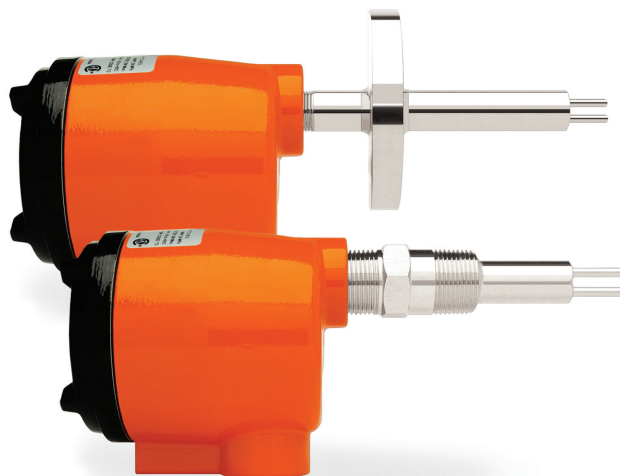


Flow to Velocity Quick Reference Guide



CLASSIC[®] Series

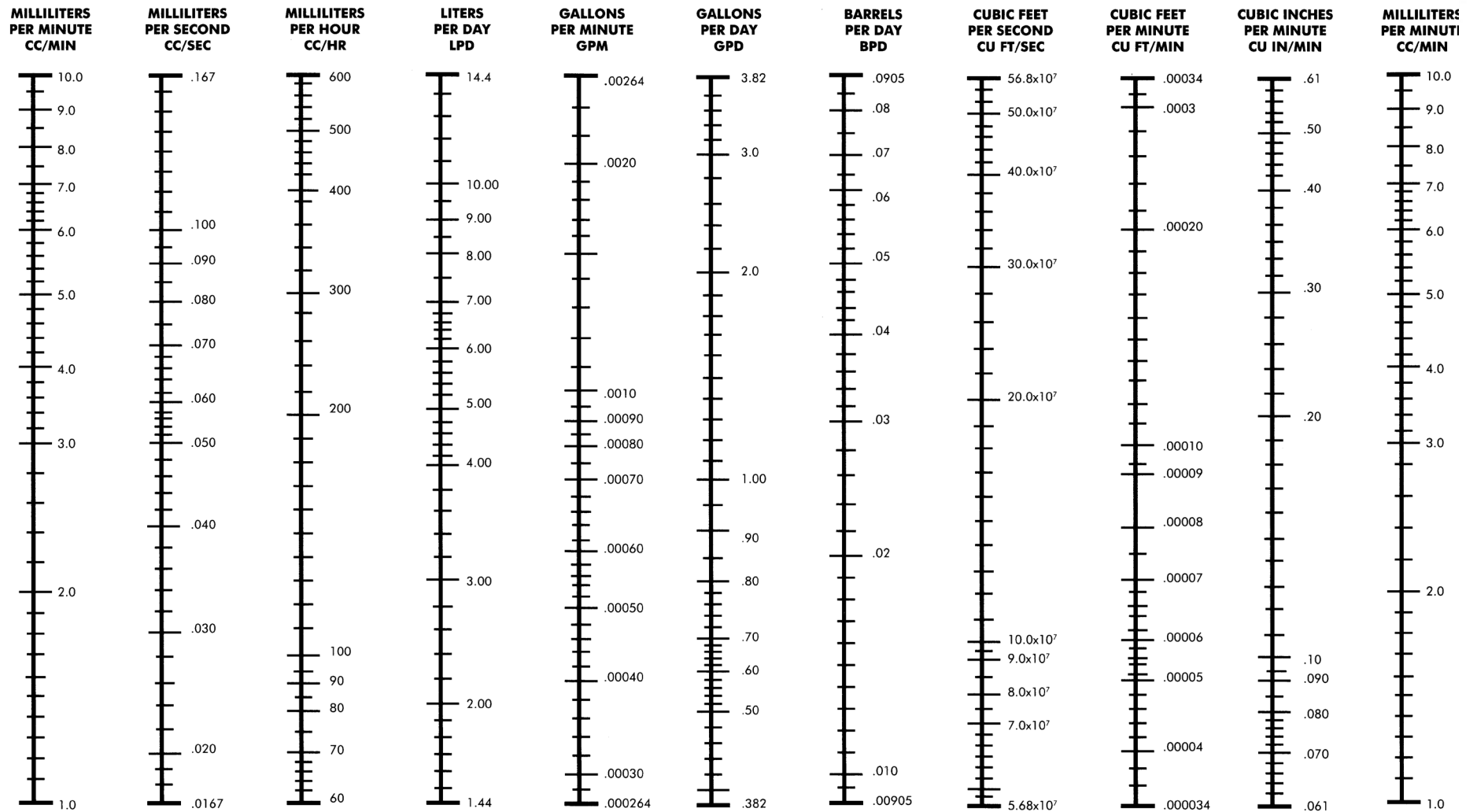
Thermal Flow, Level, Interface &
Temperature Switches & Transmitters



