

Conversion Tables

The fluid transfer community uses both the International System of Units (Metric System) and the U.S. Customary System, often simultaneously, which frequently creates confusion.

The tables on these pages provide easy cross-referencing of commonly used units of measure.

Pressure Conversion

psi	bar	Mpa	ATM
100	6.9	0.7	6.8
500	34.5	3.4	34.0
1,000	68.9	6.9	68.0
1,500	103.4	10.3	102.1
2,000	137.9	13.8	136.1
2,500	172.4	17.2	170.1
3,000	206.8	20.7	204.1
3,500	241.3	24.1	238.2
4,000	275.8	27.6	272.2
4,500	310.3	31.0	306.2
5,000	344.7	34.5	340.2
5,500	379.2	37.9	374.3
6,000	413.7	41.4	408.3
6,500	448.2	44.8	442.3
7,000	482.6	48.3	476.3
7,500	517.1	51.7	510.3
8,000	551.6	55.2	544.4
8,500	586.1	58.6	578.4
9,000	620.5	62.1	612.4
9,500	655.0	65.5	646.4
10,000	689.5	68.9	680.5



Conversion Factors

Conversion Desired	Formula
Inches to millimeters	Inches x 25.4 mm/inch
Inches to centimeters	Inches x 2.54 cm/inch
Inches to microns	Inches x 25.4mm/inch x 1000µm/mm
Diameter in inches to linear volume (µL/inch)	$[(ID/2)(2.54cm/in.)]^2 \times 3.14 \times (2.54cm/in.)(1000\mu L/cm^3)$
Diameter in inches to linear volume (µL/cm)	$[(ID/2)(2.54cm/in.)]^2 \times 3.14 \times (1000\mu L/cm^3)$
Celsius to Fahrenheit	(Celsius x 9/5) + 32
Fahrenheit to Celsius	(Fahrenheit - 32) x 5/9
psi to bar	psi x 0.06894757
psi to MPa	psi x 0.00689476
psi to torr	psi x 51.715
psi to ATM	psi x 0.06804596



Tubing Internal Diameters (IDs) and Volumes

Internal Diameters				Linear Volumes	
Inches	Wire Gauge	Millimeters	Microns	μL/in.	μL/cm
0.0008	-	0.020	20	0.008	0.003
0.001	-	0.025	25	0.013	0.005
0.002	-	0.051	51	0.051	0.020
0.0025	-	0.064	64	0.081	0.032
0.003	-	0.076	76	0.116	0.046
0.004	36	0.102	102	0.206	0.081
0.005	35	0.127	127	0.322	0.127
0.006	-	0.152	152	0.463	0.182
0.007	34	0.178	178	0.631	0.248
0.008	33	0.203	203	0.824	0.324
0.009	32	0.229	229	1.042	0.410
0.010	31	0.254	254	1.287	0.507
0.012	30	0.305	305	1.853	0.730
0.014	28	0.356	356	2.523	0.993
0.015	-	0.381	381	2.896	1.140
0.018	26	0.457	457	4.170	1.642
0.020	25	0.508	508	5.148	2.027
0.028	22	0.711	711	10.090	3.973
0.030	-	0.762	762	11.583	4.560
0.032	21	0.813	813	13.179	5.189
0.040	-	1.016	1016	20.593	8.107
0.042	19	1.067	1067	22.703	8.938
0.046	-	1.168	1168	27.234	10.722
0.055	-	1.397	1397	38.933	15.328
0.062	-	1.575	1575	49.474	19.478
0.080	14	2.032	2032	82.370	32.429
0.093	-	2.362	2362	111.316	43.825
0.120	9	3.048	3048	185.333	72.966
0.125	-	3.175	3175	201.099	79.173

Dimensions: Metric to Inches

Metric	Decimal Inches
1.0mm	0.039"
1.8mm	0.071"
2.0mm	0.079"
3.0mm	0.118"
3.2mm	0.126"
4.0mm	0.157"
4.3mm	0.169"
4.6mm	0.181"
5.0mm	0.197"
6.0mm	0.236"
7.0mm	0.276"
8.0mm	0.315"
9.0mm	0.354"
1.0cm	0.394"
2.0cm	0.787"
3.0cm	1.181"
4.0cm	1.575"
5.0cm	1.969"
6.0cm	2.362"
7.0cm	2.756"
8.0cm	3.150"
9.0cm	3.543"
10.0cm	3.937"

