



**ARMSTRONG INTERNATIONAL - INTELLIGENT SYSTEM SOLUTIONS<sup>™</sup>** [www.armstronginternational.com](http://www.armstronginternational.com)

**Steam Specialties**

Steam traps, pressure reducing valves, temperature regulators, radiator traps and valves, air vents and strainers.

**Steam-A-Ware<sup>™</sup>**

Sizing and selection software for steam, air and hot water systems

**Condensate Recovery Systems**

Non-electric pumping traps, condensate pump trap packages and flash recovery vessels.

**Hot Water Systems**

Flo-Rite-Temp<sup>™</sup> Steam to water instantaneous heaters, Flo-Direct<sup>™</sup> 99.7% thermal efficient gas fired.

**Washdown Equipment**

Steamix<sup>®</sup> Hose Stations - steam and water mixing, hot and cold water mixing, hoses, nozzles and accessories.

**Coils**

Steam and liquid heating/cooling coils. Finned tube, plate fin, unit heaters and tank heaters.

**Humidication**

Direct steam injection, gas fired, electronic, fogging and steam to steam humidifiers.

**Humid-A-Ware<sup>™</sup>**

Sizing and selection software for steam gas fired, electronic and fogging humidication systems.



**CHECK-ALL VALVE** [www.checkall.com](http://www.checkall.com)

Spring-loaded check valves - 1/8" - 20" bronze, carbon steel, nylon, PVC, stainless steel, Teflon - vacuum to 10,000 psi.



**ENERQUIP** [www.enerquip.com](http://www.enerquip.com)

Shell and tube heat exchangers for food and beverage, pharmaceutical and industrial applications.



**Lattner Boiler Company**

**LATTNER BOILER COMPANY** [www.lattnerboiler.com](http://www.lattnerboiler.com)

Steam and hot water boilers - HRT, firetube and vertical tubeless designs and electric boilers. Condensate feedwater and blowdown systems.

**DRS MARLO COIL** [www.marlocoil.com](http://www.marlocoil.com)

Heating and cooling coils, "stratomizer" face and bypass coils.

**THRUSH** [www.thrushco.com](http://www.thrushco.com)

In-line circulators, close coupled, vertical in-line pumps and heat exchangers: double wall, straight and U-tube and replacement bundles.



**CIRCLE S PRODUCTS, INC.** [www.dryflo.com](http://www.dryflo.com)

Steam and air separators, exhaust heads, flash tanks

**MERLO ENERGY**

Steam system services, compressed air services, corrosion protection coatings, educational training seminars, customized programs, energy audits, energy consulting



**PENBERTHY** [www.tycoflowcontrol-na.com/brands.asp](http://www.tycoflowcontrol-na.com/brands.asp)

Liquid level gauges, drum level control, ejectors, heaters and valves

[www.merloenergy.com](http://www.merloenergy.com)

**Grand Rapids**

1505 Steele Avenue S.W.  
Grand Rapids, MI 49507  
616-245-1195 or 800-968-1195  
Fax: 616-245-0334

**Warren**

1987 Concept Drive  
Warren, MI 48091  
586-755-3110 or 800-877-6289  
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**Midland**

4600 James Savage Road  
Midland, MI 48642  
989-496-9250  
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**Administrative Office**

130 N Helmer Road  
Battle Creek, MI 49015  
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**Use this table to:**

- Convert steam temperature from steam pressure
- Convert steam pressure to saturated temperature
- Determine Btu/lb of steam at a given pressure
- Determine the Btu/lb of condensate at a given pressure and temperature
- Determine the specific volume (cu ft/lb) of steam at a given pressure

**Table CG-1. Properties of Saturated Steam**

(Abstracted from Keenan and Keyes, THERMODYNAMIC PROPERTIES OF STEAM, by permission of John Wiley &amp; Sons, Inc.)