CRN
Canadian
Registration
Number

KAYDEN[®]
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KAYDEN | Volume Flow Table



This line chart provides an easy method of converting units for volume flow. Simply draw a line perpendicular to the scale lines through a known value of flow and read the equivalent value on any of the other scales.

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KAYDEN® | Flow Calculations

V_f In **feet per second** (Velocity)

D In inches (pipe I.D.)

$$D^2 \times 2.448 \times V_f = \text{gpm (US)}$$

$$D^2 \times 2.0384 \times V_f = \text{gpm (Imperial)}$$

$$D^2 \times 9.2665 \times V_f = \text{litres/minute}$$

$$D^2 \times .00927 \times V_f = \text{m}^3/\text{minute}$$

$$D^2 \times .327 \times V_f = \text{ft}^3/\text{minute}$$

V_m In **metres per second** (Velocity)

D In inches (pipe I.D.)

$$D^2 \times 8.0315 \times V_m = \text{gpm (US)}$$

$$D^2 \times 6.688 \times V_m = \text{gpm (Imperial)}$$

$$D^2 \times 30.4018 \times V_m = \text{litres/minute}$$

$$D^2 \times .0304 \times V_m = \text{m}^3/\text{minute}$$

Conversion Factors

To Convert	Into	Multiply By
Gallons/Day	cc second	0.0438
Gallons/Hour		1.0502
Gallons/Minute		63.102
Litre/Day		0.0116
Litre/Hour		0.2778
Litre/Minute		16.667
SCIM		0.2731
SCFM		471.95

