

ATTACHMENT A. STEAM TABLES AND CHARTS

STEAM TABLE (IMPERIAL UNITS) FOR SPECIFIC ENTHALPY (BTU / LB)												
SATURATED CONDITION		SUPERHEATED CONDITION										
Press psia	Temp F	Temperature ( F)										
		350	400	500	600	700	800	900	1000	1100	1300	1500
15	213.03	1216.2	1239.9	1287.3	1335.2	1383.8	1433.2	1483.4	1534.5	1586.5	1693.2	1803.4
20	227.96	1215.4	1239.2	1286.9	1334.9	1383.5	1432.9	1483.2	1534.3	1586.3	1693.1	1803.3
30	250.34	1213.6	1237.8	1286	1334.2	1383	1432.5	1482.8	1534	1586.1	1692.9	1803.2
40	267.25	1211.7	1236.4	1285	1333.6	1382.5	1432.1	1482.5	1533.7	1585.8	1692.7	1803
50	281.02	1209.9	1234.9	1284.1	1332.9	1382	1431.7	1482.2	1533.4	1585.6	1692.5	1802.9
60	292.71	1208	1233.5	1283.2	1332.3	1381.5	1431.3	1481.8	1533.2	1585.3	1692.4	1802.8
70	302.93	1206	1232	1282.2	1331.6	1381	1430.9	1481.5	1532.9	1585.1	1692.2	1802.6
80	312.04	1204	1230.5	1281.3	1330.9	1380.5	1430.5	1481.1	1532.6	1584.9	1692	1802.5
90	320.28	1202	1228.9	1280.3	1330.2	1380	1430.1	1480.8	1532.3	1584.6	1691.8	1802.4
100	327.82	1199.9	1227.4	1279.3	1329.6	1379.5	1429.7	1480.4	1532	1584.4	1691.6	1802.2
120	341.27	1195.6	1224.1	1277.4	1328.2	1378.4	1428.8	1479.8	1531.4	1583.9	1691.3	1802
140	353.04		1220.8	1275.3	1326.8	1377.4	1428	1479.1	1530.8	1583.4	1690.9	1801.7
160	363.55		1217.4	1273.3	1325.4	1376.4	1427.2	1478.4	1530.3	1582.9	1690.5	1801.4
180	373.08		1213.8	1271.2	1324	1375.3	1426.3	1477.7	1529.7	1582.4	1690.2	1801.2
200	381.8		1210.1	1269	1322.6	1374.3	1425.5	1477	1529.1	1581.9	1689.8	1800.9
220	389.88		1206.3	1266.9	1321.2	1373.2	1424.7	1476.3	1528.5	1581.4	1689.4	1800.6
240	397.39		1202.4	1264.6	1319.7	1372.1	1423.8	1475.6	1527.9	1580.9	1689.1	1800.4
260	404.44			1262.4	1318.2	1371.1	1423	1474.9	1527.3	1580.4	1688.7	1800.1
280	411.07			1260	1316.8	1370	1422.1	1474.2	1526.8	1579.9	1688.4	1799.8
300	417.35			1257.7	1315.2	1368.9	1421.3	1473.6	1526.2	1579.4	1688	1799.6
320	423.31			1255.2	1313.7	1367.8	1420.5	1472.9	1525.6	1578.9	1687.6	1799.3
340	428.99			1252.8	1312.2	1366.7	1419.6	1472.2	1525	1578.4	1687.3	1799.3
360	434.41			1250.3	1310.6	1365.6	1418.7	1471.5	1524.4	1577.9	1686.9	1798.8

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (psiA)		Temperature ( F)		
		t1	tx	t2
		1000	1065	1100
p1	60	1533.200		1585.300
px	66	1533.0	1566.9	1585.2
p2	70	1532.900		1585.100

