Material	Dragon Skin 10

Step 1	How to control the extrusion rate
Step 2	Determine a proper printing speed for a given extrusion rate

Part A	
Material	Silicone Resin
Volume	50 mL Plastic Syringe
Needle ID	1.55 mm
Needle OD	2.1 mm
Needle Size	14 gauge
Needle length	20 mm

$$\Delta P = Q \frac{128\eta L}{\pi d^4}$$

$$Q = \frac{\pi \Delta P R^4}{8\eta L} = \frac{\pi \Delta P D^4}{128\eta L}$$

Mass (g) in 60 s					
Pressure (psig)	1	2	3	4	5
30	1.47	1.2	1.28	1.28	1.41
40	7.02	7.31	7.26	8.4	8.49
50	12.48	11.68	10.84	10.4	10.48
60	13.83	13.64	13.93	13.55	13.66
70	14.5	14.54	16.36	15.88	16.05

Average Flow Velocity (mm/s)					
Pressure (Pa)	1	2	3	4	5
206850	33.76067425				
275800	45.01423234				
344750	56.26779042				
413700	67.52134851				
482650	78.77490659				

P = Q*(128*DynaVisc*LengthofChannel)/(pi*pipeDiameter)

Q = A*V

V = (P*d^2)/(32*dynaVis*L)

		Pressure (psig)	Theoretical Data
		30	33.76067425
		40	45.01423234
dynamic Viscosity	23,000 cps	50	56.26779042
	23 Pa*s	60	67.52134851
dynamic Viscosity	0.000023 (N/mm^2)*s	70	78.77490659

Part 1: Extrusion Rate

c	temperature of material
	https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing

Q					
Pressure (psig)	1	2	3	4	5
30	0.01749646479	0.0142828284	0.01523501696	0.01523501696	0.01678232337
40	0.08355454614	0.08700622967	0.08641111182	0.0999797988	0.1010510109
50	0.1485414154	0.1390195298	0.1290215499	0.1237845128	0.1247367014
60	0.1646095973	0.1623481495	0.165799833	0.1612769374	0.1625861966
70	0.1725841765	0.1730602708	0.1947225605	0.1890094292	0.1910328299

Rho	25.8 in^3/lb
	0.03875968992
	1.400282874 g/mm^3

Velocity (mm/s)						
Pressure (psig)	1	2	3	4	5	Average Velocity (mm/s)
30	9.27	7.57	8.07	8.07	8.89	8.38
40	44.28	46.11	45.79	52.99	53.55	48.55
50	78.72	73.68	68.38	65.60	66.11	70.50
60	87.24	86.04	87.87	85.47	86.16	86.56
70	91.46	91.72	103.20	100.17	101.24	97.56