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Fairview

Reference Booklet

Frequently Used Conversion and Calculation Charts.



Propane &
Natural Gas
Barbecue
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Introduction

The information contained in this book is provided by Fairview Fittings & Manufacturing Ltd. for reference only. Gas systems are governed by authorities having local jurisdiction and are subject to applicable Provincial \ State and Municipal Laws and Regulations. This document should not be substituted for the judgement of a professional engineer. The user of this information assumes all risk associated with its use.

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PROPERTIES OF PROPANE AND NATURAL GAS

Property	Propane	Natural Gas
Boiling Point	-44°F	-260°F
Specific Gravity of Gas (Air = 1.00)	1.53	0.55
Specific Gravity of Liquid (Water = 1.00)	0.51	0.30
Lbs per Gallon of Liquid at 60 °F	4.24	59.8
BTU per Gallon of Gas at 60 °F	91,660	101,600
BTU per Lb. Of Gas	21,591	23,875
BTU per Cubic Ft of Gas at 60 °F	2500	1000

VAPOUR PRESSURES OF LP-GAS

Temp. (°F)	Temp. (°C)	Press. PSIG	Temp. (°F)	Temp. (°C)	Press. PSIG
-40	-40	1.3	40	4.4	63.3
-30	-34	5.5	50	10	77.1
-20	-29	10.7	60	15.6	92.5
-10	-23	16.7	70	21.1	109.3
0	-17.8	23.5	80	26.7	128.1
10	-12.2	31.3	90	32.2	149.3
20	-6.7	40.8	100	37.8	172.3
30	-1.1	51.6	110	43	197.3

PROPANE CYLINDER CAPACITIES

Size	Gallon Capacity	Total BTU Capacity
20#	4.8	441,600
30#	7.1	653,200
40#	9.5	874,000
60#	14.3	1,315,600
100#	23.8	2,189,600
200#	47.2	4,342,400
420#	99.1	9,117,200



VAPORIZATION RATE OF CYLINDERS

Outside Temp °F	Outside Temp °C	Cylinder Size					
		20#	30#	40#	100#	200#	420#
60	16	24,000	32,000	40,100	79,700	125,900	185,500
50	10	21,200	28,300	35,500	70,600	111,500	164,300
40	4.4	18,450	24,700	31,000	61,500	97,200	143,100
30	-1.1	15,700	21,000	26,400	52,400	82,800	122,000
20	-6.78	13,000	17,300	21,800	43,300	68,400	100,700
10	-12.2	10,250	13,700	17,200	34,200	54,000	79,500
0	-17.8	7,500	10,000	12,600	25,000	39,500	58,300
-10	-23	4,780	6,400	8,000	16,000	25,300	37,100
-20	-29	2,050	2,700	3,400	6,800	10,700	15,900

Output in Btu/hr - Vertical Cylinder - Minimum Cylinder Pressure 10 PSI

VOLUME CONVERSION CHART

Multiply	By	To Obtain
Cubic Feet	7.4805	Gallons (US)
Cubic Feet	28.316	Liters
Cubic Feet	1728	Cubic Inches
Gallons (Imperial)	1.20095	Gallons (US)
Gallons (Imperial)	0.1337	Cubic Feet
Gallons (US)	0.83267	Gallons (Imperial)
Gallons (US)	231	Cubic Inches

CONVERTING VOLUMES OF GAS (CFH to CFH or CFM to CFM)

Multiply Flow of:	By	To Obtain Flow of:
Air	0.707	Butane
	1.290	Natural Gas
	0.808	Propane
Butane	1.414	Air
	1.826	Natural Gas
	1.140	Propane
Natural Gas	0.775	Air
	0.547	Butane
	0.625	Propane
Propane	1.237	Air
	0.874	Butane
	1.598	Natural Gas

LENGTH CONVERSION CHART

Multiply	By	To Obtain
Centimeters	0.3937	Inches
Feet	0.3048	Meters
Feet	30.48	Centimeters
Feet	304.8	Millimeters
Inches	2.54	Centimeters
Inches	25.4	Millimeters
Kilometer	0.6214	Miles
Meters	1.094	Yards
Meters	3.281	Feet
Meters	39.37	Inches
Yards	0.9144	Meters
Yards	91.44	Centimeters