Carbon Steel & PVC Pipe

Pipe	Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	42										
	Out. Dia.	.840	1.050	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625	8.625	10.750	12.750	14.000	16.000	18.000	20.000	22.000	24.000	26.000	28.000	30.000	32.000	34.000	36.000	42.000										
Standard	I.D.	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	5.047	6.065	7.981	10.020	12.000	13.250	15.250	17.250	19.250	21.250	23.250	25.250	27.250	29.250	31.250	33.250	35.250	41.250										
	Wall	.109	.113	.113	.140	.145	.154	.203	.216	.226	.237	.258	.28	.322	.365	.375	.375	.375	.375	.375	.375	.375	.375	.375	.375	.375	.375	.375	.375	◆.375									
Extra Heavy	I.D.	.546	.742	.957	1.278	1.500	1.939	2.323	2.900	3.364	3.826	4.813	5.761	7.625	9.750	11.750	13.000	15.000	17.000	19.000	21.000	23.000	25.000	27.000	29.000	31.000	33.000	35.000	41.000										
	Wall	.147	.154	.179	.191	.200	.218	.276	.300	.318	.337	.375	.432	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	.500	◆.500									
Double Extra Heavy	I.D.	.252	.434	.599	.896	1.100	1.503	1.771	2.300	2.728	3.152	4.063	4.897	6.875	8.750	10.750																							
	Wall	.294	.308	.358	.382	.400	.436	.552	.600	.636	.674	.750	.864	.875	1.000	1.000																							
Schedule 10	I.D.	NOTES: ☒ Wall thickness identical with thickness of Standard-Weight pipe.													13.500	15.500	17.500	19.500	21.500	23.500	25.376	27.376	29.376	31.376	33.376	35.376													
	Wall	▲ Wall thickness identical with thickness of Extra-Heavy pipe.													.250	.250	.250	.250	.250	.250	.312	.312	.312	.312	.312	.312													
Schedule 20	I.D.	◆ These do not conform to American Standard B36.10.													8.125	10.250	12.250	13.376	15.376	17.376	19.250	21.250	23.250	25.000	27.000	29.000	31.000	33.000	35.000	41.000									
	Wall	■ These materials are generally available in schedule 40 and 80 only.													.250	.250	.250	.312	.312	.312	☒.375	☒.375	☒.375	▲.500	▲.500	▲.500	▲.500	▲.500	▲.500	▲.500									
Schedule 30	I.D.	(a) Wall thickness of schedule 5S & 10S does not permit threading in accordance with the American Std. for Pipe Threads (ASA No. B2.1).													8.071	10.136	12.090	13.250	15.250	17.124	19.000	21.000	22.876					26.750	28.750	30.750	32.750	34.750	40.750						
	Wall														.277	.307	.330	☒.375	☒.375	.438	▲.500	▲.500	.582					.625	.625	.625	.625	.625	◆.625						
Schedule 40	I.D.	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	5.047	6.065	7.981	10.020	11.938	13.124	15.000	16.876	18.814			22.626																
	Wall	☒.109	☒.113	☒.133	☒.140	☒.145	☒.154	☒.203	☒.216	☒.226	☒.237	☒.258	☒.280	☒.322	☒.365	.406	.438	▲.500	.562	.593			.687																
Schedule 60	I.D.														7.813	9.750	11.626	12.814	14.688	16.500	18.376	20.250	22.064																
	Wall														.406	▲.500	.562	.593	.656	.750	.812	.875	.968																
Schedule 80	I.D.	.546	.742	.957	1.278	1.500	1.939	2.323	2.900	3.364	3.826	4.813	5.761	7.625	9.564	11.376	12.500	14.314	16.126	17.938	19.750	21.564																	
	Wall	▲.147	▲.154	▲.179	▲.191	▲.200	▲.218	▲.276	▲.300	▲.318	▲.337	▲.375	▲.432	▲.500	.593	.687	.750	.843	.937	1.031	1.125	1.2180																	
Schedule 100	I.D.														7.439	9.314	11.064	12.126	13.938	15.688	17.438	19.250	20.938																
	Wall	PIPE WEIGHT FORMULA FOR STEEL PIPE (Pounds per foot)													.593	.718	.843	.937	1.031	1.156	1.281	1.375	1.531																
Schedule 120	I.D.	10.68 (D-t) t													3.624	4.563	5.501	7.189	9.064	10.750	11.814	13.564	15.250	17.000	18.750	20.376													
	Wall	D = Outside Diameter													.438	.500	.562	.718	.843	1.000	1.093	1.218	1.375	1.500	1.625	1.812													
Schedule 140	I.D.	t = Wall Thickness													7.001	8.750	10.500	11.500	13.124	14.876	16.500	18.250	19.876																
	Wall														.812	1.000	1.125	1.250	1.438	1.562	1.750	1.875	20.620																
Schedule 160	I.D.	.466	.614	.815	1.160	1.338	1.689	2.125	2.624	3.438	4.313	5.189	6.813	8.500	10.126	11.188	12.814	14.438	16.064	17.750	19.314																		
	Wall	.187	.218	.250	.250	.281	.343	.375	.438	.530	.625	.718	.906	1.125	1.312	1.406	1.593	1.781	1.968	2.125	2.343																		

Non-Standard Carbon Steel Pipe

Size	10	20	24	24
Out. Dia.	10.750	20.000	24.000	24.000
I.D.	10.102	19.375	23.375	22.126
Wall	.279	.312	.312	.937

Above sizes are produced by pipe mills but dimensions do not conform to any regular standard or schedule.