Specific enthalpy BTU/lb

Imperial units

SATURATED CONDITION		SUPERHEATED CONDITION										
Press psia	Temp F	Temperature ( F)										
		500	600	700	800	900	1000	1100	1200	1300	1400	1500
380	439.61	1247.7	1309	1364.5	1417.9	1470.8	1523.8	1577.4	1631.6	1686.5	1742.2	1798.5
400	444.6	1245.1	1307.4	1363.4	1417	1470.1	1523.3	1576.9	1631.2	1686.2	1741.9	1798.2
420	449.4	1242.4	1305.8	1362.3	1416.2	1469.4	1522.7	1576.4	1630.8	1685.8	1741.6	1798
440	454.03	1239.7	1304.2	1361.1	1415.3	1468.7	1522.1	1575.9	1630.4	1685.5	1741.2	1797.7
460	458.5	1236.9	1302.5	1360	1414.4	1468	1521.5	1575.4	1629.9	1685.1	1740.9	1797.2
480	462.82	1234.1	1300.8	1358.8	1413.6	1467.3	1520.9	1574.9	1629.5	1684.7	1740.6	1797.2
500	467.01	1231.2	1299.1	1357.7	1412.7	1466.6	1520.3	1574.4	1629.1	1684.4	1740.3	1796.9
520	471.07	1228.3	1297.4	1356.5	1411.8	1465.9	1519.7	1573.9	1628.7	1684	1740	1796.7
540	475.01	1225.3	1295.7	1355.3	1410.9	1465.1	1519.1	1573.4	1628.2	1683.6	1739.7	1796.4
560	478.84	1222.2	1293.9	1354.2	1410	1464.4	1518.6	1572.9	1627.8	1683.3	1739.4	1796.1
580	482.57	1219.1	1292.1	1353	1409.2	1463.7	1518	1572.4	1627.4	1682.9	1739.1	1795.9
600	486.2	1215.9	1290.3	1351.8	1408.3	1463	1517.4	1571.9	1627	1682.6	1738.8	1795.6
650	494.89	1207.6	1285.7	1348.7	1406	1461.2	1515.9	1570.7	1625.9	1681.6	1738	1794.9
700	503.08		1281	1345.6	1403.7	1459.4	1514.4	1569.4	1624.8	1680.7	1737.2	1794.3
750	510.84		1276.1	1342.5	1401.5	1457.6	1512.9	1568.2	1623.8	1679.8	1736.4	1793.6
800	518.21		1271.1	1339.3	1399.1	1455.8	1511.4	1566.9	1622.7	1678.9	1735.7	1792.9
850	525.24		1265.9	1336	1396.8	1454	1510	1565.7	1621.6	1678	1734.9	1792.3
900	531.95		1260.6	1332.7	1394.4	1452.2	1508.5	1564.4	1620.6	1677.1	1734.1	1791.6
950	538.39		1255.1	1329.3	1392	1450.3	1507	1563.2	1619.5	1676.2	1733.3	1791
1000	544.58		1249.3	1325.9	1389.6	1448.5	1505.4	1561.9	1618.4	1675.3	1732.5	1790.3
1050	550.53		1243.4	1322.4	1387.2	1446.6	1503.9	1560.7	1617.4	1674.4	1731.8	1789.6
1100	556.28		1237.3	1318.8	1384.7	1444.7	1502.4	1559.4	1616.3	1673.5	1731	1789
1150	561.82		1230.9	1315.2	1382.2	1442.8	1500.9	1558.1	1615.2	1672.6	1730.2	1788.3

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (psiA)		Temperature ( F)		
		t1	tx	t2
		1200	1255	1300
p1	480	1629.500		1684.700
px	485	1629.4	1659.8	1684.6
p2	500	1629.100		1684.400