TEMPERATURE CONVERSION

Degrees F	Degrees C	Degrees F	Degrees C
-50	-46	60	15.6
-40	-40	70	21.1
-30	-34	80	26.7
-20	-29	90	32.2
-10	-23	100	37.8
0	-17.8	110	43
10	-12.2	120	49
20	-6.78	130	54
30	-1.1	140	60
32	0	150	66
40	4.4	160	71
50	10	170	77

Degrees F = $\frac{9}{5} \times \text{°C} + 32$
Degrees C = $(\text{°F} - 32) \times \frac{5}{9}$

PRESSURE CONVERSION CHART

Multiply	By	To Obtain
Atmospheres	1.03332	Kilograms per sq. centimeter
Atmospheres	14.70	Pounds per square inch
Atmospheres	407.14	Inches water
Grams per sq centimeter	0.0142	Pounds per square inch
Inches of mercury	0.4912	Pounds per square inch
Inches of mercury	1.133	Feet of water
Inches of water	0.0361	Pounds per square inch
Inches of water	0.0735	Inches of mercury
Inches of water	0.5781	Ounces per square inch
Inches of water	5.204	Pounds per square foot
KPA	100	Bar
Kilograms per sq. centimeter	14.22	Pounds per square inch
Kilograms per sq. meter	0.2048	Pounds per square foot
Pounds per square inch	0.06804	Atmospheres
Pounds per square inch	0.07031	Kilograms per sq. centimeter
Pounds per square inch	0.145	KPA
Pounds per square inch	2.036	inches of mercury
Pounds per square inch	2.307	Feet of water
Pounds per square inch	14.5	BAR
Pounds per square inch	27.67	Inches of water

GAUGING DRILLS

PART No.	DRILL SIZE	B.T.U. / HR.	B.T.U. / HR.	B.T.U. / HR.
		NATURAL (3.5)	NATURAL (7.0)	LP (11.0)
D19	0.1660	69965	98945	192487
D20	0.1610	65813	93074	181066
D21	0.1590	64188	90776	176596
D22	0.1570	62584	88507	172181
D23	0.1540	60215	85157	165664
D24	0.1520	58661	82959	161389
D25	0.1495	56747	80253	156123
D26	0.1470	54865	77591	150946
D27	0.1440	52649	74456	144847
D28	0.1405	50120	70881	137892
D29	0.1360	46961	66413	129200
D30	0.1285	41924	59290	115343
D31	0.1200	36562	51706	100588
D32	0.1160	34165	48316	93994
D33	0.1130	32420	45849	89195
D34	0.1110	31283	44241	86066
D35	0.1100	30722	43447	84522
D36	0.1065	28798	40726	79229
D37	0.1040	27462	38837	75553
D38	0.1015	26157	36992	71964
D39	0.0995	25137	35549	69156
D40	0.0980	24384	34485	67087
D41	0.0960	23399	33092	64377
D42	0.0935	22197	31391	61067
D43	0.0890	20111	28442	55331
D44	0.0860	18778	26557	51663
D45	0.0820	17072	24144	46969
D46	0.0810	16658	23558	45831
D47	0.0785	15646	22127	43045
D48	0.0760	14665	20740	40347
D49	0.0730	13530	19135	37225