	Col. 1 Gauge Pressure	Col. 2 Absolute Pressure (psia)	Col. 3 Steam Temp. (F°)	Col. 4 Heat of Sat. Liquid (Btu/lb)	Col. 5 Latent Heat (Btu/lb)	Col. 6 Total Heat of Steam (Btu/lb)	Col. 7 Specific Volume of Sat. Liquid (cu ft/lb)	Col. 8 Specific Volume of Sat. Steam (cu ft/lb)
<b>Inches of Vacuum</b>	29.743	0.08854	32.00	0.00	1075.8	1075.8	0.096022	3306.00
	29.515	0.2	53.14	21.21	1063.8	1085.0	0.016027	1526.00
	27.886	1.0	101.74	69.70	1036.3	1106.0	0.016136	333.60
	19.742	5.0	162.24	130.13	1001.0	1131.0	0.016407	73.52
	9.562	10.0	193.21	161.17	982.1	1143.3	0.016590	38.42
	7.536	11.0	197.75	165.73	979.3	1145.0	0.016620	35.14
	5.490	12.0	201.96	169.96	976.6	1146.6	0.016647	32.40
	3.454	13.0	205.88	173.91	974.2	1148.1	0.016674	30.06
	1.418	14.0	209.56	177.61	971.9	1149.5	0.016699	28.04
	<b>PSIG</b>	0.0	14.696	212.00	180.07	970.3	1150.4	0.016715
1.3		16.0	216.32	184.42	967.6	1152.0	0.016746	24.75
2.3		17.0	219.44	187.56	965.5	1153.1	0.016768	23.39
5.3		20.0	227.96	196.16	960.1	1156.3	0.016830	20.09
10.3		25.0	240.07	208.42	952.1	1160.6	0.016922	16.30
15.3		30.0	250.33	218.82	945.3	1164.1	0.017004	13.75
20.3		35.0	259.28	227.91	939.2	1167.1	0.017078	11.90
25.3		40.0	267.25	236.03	933.7	1169.7	0.017146	10.50
30.3		45.0	274.44	243.36	928.6	1172.0	0.017209	9.40
40.3		55.0	287.07	256.30	919.6	1175.9	0.017325	7.79
50.3		65.0	297.97	267.50	911.6	1179.1	0.017429	6.66
60.3		75.0	307.60	277.43	904.5	1181.9	0.017524	5.82
70.3		85.0	316.25	286.39	897.8	1184.2	0.017613	5.17
80.3		95.0	324.12	294.56	891.7	1186.2	0.017696	4.65
90.3		105.0	331.36	302.10	886.0	1188.1	0.017775	4.23
100.0		114.7	337.90	308.80	880.0	1188.8	0.017850	3.88
110.3		125.0	344.33	315.68	875.4	1191.1	0.017922	3.59
120.3		135.0	350.21	321.85	870.6	1192.4	0.017991	3.33
125.3		140.0	353.02	324.82	868.2	1193.0	0.018024	3.22
130.3		145.0	355.76	327.70	865.8	1193.5	0.018057	3.11
140.3		155.0	360.50	333.24	861.3	1194.6	0.018121	2.92
150.3		165.0	365.99	338.53	857.1	1195.6	0.018183	2.75
160.3		175.0	370.75	343.57	852.8	1196.5	0.018244	2.60
180.3		195.0	379.67	353.10	844.9	1198.0	0.018360	2.34
200.3		215.0	387.89	361.91	837.4	1199.3	0.018470	2.13
225.3		240.0	397.37	372.12	828.5	1200.6	0.018602	1.92
250.3		265.0	406.11	381.60	820.1	1201.7	0.018728	1.74
		300.0	417.33	393.84	809.0	1202.8	0.018896	1.54
		400.0	444.59	424.00	780.5	1204.5	0.019340	1.16
		450.0	456.28	437.20	767.4	1204.6	0.019547	1.03
	500.0	467.01	449.40	755.0	1204.4	0.019748	0.93	
	600.0	486.21	471.60	731.6	1203.2	0.02013	0.77	
	900.0	531.98	526.60	668.8	1195.4	0.02123	0.50	
	1200.0	567.22	571.70	611.7	1183.4	0.02232	0.36	
	1500.0	596.23	611.60	556.3	1167.9	0.02346	0.28	
	1700.0	613.15	636.30	519.6	1155.9	0.02428	0.24	
	2000.0	635.82	671.70	463.4	1135.1	0.02565	0.19	
	2500.0	668.13	730.60	360.5	1091.1	0.02860	0.13	
	2700.0	679.55	756.20	312.1	1068.3	0.03027	0.11	
	3206.2	705.40	902.70	0.0	902.7	0.05053	0.05	

**See front page for more useful information!**