Specific enthalpy BTU/lb

Imperial units

SATURATED CONDITION		SUPERHEATED CONDITION										
Press psia	Temp F	Temperature ( F)										
		650	700	750	800	900	1000	1100	1200	1300	1400	1500
1200	567.19	1271.8	1311.5	1346.9	1379.7	1440.9	1499.4	1556.9	1614.2	1671.6	1729.4	1787.6
1300	577.42	1261.9	1303.9	1340.8	1374.6	1437.1	1496.3	1554.3	1612	1669.8	1727.9	1786.3
1400	587.07	1251.4	1296.1	1334.5	1369.3	1433.2	1493.2	1551.8	1609.9	1668	1726.3	1785
1500	596.2	1240.2	1287.9	1328	1364	1429.2	1490.1	1549.2	1607.7	1666.2	1724.8	1783.7
1600	604.87	1228.3	1279.4	1321.4	1358.5	1425.2	1486.9	1546.6	1605.6	1664.3	1723.2	1782.3
1700	613.13	1215.3	1270.5	1314.5	1352.9	1421.2	1483.8	1544	1603.4	1662.5	1721.7	1781
1800	621.02	1201.2	1261.1	1307.4	1347.2	1417.1	1480.6	1541.4	1601.2	1660.7	1720.1	1779.7
1900	628.56	1185.7	1251.3	1300.2	1341.4	1412.9	1477.4	1538.8	1599.1	1658.8	1718.6	1778.4
2000	635.8	1168.3	1240.9	1292.6	1335.4	1408.7	1474.1	1536.2	1596.9	1657	1717	1777.1
2100	642.76	1148.5	1229.8	1284.9	1329.3	1404.4	1470.9	1533.6	1594.7	1655.2	1715.4	1775.7
2200	649.45	1123.9	1218	1276.8	1323.1	1400	1467.6	1530.9	1592.5	1653.3	1713.9	1774.4
2300	655.89		1205.3	1268.4	1316.7	1395.7	1464.2	1528.3	1590.3	1651.5	1712.3	1773.1
2400	662.11		1191.6	1259.7	1310.1	1391.2	1460.9	1525.6	1588.1	1649.6	1710.8	1771.8
2500	668.11		1176.7	1250.6	1303.4	1386.7	1457.5	1522.9	1585.9	1647.8	1709.2	1770.4
2600	673.91		1160.2	1241.1	1296.5	1382.1	1454.1	1520.2	1583.7	1646	1707.7	1769.1
2700	679.53		1142	1231.1	1289.5	1377.5	1450.7	1517.5	1581.5	1644.1	1706.1	1767.8
2800	684.96		1121.2	1220.6	1282.2	1372.8	1447.2	1514.8	1579.3	1642.2	1704.5	1766.5
2900	690.22		1095.3	1209.6	1274.7	1368	1443.7	1512.1	1577	1640.4	1703	1765.2
3000	695.33		1060.5	1197.9	1267	1363.2	1440.2	1509.4	1574.8	1638.5	1701.4	1763.8
3100	700.28			1185.4	1259.1	1358.4	1436.7	1506.6	1572.6	1636.7	1699.8	1762.5
3200	705.08			1172.3	1250.9	1353.4	1433.1	1503.8	1570.3	1634.8	1698.3	1761.2

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (psiA)	Temperature ( F)		
	t1	tx	t2
	1200.0	1270	1300.0
p1	1500	1607.700	1666.200
px	1545	1606.8	1665.3
p2	1600	1605.600	1664.300

