Material	Dragon Skin 10					
Step 1	How to control the extrusion rate					
Step 2	Determine a proper printing speed for a given extrusion rate					
Зієр 2	Determine a proper printing speed for a given extrusion rate					
Part A						
Material	Silicone Resin					
				100 7		
olume	50 mL Plastic Syringe		$\Delta P = Q$	128nI		$Q = \frac{\pi \Delta P R^4}{8\eta L} = \frac{\pi \Delta P D^4}{128\eta L}$
leedle ID	1.55 mm		AD = O	1201/1		$O = \frac{n\Delta I R}{n} = \frac{n\Delta I D}{n}$
leedle OD	2.1 mm		$\Delta P = Q$	- 1	-	$Q = \frac{128nL}{128nL}$
leedle Size	14 gauge		~	πd^4		5/12
eedle length	20 mm			πα		
seule length	20 11111					
		Mass (g) in 60 s	s			
ressure (psig)	1	2	3	4	5	
	1					
30			1.28	1.28		
40			7.26	8.4		
50	12.48	11.68	10.84	10.4	10.48	
60			13.93	13.55		
70			16.36	15.88		
		11.01	10.00	10.00	10.00	
	Ave	erage Flow Velocity	(mm/s)			
ressure (Pa)	1	2	3	4	5	
	1	_	3	4	1	Part 1: Extrusion Rate
206850						
275800						 Theoretical Data Average Velocity (mm/s)
344750	56.26779042					100
413700	67.52134851					
482650						
402030	70.77490039					₩ 75
						E '
						ity
						75 (symu), Apo 50
P = Q*(128*DynaVisc*LengthofChannel)/(pi*pipeDiameter)		Pressure (psig)	Theoretical Data			9 50
						How
= A*V		30	33.76067425			
		40	45.01423234			© 25
= (P*d^2)/(32*dynaVis*L)		50	56.26779042			Ş.
, , ,		60	67.52134851			
mamia Viaganity	23,000 cps	70	78.77490659			30 40 50 60 70
dynamic Viscosity						30 40 50 60 70
	23 Pa*s					Procesure (neigh)
namic Viscosity						Pressure (psig)
namic Viscosity	23 Pa*s					Pressure (psig)
namic Viscosity	23 Pa*s					Pressure (psig)
mamic Viscosity	23 Pa*s					
namic Viscosity	23 Pa*s					c temperature of material
	23 Pa*s	Q				
essure (psig)	23 Pa*s 0.000023 (N/mm^2)*s	Q	3	4	5	c temperature of material
	23 Pa*s 0.000023 (N/mm^2)*s	Q	3	4 0.01523501696	5 0.01678232337	c temperature of material
essure (psig)	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479	Q 2 0.0142828284	3 0.01523501696		0.01678232337	c temperature of material
essure (psig) 30 40	23 Pa's 0.000023 (N/mm^2)'s 1 0.001749646479 0.08355454614	Q 2 0.0142828284 0.08700622967	3 0.01523501696 0.08641111182	0.0999797988	0.01678232337 0.1010510109	c temperature of material
essure (psig) 30 40 50	23 Pa's 0.000023 (N/mm^2)'s 1 0.01749646479 0.0355545614 0.1485414154	Q 2 0.0142828284 0.08700622967 0.1390195298	3 0.01523501696 0.08641111182 0.1290215499	0.0999797988 0.1237845128	0.01678232337 0.1010510109 0.1247367014	c temperature of material
essure (psig) 30 40 50 60	23 Pa's 0.000023 (N/mm^2)'s 1 0.01749646479 0.08355454614 0.01485414154 0.01646095973	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
ressure (psig) 30 40 50	23 Pa's 0.000023 (N/mm^2)'s 1 0.01749646479 0.08355454614 0.01485414154 0.01646095973	Q 2 0.0142828284 0.08700622967 0.1390195298	3 0.01523501696 0.08641111182 0.1290215499	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
ressure (psig) 30 40 50 60	23 Pa's 0.000023 (N/mm^2)'s 1 0.01749646479 0.08355454614 0.01485414154 0.01646095973	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
ressure (psig) 30 40 50 60 70	23 Pa's 0.000023 (N/mm^2)'s 1 0.01749646479 0.08355454614 0.01485414154 0.01646095973	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
essure (psig) 30 40 50 60 70	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01725841765	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495 0.1730602708	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
ressure (psig) 30 40 50 60 70	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01646095973 0.1725841765 25.8 in*3/lb 0.03875968992	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495 0.1730602708	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
