



Change



Dew point bubble point



Definition

- **DEW POINT** : The temperature at which a vapor will condense or, where associated with glide, the higher or highest boiling point of the mixture. The vapor temperature without superheat.
- **BUBBLE POINT**: The temperature at which a liquid forms bubbles (usually the lower or lowest boiling point of one of the constituents of a blend). The liquid temperature without sub-cooling.

Definitions

- Glide
 - Refrigerant blend has various temperatures at a single pressure in the condenser or evaporator.
- Fractionation
 - Blends are separated during a phase of transition

Blends

- 404A
 - (R-125/143a/134a)
 - 1.5°F Glide
- 410A
 - HFC-125/R-32
 - < .5°F Glide

Other Glide Examples

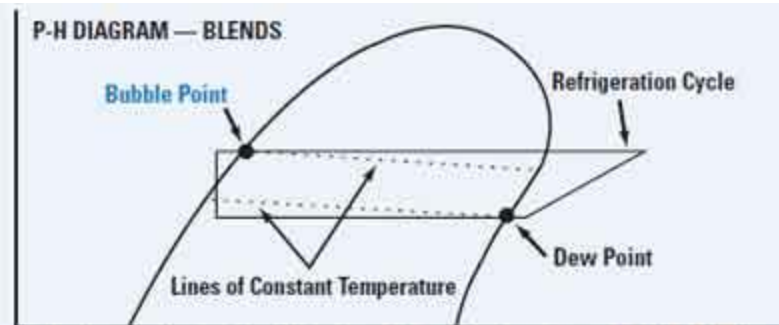
- MP39 < 11.5°F
- HP80 < 3.5°F
- 407C < 11.5°F

Temperature		R22	R407C		R417A		R410A
°F	°C		Liquid Press.	Vapor Press.	Liquid Press.	Vapor Press.	
-40	-40.0	0.5	3.0	4.4	0.5	4.2	11.6
-35	-37.2	2.6	5.4	0.6	2.4	0.8	14.9
-30	-34.4	4.9	8.0	1.8	4.5	1.5	18.5
-25	-31.7	7.4	10.9	4.1	6.9	3.6	22.5
-20	-28.9	10.1	14.1	6.6	9.4	5.9	26.9
-15	-26.1	13.2	17.6	9.4	12.2	8.4	31.7
-10	-23.3	16.5	21.3	12.5	15.2	11.2	36.8
-5	-20.6	20.1	25.4	15.9	18.5	14.3	42.5
0	-17.8	24.0	29.9	19.6	22.0	17.6	48.6
5	-15.0	28.2	34.7	23.6	25.9	21.2	55.2
10	-12.2	32.8	39.9	28.0	30.0	25.1	62.3
15	-9.4	37.7	45.6	32.8	34.5	29.3	70.0
20	-6.7	43.0	51.6	38.0	39.3	33.9	78.3
25	-3.9	48.8	58.2	43.6	44.5	38.9	87.3
30	-1.1	54.9	65.2	49.6	50.8	44.2	96.8
35	1.7	61.5	72.6	56.1	56.0	49.9	107
40	4.4	68.5	80.7	63.1	62.4	56.1	118
45	7.2	76.0	89.2	70.6	69.2	62.7	130
50	10.0	84.0	98.3	78.7	76.4	69.8	142
55	12.8	92.6	108	87.3	87.2	77.3	155
60	15.6	102	118	96.8	95.7	85.4	170
65	18.3	111	129	106	105	93.9	185
70	21.1	121	141	117	114	103	201
75	23.9	132	153	128	124	113	217
80	26.7	144	166	140	134	123	235
85	29.4	156	180	153	146	134	254
90	32.2	168	195	166	157	145	274
95	35.0	182	210	181	170	158	295
100	37.8	196	226	196	183	170	317
105	40.6	211	243	211	197	184	340
110	43.3	226	261	229	211	198	365
115	46.1	243	280	247	225	212	391
120	48.9	260	300	266	241	227	418
125	51.7	278	321	286	258	244	446
130	54.4	297	342	307	275	261	476
135	57.2	317	365	329	293	279	507
140	60.0	337	389	353	312	297	539
145	62.8	359	-	-	-	-	573
150	65.6	382	-	-	-	-	608

