

12.7 Syringe Diameters and Rate Limits

Syringe Manufacturer (all names ™)	Syringe (mL)	Inside Diameter (mm)	Maximum Rate (mL/hr)	Minimum Rate (µL/hr)	Maximum Rate (mL/min)			
B-D	1	4.699	53.07	0.73	0.884			
	3	8.585	177.1	2.434	2.952			
	5	11.99	345.5	4.748	5.758			
	10	14.43	500.4	6.876	8.341			
	20	19.05	872.2	11.99	14.53			
	30	21.59	1120	15.4	18.67			
60	26.59	1699	23.35	28.32				
HSW Norm-Ject	1	4.69	52.86	0.727	0.881			
	3	9.65	223.8	3.076	3.73			
	5	12.45	372.5	5.119	6.209			
	10	15.9	607.6	8.349	10.12			
	20	20.05	966.2	13.28	16.1			
	30	22.9	1260	17.32	21			
50	29.2	2049	28.16	34.15				
Monoject	1	5.74	79.18	1.088	1.319			
	3	8.941	192.1	2.64	3.202			
	6	12.7	387.6	5.326	6.46			
	12	15.72	593.9	8.161	9.899			
	20	20.12	972.9	13.37	16.21			
	35	23.52	1329	18.27	22.15			
	60	26.64	1705	23.44	28.42			
140	38	3470	47.69	57.84				
Terumo	1	4.7	53.09	0.73	0.884			
	3	8.95	192.5	2.646	3.208			
	5	13	406.1	5.581	6.769			
	10	15.8	600	8.244	10			
	20	20.15	975.8	13.41	16.26			
	30	23.1	1282	17.63	21.37			
60	29.7	2120	29.13	35.33				
Poulten & Graf (Glass)	1	6.7	107.8	1.483	1.798			
	2	8.91	190.8	2.622	3.18			
	3	9.06	197.2	2.711	3.288			
	5	11.75	331.8	4.559	5.53			
	10	14.67	517.2	7.107	8.62			
	20	19.62	925.2	12.72	15.42			
	30	22.69	1237	17.01	20.62			
50	26.96	1746	24.01	29.11				
Steel Syringes	1	9.538	218.6	3.005	3.644			
	3	9.538	218.6	3.005	3.644			
	5	12.7	387.6	5.326	6.46			
	8	9.538	218.6	3.005	3.644			
	20	19.13	879.5	12.09	14.65			
50	28.6	1965	27.01	32.76				
	Syringe (µL)	Inside Diameter (mm)	Maximum Rate (µL/hr)	Minimum Rate (µL/hr)	Syringe (mL)	Inside Diameter (mm)	Maximum Rate (mL/hr)	Minimum Rate (µL/hr)
SGE (gas tight)	5	0.343	282.7	0.004	0.25	2.303	12.74	0.176
	10	0.485	565.3	0.008	0.5	3.257	25.49	0.351
	25	0.728	1273	0.018	1	4.606	50.99	0.701
	50	1.03	2549	0.036	2.5	7.284	127.5	1.752
100	1.457	5102	0.071	5	10.3	254.9	3.504	
Hamilton Microliter	0.5	0.103	25.49	0.001	10	14.57	510.2	7.01
	1	0.146	51.23	0.001	25	23.03	1274	17.52
	2	0.206	101.9	0.002	50	27.5	1817	24.98
	5	0.326	255.4	0.004	100	34.99	2942	40.43