GAUGING DRILLS

PART No.	DRILL SIZE	B.T.U. / HR.	B.T.U. / HR.	B.T.U. / HR.
		NATURAL (3.5)	NATURAL (7.0)	LP (11.0)
D50	0.0700	12441	17594	34228
D51	0.0670	11398	16119	31357
D52	0.0635	10238	14479	28167
D53	0.0595	8989	12712	24730
D54	0.0550	7680	10862	21131
D55	0.0520	6865	9709	18888
D56	0.0465	5490	7764	15104
D57	0.0430	4695	6639	12916
D58	0.0420	4479	6334	12322
D59	0.0410	4268	6036	11742
D60	0.0400	4062	5745	11176
D61	0.0390	3862	5461	10625
D62	0.0380	3666	5185	10087
D63	0.0370	3476	4916	9563
D64	0.0360	3291	4654	9053
D65	0.0350	3110	4399	8557
D66	0.0330	2765	3910	7607
D67	0.0320	2600	3677	7153
D68	0.0310	2440	3451	6713
D69	0.0292	2165	3062	5956
D70	0.0280	1991	2815	5476
D71	0.0260	1716	2427	4722
D72	0.0250	1587	2244	4366
D73	0.0240	1462	2068	4024
D74	0.0225	1285	1818	3536
D75	0.0210	1120	1583	3081
D76	0.0200	1016	1436	2794
D77	0.0180	823	1163	2263
D78	0.0160	650	919	1788
D79	0.0145	534	755	1469
D80	0.0135	463	654	1273

Maximum Capacity in Cubic Feet per Hour Natural Gas For Schedule 40 Pipe and Plastic Pipe, including Fittings.

Gas Pressure: 7 in. w.c. Pressure Drop: 0.5 in w.c

Pipe Length, ft	Pipe Size								
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
10	156	326	614	1,261	1,890	3,639	5,800	10,253	20,914
20	107	224	422	867	1,299	2,501	3,986	7,047	14,374
30	86	180	339	696	1,043	2,008	3,201	5,659	11,543
40	74	154	290	596	893	1,719	2,740	4,843	9,879
50	65	137	257	528	791	1,524	2,428	4,293	8,756
60	59	124	233	478	717	1,380	2,200	3,889	7,933
70	54	114	214	440	659	1,270	2,024	3,578	7,299
80	51	106	199	409	613	1,181	1,883	3,329	6,790
90	48	99	187	384	576	1,109	1,767	3,123	6,371
100	45	94	177	363	544	1,047	1,669	2,950	6,018
125	40	83	157	322	482	928	1,479	2,615	5,333
150	36	75	142	291	437	841	1,340	2,369	4,832
175	33	69	131	268	402	774	1,233	2,180	4,446
200	31	64	121	249	374	720	1,147	2,028	4,136

250	27	57	108	221	331	638	1,017	1,797	3,666
300	25	52	98	200	300	578	921	1,628	3,321
350	23	48	90	184	276	532	847	1,498	3,056
400	21	44	83	171	257	495	788	1,394	2,843
450	20	42	78	161	241	464	740	1,308	2,667
500	19	39	74	152	228	438	699	1,235	2,519
600	17	36	67	138	206	397	633	1,119	2,283
700	16	33	62	127	190	365	582	1,030	2,100
800	15	30	57	118	177	340	542	958	1,954
900	14	29	54	111	166	319	508	899	1,833
1000	13	27	51	104	156	301	480	849	1,732
1200	12	24	46	95	142	273	435	769	1,569
1400	11	23	42	87	130	251	400	708	1,443
1600	10	21	39	81	121	234	372	658	1,343
1800	9	20	37	76	114	219	349	618	1,260
2000	9	19	35	72	108	207	330	583	1,190

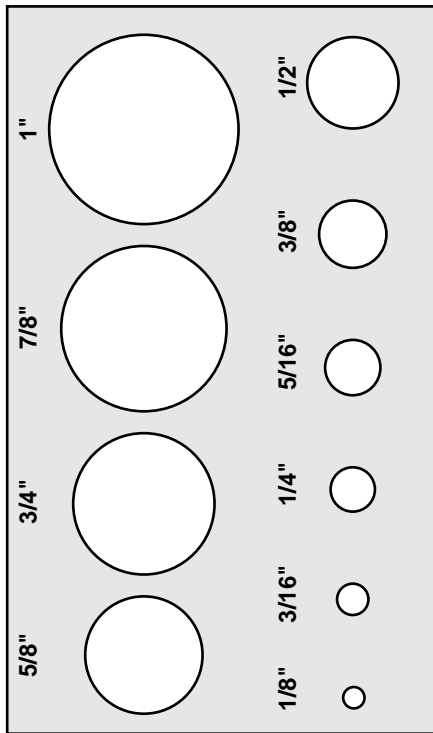
Maximum Capacity in Cubic Feet per Hour Propane Gas For Schedule 40 Pipe and Plastic Pipe, including Fittings.