STEAM TABLE (METRIC UNIT) FOR SPECIFIC ENTHALPY (kJ/kg)												
SATURATED STEAM		SUPERHEATED CONDITION										
Press barA	Temp C	Temperature ( C)										
		176.7	204.4	260.0	315.6	371.1	426.7	482.2	537.8	593.3	704.4	815.6
1.035	100.6	2828.9	2884.0	2994.3	3105.7	3218.7	3333.6	3450.4	3569.2	3690.2	3938.4	4194.7
1.379	108.9	2827.0	2882.4	2993.3	3105.0	3218.0	3332.9	3449.9	3568.8	3689.7	3938.2	4194.5
2.069	121.3	2822.8	2879.1	2991.2	3103.3	3216.9	3332.0	3449.0	3568.1	3689.3	3937.7	4194.2
2.759	130.7	2818.4	2875.9	2988.9	3102.0	3215.7	3331.1	3448.3	3567.4	3688.6	3937.2	4193.8
3.449	138.3	2814.2	2872.4	2986.8	3100.3	3214.5	3330.1	3447.6	3566.7	3688.1	3936.8	4193.5
4.138	144.8	2809.8	2869.1	2984.7	3098.9	3213.4	3329.2	3446.7	3566.2	3687.4	3936.5	4193.3
4.828	150.5	2805.2	2865.6	2982.4	3097.3	3212.2	3328.3	3446.0	3565.5	3686.9	3936.1	4192.8
5.518	155.6	2800.5	2862.1	2980.3	3095.7	3211.0	3327.3	3445.0	3564.8	3686.5	3935.6	4192.6
6.207	160.2	2795.9	2858.4	2978.0	3094.0	3209.9	3326.4	3444.3	3564.1	3685.8	3935.1	4192.4
6.897	164.3	2791.0	2854.9	2975.7	3092.6	3208.7	3325.5	3443.4	3563.4	3685.3	3934.7	4191.9
8.276	171.8	2781.0	2847.3	2971.2	3089.4	3206.2	3323.4	3442.0	3562.0	3684.2	3934.0	4191.5
9.656	178.4	0.0	2839.6	2966.3	3086.1	3203.8	3321.5	3440.4	3560.6	3683.0	3933.0	4190.8
11.035	184.2	0.0	2831.7	2961.7	3082.9	3201.5	3319.7	3438.8	3559.5	3681.8	3932.1	4190.1
12.415	189.5	0.0	2823.3	2956.8	3079.6	3198.9	3317.6	3437.1	3558.1	3680.7	3931.4	4189.6
13.794	194.3	0.0	2814.7	2951.7	3076.4	3196.6	3315.7	3435.5	3556.7	3679.5	3930.5	4188.9
15.173	198.8	0.0	2805.9	2946.8	3073.1	3194.1	3313.9	3433.9	3555.3	3678.3	3929.5	4188.2
16.553	203.0	0.0	2796.8	2941.5	3069.6	3191.5	3311.8	3432.2	3553.9	3677.2	3928.8	4187.7
17.932	206.9	0.0	0.0	2936.3	3066.1	3189.2	3309.9	3430.6	3552.5	3676.0	3927.9	4187.0
19.312	210.6	0.0	0.0	2930.8	3062.9	3186.6	3307.8	3429.0	3551.3	3674.8	3927.2	4186.3
20.691	214.1	0.0	0.0	2925.4	3059.2	3184.1	3305.9	3427.6	3549.9	3673.7	3926.3	4185.9
22.070	217.4	0.0	0.0	2919.6	3055.7	3181.5	3304.1	3426.0	3548.5	3672.5	3925.4	4185.2
23.450	220.6	0.0	0.0	2914.0	3052.2	3178.9	3302.0	3424.3	3547.2	3671.4	3924.7	4185.2
24.829	223.6	0.0	0.0	2908.2	3048.5	3176.4	3299.9	3422.7	3587.6	3670.2	3923.7	4184.0

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (barA)		Temperature ( C)		
		t1	tx	t2
		537.8	550	593.3
p1	4.138	3566.223		3687.408
px	4.5	3565.9	3592.5	3687.2
p2	4.828	3565.525		3686.943