ressure (psig) 30 40 50 60 70	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01745941765 0.03875968992 1.400282874	Q 2 0.0142828284 0.08700622967 0.139019329 0.1623481495 0.1730602708	3 0.01523501696 0.0864111182 0.1290215499 0.165799833	0.0999797988 0.1237845128 0.1612769374	0.01678232337 0.1010510109 0.1247367014 0.1625861966	c temperature of material
essure (psig) 30 40 50 60 70	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01725841765 25.8 in*3/lb 0.03875968992 1.400282874 Velocity (mm/s)	Q 2 0.0142828284 0.0870622967 0.1390195298 0.1623481495 0.1730602708	3 0.01523501696 0.0864111182 0.1290215499 0.165799833 0.1947225605	0.099797988 0.1237845128 0.1612769374 0.1890094292	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
ressure (psig) 30 44 50 60 70 ho	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.0.1485414154 0.1485414154 0.1725841765 25.8 in*3/lb 0.03875968992 1.400282874 Velocity (mm/s)	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495 0.1730602708	3 0.01523501696 0.08641111182 0.1290215499 0.165799833 0.1947225605	0.099797988 0.1237845128 0.1612769374 0.1890094292	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
ressure (psig) 30 40 50 60 70 ho	23 Pa*s 0.000023 (N/mm^2)*s 1 1 0.001749646479 0.08355454614 0.01485414154 0.1485414154 0.1646095973 0.1725841765 25.8 in^3/lb 0.03875968992 1.400282874 Velocity (mm/s) 1 9.27	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495 0.1730602708 g/mm*3	3 0.01523501696 0.08641111182 0.1290215499 0.165799833 0.1947225605 3 3 3	0.099797988 0.1237845128 0.1612769374 0.1890094292	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
ressure (psig) 30 40 55 60 70 ho ressure (psig) 33 44	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01725841765 25.8 in*3/lb 0.03875968992 1.400282874 Velocity (mm/s) 1 0.9.277 14.28	Q 2 0.0142828284 0.0870622967 0.1390195298 0.1623481495 0.1730602708 g/mm^3	3 0.01523501696 0.0864111182 0.1290215499 0.165799833 0.1947225605 3 8.07 45.79	0.099797988 0.1237845128 0.1612769374 0.1890094292 4 4 8.07 52.99	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
40 55 60 70 ho	23 Pa*s 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.01485414154 0.01725841765 25.8 in*3/lb 0.03875968992 1.400282874 Velocity (mm/s) 1 0.9.277 14.28	Q 2 0.0142828284 0.0870622967 0.1390195298 0.1623481495 0.1730602708 g/mm^3	3 0.01523501696 0.08641111182 0.1290215499 0.165799833 0.1947225605 3 3 3	0.099797988 0.1237845128 0.1612769374 0.1890094292	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
ressure (psig) 30 40 55 60 70 ho ressure (psig) 33 44	23 Pa's 0.000023 (N/mm^2)'s 1 1 0.01749646479 0.0.8355454614 0.0.14846995973 0.1725841765 25.8 in^3/lb 0.03875968992 1.400282874 Velocity (mm/s) 1 9.27 0.44.28 0.78.72	Q 2 0.0142828284 0.0870622967 0.1390195298 0.1623481495 0.1730602708 g/mm^3	3 0.01523501696 0.0864111182 0.1290215499 0.165799833 0.1947225605 3 8.07 45.79	0.099797988 0.1237845128 0.1612769374 0.1890094292 4 4 8.07 52.99	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299 55.85 66.11	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing
ressure (psig) 30 40 55 60 70 ho ressure (psig) 30 44 50	23 Pa*s 0.000023 (N/mm*2)*s 1 0.000023 (N/mm*2)*s 1 0.01749646479 0.08355454614 0.0.1485414154 0.1.485414154 0.1.646095973 0.1725841765 25.8 in*3/lb 0.03875968992 1.400282874 Velocity (mm/s) 1 0.0.03875968992 1.40282874 1.40282874 1.40282874 1.40282874 1.40282874 1.40282874 1.40282874	Q 2 0.0142828284 0.08700622967 0.1390195298 0.1623481495 0.1730602708 g/mm^3	3 0.01523501696 0.0864111182 0.1290215499 0.166799833 0.1947225605 3 8.07 45.79 66.38	0.099797988 0.1237845128 0.1612769374 0.1890094292 4 8.07 52.99 65.60	0.01678232337 0.1010510109 0.1247367014 0.1625861966 0.1910328299 55.55 66.11 86.16	c temperature of material https://www.wevolver.com/article/dealing-with-over-extrusion-in-3d-printing