Gas Pressure: 11 in. w.c. Pressure Drop: 1.0 in w.c.

Pipe Length, ft	Pipe Size								
	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	
10	386	807	1,520	3,121	4,676	9,005	14,353	25,374	51,754
20	265	555	1,045	2,145	3,214	6,189	9,865	17,439	35,571
30	213	445	839	1,722	2,581	4,970	7,922	14,004	28,564
40	182	381	718	1,474	2,209	4,254	6,780	11,986	24,447
50	162	338	636	1,307	1,958	3,770	6,009	10,623	21,667
60	146	306	577	1,184	1,774	3,416	5,445	9,625	19,632
70	135	282	530	1,089	1,632	3,143	5,009	8,855	18,061
80	125	262	493	1,013	1,518	2,924	4,660	8,238	16,803
90	118	246	463	951	1,424	2,743	4,372	7,729	15,765
100	111	232	437	898	1,345	2,591	4,130	7,301	14,892
125	98	206	388	796	1,192	2,297	3,660	6,471	13,198
150	89	186	351	721	1,080	2,081	3,317	5,863	11,959
175	82	172	323	663	994	1,914	3,051	5,394	11,002
200	76	160	301	617	925	1,781	2,839	5,018	10,235

250	68	141	266	547	820	1,578	2,516	4,447	9,071
300	61	128	241	496	743	1,430	2,279	4,030	8,219
350	56	118	222	456	683	1,316	2,097	3,707	7,561
400	52	110	207	424	636	1,224	1,951	3,449	7,035
450	49	103	194	398	596	1,148	1,830	3,236	6,600
500	46	97	183	376	563	1,085	1,729	3,057	6,235
600	42	88	166	341	510	983	1,567	2,770	5,649
700	39	81	153	313	470	904	1,441	2,548	5,197
800	36	75	142	292	437	841	1,341	2,370	4,835
900	34	71	133	274	410	789	1,258	2,224	4,536
1000	32	67	126	258	387	746	1,188	2,101	4,285
1200	29	61	114	234	351	676	1,077	1,903	3,882
1400	27	56	105	215	323	622	991	1,751	3,572
1600	25	52	98	200	300	578	922	1,629	3,323
1800	23	49	92	188	282	542	865	1,529	3,118
2000	22	46	86	178	266	512	817	1,444	2,945

ACTUAL OUTSIDE DIAMETERS OF TUBING

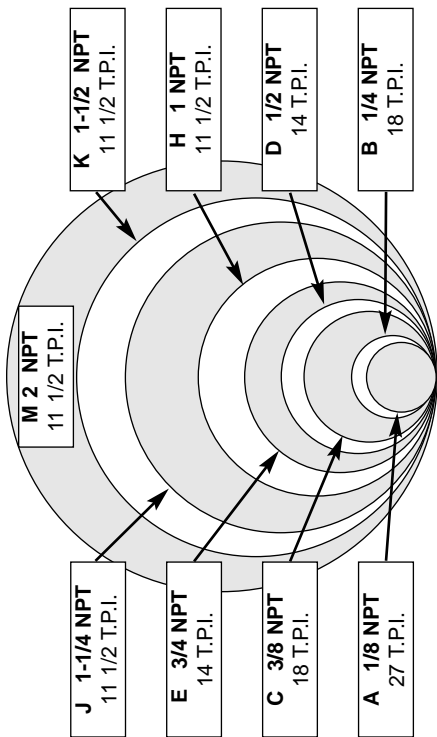


FAIRVIEW

Tube Size Code -- 1/16ths

1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1-1/4	1-1/2	2	2-1/2	3	4
2	3	4	5	6	7	8	10	12	14	16	20	24	32	40	48	64

ACTUAL OUTSIDE DIAMETERS OF PIPE THREADS
(Fairview Pipe Code Letters)



Pipe Size Code

1/16	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2-1/2	3	4
1	A	B	C	D	E	H	J	K	M	N	P	S

NOTES
