



# Reference Tables

## Compatibility Key

Good: compatible for use with solvent; Poor: should not be used with solvent; Unknown: compatibility testing is suggested prior to use

Compatibility of Catheter Materials				
Vehicle/Solvent	Polyurethane	Silicone	Polyethylene	Vinyl
Acids, with pH greater than 1.8	Good	Good	Good	Unknown
Bases, with pH less than 14	Fair	Good	Unknown	Unknown
Cremophor EL, up to 25% in water	Good	Good	Unknown	Unknown
Culture media (1% benzyl alcohol as bacteriostatic)	Good	Good	Good	Good
Cyclodextrins	Good	Good	Good	Good
Dextrose, up to 5%, in water or NaCl	Good	Good	Good	Good
N, N-Dimethyl Formamide (DMF), up to 25% in water	Poor	Unknown	Unknown	Poor
DMSO, up to 50% in water or polyethylene glycol	Poor	Good	Good	Poor
DMSO, up to 50% in ethanol (< or = 15%) and water	Poor	Good	Good	Poor
Ethanol, up to 15% in water	Poor	Good	Good	Poor
Glycerol	Good*	Good*	Good*	Good*
1-Methyl-2-Pyrrolidone, up to 12.5% in water	Unknown	Unknown	Unknown	Unknown
Phosphate buffer	Good	Good	Good	Good
Polyethylene glycol 300 or 400, neat or in water	Good*	Good*	Good*	Good*
Propylene glycol, neat or in water	Good*	Good*	Good*	Good*
Ringer's solution	Good	Good	Good	Good
Saline, 0.9% (aqueous salt solution)	Good	Good	Good	Good
Serum (rat, mouse, etc.)	Good	Good	Good	Good
Solutol, up to 30% in water	Unknown	Unknown	Unknown	Unknown
Triacetin, up to 5% in water	Unknown	Unknown	Unknown	Unknown
Tween 80, up to 2%	Good	Good	Unknown	Unknown
Water, distilled	Good	Good	Good	Good

\*Be aware of the viscosity (viscosity may be a problem for catheters with very small inner diameter)  
Reference table provided by ALZET Corporation

Units		
Imperial Unit Length	Metric Equivalent	Corresponding Metric Unit
Inch	2.54	Centimeter
Foot	0.3048	Meter
Yard	0.9144	Meter
Fathom	1.8288	Meter
Chain	20.1168	Meter
Furlong	0.201168	Kilometer
Mile	1.609344	Kilometer
Nautical Mile (UK)	1853	Meter
Kg	2.2046	Pound
Ounce	29.5735	Milliliter
Pint	16	Ounce
Quart	2	Pint
Gallon	4	Quart
Gallon	3.785	Liter

# Reference Tables



French Catheter Scale *Sizes are outside diameter		
French	Inches	mm
1	0.013	0.33
2	0.026	0.67
3	0.039	1.00
4	0.053	1.35
5	0.066	1.67
6	0.079	2.00
7	0.092	2.60
8	0.105	2.70
9	0.118	3.00
10	0.131	3.30
11	0.144	3.70
12	0.158	4.00
13	0.170	4.30
14	0.184	4.70
15	0.197	5.00
16	0.210	5.30
17	0.223	5.70
18	0.236	6.00
19	0.249	6.30
20	0.263	6.70
22	0.288	7.30
24	0.315	8.00
26	0.341	8.70
28	0.367	9.30
30	0.393	10.00
32	0.419	10.70
34	0.445	11.30

Needle Gauge Chart					
Needle Gauge	Nominal O.D.		Nominal I.D.		Volume (ul/cm)
	mm	Inches	mm	Inches	
10	3.404	0.134	2.692	0.106	57
11	3.048	0.120	2.388	0.094	45
12	2.769	0.109	2.159	0.085	37
13	2.413	0.095	1.803	0.071	26
14	2.108	0.083	1.600	0.063	20
15	1.829	0.072	1.372	0.054	15
16	1.651	0.065	1.194	0.047	11
17	1.473	0.058	1.067	0.042	8.9
18	1.270	0.050	0.838	0.033	5.5
19	1.067	0.042	0.686	0.027	3.7
20	0.902	0.0355	0.584	0.023	2.7
21	0.813	0.032	0.495	0.0195	1.9
22	0.711	0.028	0.394	0.0155	1.2
22s	0.711	0.028	0.140	0.0055	0.15
23	0.635	0.025	0.318	0.0125	0.79
24	0.559	0.022	0.292	0.0115	0.67
25	0.508	0.020	0.241	0.0095	0.46
26	0.457	0.018	0.241	0.095	0.46
27	0.406	0.016	0.191	0.075	0.29
28	0.356	0.014	0.165	0.065	0.21
29	0.330	0.013	0.165	0.065	0.21
30	0.305	0.012	0.140	0.0055	0.15
31	0.254	0.010	0.114	0.0045	0.10
32	0.229	0.009	0.089	0.0035	0.062
33	0.203	0.008	0.089	0.0035	0.062

Conversions		
Convert From	Multiply By	To Get
Celsius	$(1.8 \times C) + 32$	Fahrenheit
Fahrenheit	$5/9(F-32)$	Celsius
cm	0.03281	Foot
cm	0.3937	Inch
cm <sup>3</sup>	0.0338	Fl. Oz.

Celsius (C)	Fahrenheit (F)
$(C + 273.15) = K$	$(5/9)(F + 459.67) = K$
$(9/5C + 32) = F$	$(5/9)(F - 32) = C$

Polyethylene (PE)					
Approx.	O.D.		I.D.		Volume ul/cm
	Inches	mm	Inches	mm	
PE-5	0.020	0.51	0.008	0.20	0.44
PE-8	0.014	0.36	0.008	0.20	0.44
PE-10	0.024	0.61	0.011	0.28	0.61
PE-20	0.043	1.09	0.015	0.38	1.1
PE-50	0.038	0.97	0.023	0.58	2.7
PE-60	0.048	1.22	0.030	0.76	4.6
PE-90	0.050	1.27	0.034	0.86	5.9
PE-100	0.060	1.52	0.034	0.86	5.9
PE-160	0.062	1.57	0.045	1.14	10.3
PE-190	0.067	1.70	0.047	1.19	11.2
PE-200	0.075	1.91	0.055	1.40	15.3
PE-205	0.082	2.08	0.062	1.57	19.5
PE-240	0.095	2.41	0.066	1.68	22
PE-260	0.110	2.79	0.070	1.78	25
PE-280	0.128	3.25	0.085	2.16	37
PE-320	0.138	3.51	0.106	2.36	57