Stainless Steel, Hastelloy C & Titanium Pipe

Pipe	Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	22	24	
	Out. Dia.	.840	1.050	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.563	6.625	8.625	10.750	12.750	14.000	16.000	18.000	20.000	22.000	24.000	
Schedule 5 S (a)	I.D.	.710	.920	1.185	1.530	1.770	2.245	2.709	3.334	3.834	4.334	5.345	6.407	8.407	10.482	12.438	13.688	15.670	17.670	19.634	21.624	23.563	
	Wall	.065	.065	.065	.065	.065	.065	.083	.083	.083	.083	.109	.109	.109	.134	.156	.156	.165	.165	.188	.188	.218	
Schedule 10 S (a)	I.D.	.674	.884	1.097	1.442	1.682	2.157	2.635	3.260	3.760	4.260	5.295	6.357	8.329	10.420	12.390	13.624	15.624	17.624	19.624	21.564	23.500	
	Wall	.083	.083	.109	.109	.109	.109	.120	.120	.120	.120	.134	.134	.148	.165	.180	.188	.188	.188	.188	.218	.250	
Schedule 40 S	I.D.	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	5.047	6.065	7.981	10.020	12.000							
	Wall	☒.109	☒.133	☒.133	☒.140	☒.145	☒.154	☒.203	☒.216	☒.226	☒.237	☒.258	☒.280	☒.322	☒.365	◆.375							
Schedule 80 S	I.D.	.546	.742	.957	1.278	1.500	1.939	2.323	2.900	3.364	3.826	4.813	5.761	7.625	9.750	11.750							
	Wall	▲.147	▲.154	▲.179	▲.191	▲.200	▲.218	▲.276	▲.300	▲.318	▲.337	▲.375	▲.432	▲.500	▲.500	◆.500							