Temperature

Celsius (° C)	Fahrenheit (° F)
0	32
1	34
5	41
10	50
15	59
20	68
25	77
30	86
35	95
40	104
45	113
50	122
55	131
60	140
65	149
70	158
75	167
80	176
85	185
90	194
95	203
100	212
105	221
110	230
115	239
120	248
125	257
130	266
135	275
140	284
145	293
150	302
155	311
160	320
165	329
170	338
175	347
180	356
185	365
190	374
195	383
200	392
205	401
210	410
215	419

Dimensions: Inches to Metric

Decimal Inches	Fractional Inches	Metric
0.031"	1/32"	0.79mm
0.062"	1/16"	1.57mm
0.125"	1/8"	3.18mm
0.188"	3/16"	4.78mm
0.250"	1/4"	6.35mm
0.313"	5/16"	7.95mm
0.375"	3/8"	9.53mm
0.438"	7/16"	11.13mm
0.500"	1/2"	12.70mm
0.563"	9/16"	14.30mm
0.625"	5/8"	15.88mm
0.688"	11/16"	17.48mm
0.750"	3/4"	19.05mm
0.813"	13/16"	20.65mm
0.875"	7/8"	22.23mm
0.938"	15/16"	23.83mm
1"	1"	2.54cm
2"	2"	5.08cm
3"	3"	7.62cm
4"	4"	10.16cm
5"	5"	12.70cm
6"	6"	15.24cm
7"	7"	17.78cm
10"	10"	25.40cm

“All About Fittings” Guide



The sixty-four page booklet reveals the secrets of nuts, ferrules and thread geometry and offers advice on choosing the best fitting for a given application. Other topics include how fittings work, how to identify fittings you have on hand and a discussion on metal versus plastic fittings. The booklet also includes a chapter explaining key HPLC system components and the tubing and fittings that tie them together.

In addition, the booklet addresses related topics such as methods for cutting and connecting capillary tubing and the use of adapters and unions. The appendix includes a discussion on filtration, back pressure regulators, polymer information and a glossary of pertinent fittings terms.

Contact us today for a free copy of “All About Fittings” call **800/822-5242**

Fittings Chemical Compatibility Chart

	DELTRIN®	HALAR®	KEL-F®	PEEK™*	POLYPROPYLENE	PPS†	RADEL® R	TEFLON®‡	TEFZEL®	UHMWPE	ULTEM®
Chemical Family											
Aromatics	R	R†	R	R	NR	R	M	R	R	NR	R
Chlorinated	M	R	M	M	NR	M	M	R	R	M	M
Ketones	R	R†	R	R	M	R	M	R	R	M	M
Aldehydes	R	R†	R	R	R	R	M	R	R	R	M
Ethers	R	M	M	M	NR	R	M	R	R	M	M
Amines	M	M	R	R	R	R	M	R	M	M	N/A
Aliphatic Solutions	R	R	R	R	M	R	R	R	R	M	M
Organic Acids	NR	R	R	M	M	R	R	R	R	M	M
Inorganic Acids	NR	R	R	M	M	M	M	R	M	M	M
Bases	NR	R	R	R	R	R	R	R	R	R	M
Sulfonated Compounds	R	R	R	M	M	R	M	R	R	M	M
Thread Strength*	Excellent	N/A	Good	Excellent	Fair	Excellent	N/A	Good	Good	Good	N/A
Max. Recommended Operating Temp. (°C)									FEP	PFA	
Fittings	60	N/A	80	125**	40	50	N/A	N/A	80	50	N/A
Tubing	N/A	50	N/A	100	N/A	N/A	100***	50	80	80	125
<p>† Chemical resistance assumes room temperature use. Elevated temperatures may result in a significant reduction in chemical resistance.</p> <p>‡ While the chemical compatibility of FEP & PFA Teflon is virtually identical, please note the temperature limit differences.</p> <p>R Recommended</p> <p>M Some solvents in this category are satisfactory, others are not. In addition, maximum concentration can vary with the specific product type and chemical.</p> <p>NR Chemicals in this category are generally not recommended for use with this polymer.</p> <p>N/A Information not available</p> <p>* Shear Strength</p> <p>** In some cases, PEEK fittings can be used to 150°C.</p> <p>*** Radel is an amorphous polymer, and as such, its upper limit service temperature is application and chemical dependent, and may be higher than 100°C in some cases.</p> <p>† In some circumstances, acetonitrile has been reported to swell and occasionally burst PEEK tubing. Exercise caution when using high concentrations of acetonitrile at or near the maximum pressure of this tubing.</p>											