Properties in parentheses)

TEMP. °F	ABSOLUTE PRESSURE, psia												TEMP. °F	
	400.00			450.00			500.00			550.00				
	(180.66°F)			(190.91°F)			(200.29°F)			(208.92°F)				
	V	H	S	V	H	S	V	H	S	V	H	S		
	(0.1138)	(121.0)	(0.2103)	(0.0962)	(120.5)	(0.2080)	(0.0816)	(119.6)	(0.2054)	(0.0689)	(118.1)	(0.2021)		
190	0.1207	123.7	0.2146	—	—	—	—	—	—	—	—	—	190	
200	0.1274	126.6	0.2189	0.1032	123.5	0.2127	—	—	—	—	—	—	200	
210	0.1335	129.3	0.2229	0.1099	126.6	0.2173	0.0896	123.3	0.2110	0.0702	118.7	0.2030	210	
220	0.1393	131.9	0.2268	0.1160	129.5	0.2216	0.0964	126.7	0.2160	0.0790	123.2	0.2097	220	
230	0.1447	134.4	0.2306	0.1215	132.3	0.2256	0.1023	129.8	0.2206	0.0858	126.9	0.2151	230	
240	0.1500	137.0	0.2342	0.1267	135.0	0.2295	0.1077	132.7	0.2248	0.0916	130.2	0.2199	240	
250	0.1550	139.5	0.2378	0.1317	137.6	0.2333	0.1127	135.6	0.2288	0.0968	133.3	0.2243	250	
260	0.1598	142.0	0.2412	0.1364	140.2	0.2369	0.1174	138.3	0.2326	0.1016	136.3	0.2284	260	
270	0.1645	144.4	0.2446	0.1409	142.8	0.2404	0.1218	141.0	0.2363	0.1061	139.1	0.2323	270	
280	0.1691	146.9	0.2479	0.1453	145.3	0.2439	0.1261	143.6	0.2399	0.1103	141.9	0.2361	280	
290	0.1736	149.3	0.2512	0.1495	147.8	0.2472	0.1302	146.2	0.2434	0.1143	144.6	0.2397	290	
300	0.1779	151.7	0.2544	0.1537	150.3	0.2506	0.1342	148.8	0.2469	0.1182	147.3	0.2433	300	
310	0.1822	154.2	0.2576	0.1577	152.8	0.2538	0.1381	151.4	0.2502	0.1219	149.9	0.2468	310	
320	0.1864	156.6	0.2608	0.1617	155.3	0.2570	0.1418	153.9	0.2535	0.1255	152.6	0.2501	320	
330	0.1906	159.0	0.2639	0.1655	157.8	0.2602	0.1455	156.5	0.2567	0.1291	155.2	0.2535	330	
340	0.1946	161.4	0.2669	0.1693	160.2	0.2633	0.1491	159.0	0.2599	0.1325	157.8	0.2567	340	
350	0.1986	163.9	0.2699	0.1730	162.7	0.2664	0.1526	161.5	0.2631	0.1358	160.3	0.2599	350	
360	0.2026	166.3	0.2729	0.1767	165.2	0.2694	0.1560	164.1	0.2662	0.1391	162.9	0.2631	360	
370	0.2065	168.8	0.2759	0.1803	167.7	0.2724	0.1594	166.6	0.2692	0.1423	165.5	0.2662	370	
380	0.2104	171.2	0.2788	0.1839	170.2	0.2754	0.1627	169.1	0.2722	0.1455	168.0	0.2693	380	
390	0.2142	173.7	0.2817	0.1874	172.6	0.2783	0.1660	171.6	0.2752	0.1486	170.6	0.2723	390	
400	0.2180	176.1	0.2846	0.1909	175.1	0.2813	0.1693	174.1	0.2782	0.1516	173.1	0.2753	400	
410	0.2217	178.6	0.2874	0.1943	177.6	0.2841	0.1725	176.7	0.2811	0.1546	175.7	0.2782	410	
420	0.2254	181.0	0.2903	0.1977	180.1	0.2870	0.1756	179.2	0.2840	0.1576	178.3	0.2812	420	
430	0.2291	183.5	0.2931	0.2011	182.6	0.2898	0.1787	181.7	0.2869	0.1605	180.8	0.2841	430	
440	0.2327	186.0	0.2959	0.2044	185.1	0.2926	0.1818	184.3	0.2897	0.1634	183.4	0.2869	440	
450	0.2363	188.5	0.2986	0.2077	187.7	0.2954	0.1849	186.8	0.2925	0.1662	186.0	0.2898	450	
460	0.2399	191.0	0.3014	0.2110	190.2	0.2982	0.1879	189.4	0.2953	0.1691	188.5	0.2926	460	
470	0.2435	193.5	0.3041	0.2143	192.7	0.3009	0.1909	191.9	0.2981	0.1719	191.1	0.2954	470	
480	0.2470	196.1	0.3068	0.2175	195.3	0.3037	0.1939	194.5	0.3008	0.1746	193.7	0.2982	480	
490	0.2505	198.6	0.3095	0.2207	197.8	0.3064	0.1968	197.1	0.3035	0.1774	196.3	0.3009	490	
500	—	—	—	0.2239	200.4	0.3091	0.1998	199.7	0.3062	0.1801	198.9	0.3036	500	
510	—	—	—	—	—	—	0.2027	202.3	0.3089	0.1828	201.5	0.3064	510	





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