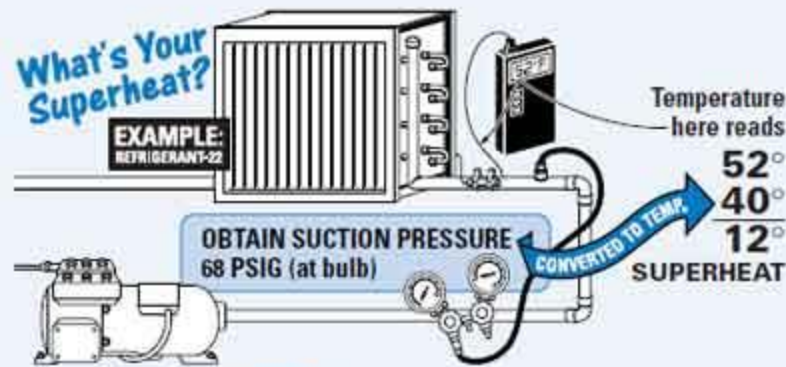
**R407C SATURATED VAPOR/LIQUID
TEMPERATURE/PRESSURE CHART**

PRESSURE (PSIG)	LIQUID TEMP (°F)	VAPOR TEMP (°F)	PRESSURE (PSIG)	LIQUID TEMP (°F)	VAPOR TEMP (°F)
20	-10.7	1.5	150	74.8	84.9
22	-8.2	4.0	155	76.8	86.8
24	-5.7	6.4	160	78.7	88.7
26	-3.4	8.7	165	80.6	90.5
28	-1.1	11.0	170	82.5	92.3
30	1.1	13.1	175	84.3	94.0
32	3.2	15.2	180	86.1	95.8
34	5.3	17.2	185	87.8	97.5
36	7.3	19.2	190	89.6	99.1
38	9.2	21.0	195	91.3	100.7
40	11.1	22.9	200	92.9	102.3
42	12.9	24.7	205	94.6	103.9
44	14.7	26.4	210	96.2	105.4
46	16.4	28.1	215	97.7	107.0
48	18.1	29.7	220	99.3	108.4
50	19.7	31.3	225	100.8	109.9
52	21.3	32.9	230	102.3	111.4
54	22.9	34.4	235	103.8	112.8
56	24.4	35.9	240	105.3	114.2
58	25.9	37.4	245	106.7	115.6
60	27.4	28.8	250	108.2	116.9
62	28.8	40.2	255	109.6	118.2
64	30.2	41.6	260	111.0	119.6
66	31.6	43.0	265	112.3	120.9
68	33.0	44.3	270	113.7	122.1
70	34.3	45.6	275	115.0	123.4
72	35.6	46.9	280	116.3	124.7
74	36.9	48.1	285	117.6	125.9
76	38.2	49.3	290	118.9	127.1
78	39.4	50.6	295	120.2	128.3
80	40.6	51.8	300	121.4	129.5
82	41.9	52.9	305	122.7	130.7
84	43.0	54.1	310	123.9	131.8
86	44.2	55.2	315	125.1	133.0
88	45.4	56.3	320	126.3	134.1
90	46.5	57.4	325	127.5	135.2
92	47.6	58.5	330	128.7	136.3
94	48.7	59.6	335	129.8	137.4
96	49.8	60.7	340	131.0	138.5
98	50.9	61.7	345	132.1	139.6
100	51.9	62.7	350	133.2	140.6
105	54.5	65.2	355	134.3	141.7
110	57.0	67.7	360	135.4	142.7
115	59.5	70.0	365	136.5	143.7
120	61.8	72.3	370	137.6	144.7
125	64.1	74.6	375	138.7	145.7
130	66.4	76.7	380	139.8	146.7
135	68.5	78.8	385	140.8	147.7
140	70.7	80.9	390	141.8	148.7
145	72.8	82.9	395	142.9	149.6

Superheat calculation



To determine superheat, use **Dew Point** values. To determine subcooling, use **Bubble Point** values.



