

# SATURATED STEAM

## Thermodynamic Properties – Saturated Steam (Values to Nearest Even Digits)

PSIG	°F	BTU/lb.			Spec. Vol. Ft <sup>3</sup> /lb Sat. Vapor
		Heat of Liquid*	Latent Heat of Evaporation	Total Heat of Steam	
0	212	180	970	1150	27
1	216	183	968	1151	25
2	219	187	965	1152	24
3	222	190	964	1154	22.5
4	224	193	962	1155	21.0
5	227	195	961	1156	20.0
6	230	298	959	1157	19.5
7	232	201	957	1158	18.5
8	235	203	956	1159	18.0
9	237	206	954	1160	17.0
10	240	208	952	1160	16.5
15	250	218	945	1163	14.0
20	259	227	940	1167	12.0
25	267	236	934	1170	10.5
30	274	243	929	1172	9.5
35	281	250	924	1174	8.5
40	287	256	920	1176	8.0
45	292	262	915	1177	7.0
50	298	267	912	1179	6.7
55	303	272	908	1180	6.2
60	307	277	905	1182	5.8

PSIG	°F	BTU/lb.			Spec. Vol. Ft <sup>3</sup> /lb Sat. Vapor
		Heat of Liquid*	Latent Heat of Evaporation	Total Heat of Steam	
65	312	282	901	1183	5.5
70	316	286	898	1184	5.2
75	320	290	895	1185	4.9
80	324	294	892	1186	4.7
85	328	298	889	1187	4.4
90	331	302	886	1188	4.2
95	335	306	883	1189	4.0
100	338	309	881	1190	3.9
110	344	316	876	1192	3.6
120	350	322	871	1193	3.3
125	353	325	868	1193	3.2
130	356	328	866	1194	3.1
140	361	334	861	1195	2.9
150	366	339	857	1196	2.7
160	371	344	853	1197	2.6
170	375	348	849	1197	2.5
180	380	353	845	1198	2.3
190	384	358	841	1199	2.2
200	388	362	837	1199	2.1
220	395	370	830	1200	2.0
240	403	378	823	1201	1.8
250	406	381	820	1201	1.75

\* Heat content is the number of BTU/lb needed to reach the condition indicated starting with water at 32°F.

Saturated steam is pure steam in direct contact with the liquid water from which it was generated and at a temperature of water at the existing pressure. For example, saturated steam at 50 PSIG has a temperature of 298°F.

Pressure is commonly expressed either (a) PSIA – pounds per square inch absolute or, (b) PSIG – pounds per square inch gauge above

standard atmospheric pressure of 14.7 PSIA, thus PSIG is equal to PSIA minus 14.7 psi.

Latent heat, expressed in BTU per pound, is the amount of heat needed (absorbed) to convert a pound of boiling water to a pound of steam. The same amount of heat is liberated when a pound of steam condenses back to a pound of water. Latent heat varies with temperature (see table above).

## SHEATH MATERIAL COMPOSITION

Sheath Material	Chemical Composition															Notes	
	Al	C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S	Si	Ta	Ti	V		W
Steel—1010 Carbon		.08/.13				Bal	.3/.6			.04	.05						
<b>Stainless Steels</b>																	
304		.08		18/20		Bal	2		8/10.5	.045	.03	1					
316		.08		16/18		Bal	2	2/3	10/14	.045	.03	1					
316L		.03		16/18		Bal	2	2/3	10/14	.045	.03	1					
321		.08		17/19		Bal	2		9/12	.045	.03	1					
347		.08		17/19		Bal	2		9/13	.045	.03	1					
Carpenter 20Cb-3		.06		19/21	3/4	Bal	2	2/3	32/38	.05	.035	1					
<b>Nickel Alloys</b>																	
Incoloy 800	.38	.05		21	.38	Bal	.75		32.5		.008	.5		.38			
Incoloy 840		.08		18/22	.075	Bal	1		18/22		.015	1.0					
Monel 400		.15			Bal	1.25	1		66.5		.012	.25	.25				
Inconel 600		.08		15.5	.25	8	.5		76		.008	.25	.25				

Nickel + Cobalt = 76% min.