KAYDEN | Pipe Data / Specifications

Cast Iron Pipe – AWWA Standard

Pipe Size	Class A 100 Ft. 43 PSIG			Class B 200 Ft. 86 PSIG			Class C 300 Ft. 130 PSIG			Class D 400 Ft. 173 PSIG			Class E 500 Ft. 217 PSIG			Class F 600 Ft. 260 PSIG			Class G 700 Ft. 304 PSIG			Class H 800 Ft. 347 PSIG		
	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.	O.D.	Wall	I.D.
	3	3.80	.39	3.02	3.96	.42	3.12	3.96	.45	3.06	3.96	.48	3.00											
4	4.80	.42	3.96	5.00	.45	4.10	5.00	.48	4.04	5.00	.52	3.96												
6	6.90	.44	6.02	7.10	.48	6.14	7.10	.51	6.08	7.10	.55	6.00	7.22	.58	6.06	7.22	.61	6.00	7.38	.65	6.08	7.38	.69	6.00
8	9.05	.46	8.13	9.05	.51	8.03	9.30	.56	8.18	9.30	.60	8.10	9.42	.66	8.10	9.42	.71	8.00	9.60	.75	8.10	9.60	.80	8.00
10	11.10	.50	10.10	11.10	.57	9.96	11.40	.62	10.16	11.40	.68	10.04	11.60	.74	10.12	11.60	.80	10.00	11.84	.86	10.12	11.84	.92	10.00
12	13.20	.54	12.12	13.20	.62	11.96	13.50	.68	12.14	13.50	.75	12.00	13.78	.82	12.14	13.78	.89	12.00	14.08	.97	12.14	14.08	1.04	12.00
14	15.30	.57	14.16	15.30	.66	13.98	15.65	.74	14.17	15.65	.82	14.01	15.98	.90	14.18	15.98	.99	14.00	16.32	1.07	14.18	16.32	1.16	14.00
16	17.40	.60	16.20	17.40	.70	16.00	17.80	.80	16.20	17.80	.89	16.02	18.16	.98	16.20	18.16	1.08	16.00	18.54	1.18	16.18	18.54	1.27	16.00
18	19.50	.64	18.22	19.50	.75	18.00	19.92	.87	18.18	19.92	.96	18.00	20.34	1.07	18.20	20.34	1.17	18.00	20.78	1.28	18.22	20.78	1.39	18.00
20	21.60	.67	20.26	21.60	.80	20.00	22.06	.92	20.22	22.06	1.03	20.00	22.54	1.15	20.24	22.54	1.27	20.00	23.02	1.39	20.24	23.02	1.51	20.00
24	25.80	.76	24.28	25.80	.89	24.02	26.32	1.04	24.22	26.32	1.16	24.00	26.90	1.31	24.28	26.90	1.45	24.00	27.76	1.75	24.26	27.76	1.88	24.00
30	31.74	.88	29.98	32.00	1.03	29.94	32.40	1.20	30.00	32.74	1.37	30.00	33.10	1.55	30.00	33.46	1.73	30.00						
36	37.96	.99	35.98	38.30	1.15	36.00	38.70	1.36	39.98	39.16	1.58	36.00	39.60	1.80	36.00	40.04	2.02	36.00						
42	44.20	1.10	42.00	44.50	1.28	41.94	45.10	1.54	42.02	45.58	1.78	42.02												
48	50.50	1.26	47.98	50.80	1.42	47.96	51.40	1.71	47.98	51.98	1.96	48.06												
54	56.66	1.35	53.96	57.10	1.55	54.00	57.80	1.90	54.00	58.40	2.23	53.94												
60	62.80	1.39	60.02	63.40	1.67	60.06	64.20	2.00	60.20	64.82	2.38	60.06												
72	75.34	1.62	72.10	76.00	1.95	72.10	76.88	2.39	72.10															
84	87.54		84.10	88.54	2.22	84.10																		

Cast Iron Pipe – ASA Standard

Pipe Size	Pipe O.D.	Class 50 50 PSIG		Class 100 100 PSIG		Class 150 150 PSIG		Class 200 200 PSIG		Class 250 250 PSIG		Class 300 300 PSIG		Class 350 350 PSIG	
		Wall	I.D.	Wall	I.D.	Wall	I.D.	Wall	I.D.	Wall	I.D.	Wall	I.D.	Wall	I.D.
		3	3.96	.32	3.32	.32	3.32	.32	3.32	.32	3.32	.32	3.32	.32	3.32
4	4.80	.35	4.10	.35	4.10	.35	4.10	.35	4.10	.35	4.10	.35	4.10	.35	4.10
6	6.90	.38	6.14	.38	6.14	.38	6.14	.38	6.14	.38	6.14	.38	6.14	.38	6.14
8	9.05	.41	8.23	.41	8.23	.41	8.23	.41	8.23	.41	8.23	.41	8.23	.41	8.23
10	11.10	.44	10.22	.44	10.22	.44	10.22	.44	10.22	.44	10.22	.48	10.14	.52	10.06
12	13.20	.48	12.24	.48	12.24	.48	12.24	.48	12.24	.52	12.16	.52	12.16	.56	12.08
14	15.30	.48	14.34	.51	14.34	.51	14.34	.55	14.20	.59	14.12	.59	14.12	.64	14.02
16	17.40	.54	16.32	.54	16.32	.54	16.32	.58	16.24	.63	16.14	.68	16.04	.68	16.04
18	19.50	.54	18.42	.58	18.34	.58	18.34	.63	18.24	.68	18.14	.73	18.04	.79	17.92
20	21.60	.57	20.46	.62	20.36	.62	20.36	.67	20.26	.72	20.16	.78	20.04	.84	19.92
24	25.80	.63	24.54	.68	24.44	.73	24.34	.79	24.22	.85	24.10	.92	23.96		

KAYDEN®

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For more information about the CLASSIC Series or any of Kayden's other products, please visit kayden.com

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