SPORLAN VALVE COMPANY
204 LANSDOWNE • WASHINGTON, MD 20786
833-423-1111 • FAX 833-423-9130
www.sporlan.com

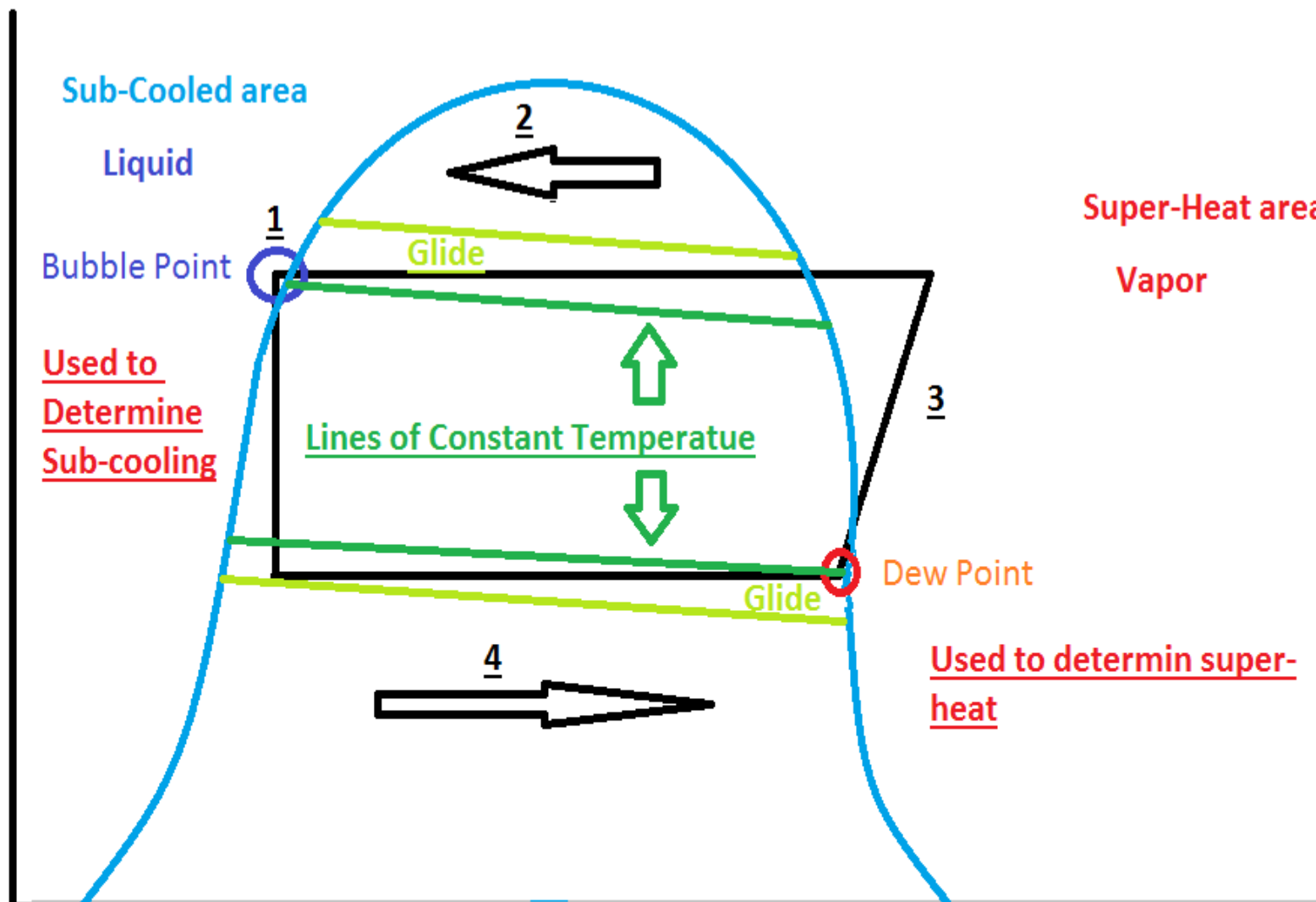
Subcooling calculation

- Find the Bubble point temperature from the High pressure gage
- Subtract the liquid line temperature
- You now have the subcooling
- Example 407C
 - Liquid pressure 200PSIG = 92.9°F
 - Measured liquid line temperature is 89.9°F
 - Subcooling is 10°F

Superheat calculation

- Measure the Suction line temperature
- Find the Dew point temperature from the Low pressure gage and subtract from Suction Line temperature
- You now have the subcooling
- Example 407C
 - Measured liquid line temperature is 44.3°F
 - Liquid pressure 70PSIG = 34.3°F
 - Subcooling is 10°F

Pressure



Used to Determine Sub-cooling

Used to determin super-heat

- 1= Metering device
- 2= Condenser
- 3= Compressor
- 4= Evaporator

Enthlpy