Specific enthalpy kJ/kg

Metric units

SATURATED STEAM		SUPERHEATED CONDITION										
Press barA	Temp C	Temperature ( C)										
		260.0	315.6	371.1	426.7	482.2	537.8	593.3	648.9	704.4	760.0	815.6
26.209	226.5	2902.2	3044.7	3173.8	3298.0	3421.1	3544.4	3669.0	3795.1	3922.8	4052.4	4183.3
27.588	229.2	2896.1	3041.0	3171.3	3295.9	3419.5	3543.2	3667.9	3794.2	3922.1	4051.7	4182.6
28.967	231.9	2889.8	3037.3	3168.7	3294.1	3417.8	3541.8	3666.7	3793.2	3921.2	4051.0	4182.1
30.347	234.5	2883.5	3033.6	3165.9	3292.0	3416.2	3540.4	3665.5	3792.3	3920.5	4050.0	4181.5
31.726	236.9	2877.0	3029.6	3163.4	3289.9	3414.6	3539.0	3664.4	3791.1	3919.5	4049.3	4180.3
33.106	239.3	2870.5	3025.7	3160.6	3288.0	3412.9	3537.6	3663.2	3790.2	3918.6	4048.6	4180.3
34.485	241.7	2863.8	3021.7	3158.0	3285.9	3411.3	3536.2	3662.1	3789.3	3917.9	4047.9	4179.6
35.864	243.9	2857.0	3017.8	3155.2	3283.8	3409.7	3534.8	3660.9	3788.4	3917.0	4047.2	4179.1
37.244	246.1	2850.0	3013.8	3152.4	3281.8	3407.8	3533.4	3659.7	3787.2	3916.1	4046.5	4178.4
38.623	248.2	2842.8	3009.6	3149.9	3279.7	3406.2	3532.3	3658.6	3786.3	3915.4	4045.8	4177.7
40.003	250.3	2835.6	3005.4	3147.1	3277.8	3404.6	3530.9	3657.4	3785.3	3914.4	4045.1	4177.3
41.382	252.3	2828.2	3001.2	3144.3	3275.7	3402.9	3529.5	3656.2	3784.4	3913.7	4044.4	4176.6
44.831	257.2	2808.9	2990.5	3137.1	3270.4	3398.8	3526.0	3653.4	3781.8	3911.4	4042.6	4174.9
48.279	261.7	0.0	2979.6	3129.9	3265.0	3394.6	3522.5	3650.4	3779.3	3909.3	4040.7	4173.5
51.728	266.0	0.0	2968.2	3122.7	3259.9	3390.4	3519.0	3647.6	3777.0	3907.2	4038.9	4171.9
55.176	270.1	0.0	2956.6	3115.2	3254.3	3386.2	3515.5	3644.6	3774.4	3905.1	4037.2	4170.3
58.625	274.0	0.0	2944.5	3107.5	3249.0	3382.0	3512.3	3641.8	3771.8	3903.0	4035.4	4168.9
62.073	277.8	0.0	2932.2	3099.9	3243.4	3377.8	3508.8	3638.8	3769.5	3900.9	4033.5	4167.3
65.522	281.3	0.0	2919.4	3092.0	3237.8	3373.4	3505.3	3636.0	3767.0	3898.8	4031.7	4165.9
68.970	284.8	0.0	2905.9	3084.0	3232.2	3369.2	3501.6	3633.0	3764.4	3896.7	4029.8	4164.2
72.419	288.1	0.0	2892.1	3075.9	3226.6	3364.8	3498.1	3630.2	3762.1	3894.7	4028.2	4162.6
75.867	291.3	0.0	2878.0	3067.5	3220.8	3360.4	3494.6	3627.2	3759.5	3892.6	4026.3	4161.2
79.316	294.3	0.0	2863.1	3059.2	3215.0	3356.0	3491.1	3624.1	3757.0	3890.5	4024.4	4159.6

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (barA)		Temperature ( C)		
		t1	tx	t2
		648.9	655	704.4
p1	33.106	3790.217		3918.612
px	34	3789.6	3803.8	3918.2
p2	34.485	3789.287		3917.914

Specific enthalpy kJ/kg

Metric units

SATURATED STEAM		SUPERHEATED CONDITION										
Press barA	Temp C	Temperature ( C )										
		343.3	371.1	398.9	426.7	482.2	537.8	593.3	648.9	704.4	760.0	815.6
82.764	297.3	2958.2	3050.5	3132.9	3209.2	3351.5	3487.6	3621.3	3754.6	3888.1	4022.6	4158.0
89.661	303.0	2935.2	3032.9	3118.7	3197.3	3342.7	3480.4	3615.3	3749.5	3884.0	4019.1	4154.9
96.558	308.4	2910.8	3014.7	3104.0	3185.0	3333.6	3473.2	3609.5	3744.6	3879.8	4015.4	4151.9
103.455	313.4	2884.7	2995.7	3088.9	3172.7	3324.3	3466.0	3603.4	3739.5	3875.6	4011.9	4148.9
110.352	318.3	2857.0	2975.9	3073.6	3159.9	3315.0	3458.5	3597.4	3734.6	3871.2	4008.2	4145.6
117.249	322.9	2826.8	2955.2	3057.5	3146.8	3305.7	3451.3	3591.3	3729.5	3867.0	4004.7	4142.6
124.146	327.2	2794.0	2933.3	3041.0	3133.6	3296.2	3443.9	3585.3	3724.4	3862.8	4001.0	4139.6
131.043	331.4	2757.9	2910.5	3024.3	3120.1	3286.4	3436.4	3579.2	3719.5	3858.4	3997.5	4136.6
137.940	335.4	2717.5	2886.3	3006.6	3106.1	3276.6	3428.8	3573.2	3714.4	3854.2	3993.7	4133.5
144.837	339.3	2671.4	2860.5	2988.7	3092.0	3266.6	3421.3	3567.2	3709.3	3850.0	3990.0	4130.3
151.734	343.0	2614.2	2833.1	2969.8	3077.5	3256.4	3413.6	3560.9	3704.2	3845.6	3986.5	4127.3
158.631	346.6	0.0	2803.5	2950.3	3062.6	3246.4	3405.7	3554.8	3699.0	3841.4	3982.8	4124.2
165.528	350.1	0.0	2771.7	2930.1	3047.3	3235.9	3398.1	3548.5	3693.9	3837.0	3979.3	4121.2
172.425	353.4	0.0	2737.0	2908.9	3031.7	3225.5	3390.1	3542.3	3688.8	3832.8	3975.6	4118.0
179.322	356.6	0.0	2698.6	2886.8	3015.7	3214.8	3382.2	3536.0	3683.7	3828.6	3972.1	4114.9
186.219	359.7	0.0	2656.3	2863.5	2999.4	3204.1	3374.3	3529.7	3678.6	3824.2	3968.4	4111.9
193.116	362.8	0.0	2607.9	2839.1	2982.4	3193.1	3366.2	3523.4	3673.5	3819.8	3964.7	4108.9
200.013	365.7	0.0	2547.7	2813.5	2965.0	3182.0	3358.0	3517.1	3668.1	3815.6	3961.2	4105.9
206.910	368.5	0.0	2466.7	2786.3	2947.0	3170.8	3349.9	3510.9	3663.0	3811.2	3957.5	4102.6
213.807	371.3	0.0	0.0	2757.2	2928.7	3159.6	3341.8	3504.4	3657.9	3807.0	3953.7	4099.6
220.704	373.9	0.0	0.0	2726.8	2909.6	3148.0	3333.4	3497.8	3652.5	3802.5	3950.2	4096.6

Specific enthalpy at pressure and temperature at between 2 point in the table :

Pressure (barA)		Temperature ( C )			Press (barA)	Temperature ( C )		
		t1	tx	t2		t1	tx	t2
		648.9	650	704.4				
p1	103.455	3739.510		3875.581	p1	h1		h3
px	110	3734.9	3737.6	3871.4	px	hx1	hx	hx2
p2	110.352	3734.626		3871.162	p2	h2		h4

Formula (linier) :

$$hx1=h1+(h2-h1) \times (px-p1)/(p2-p1)$$

$$hx2=h3+(h4-h3) \times (px-p1)/(p2-p1)$$

$$hx=hx1+(hx2-hx1) \times (tx-t1)/(t2-t1)$$