Rural & Irrigation Pipe Systems
Polyethylene (½) 13mm to (2) 50mm

Vinidex by aliaxis

PIPE FLOW CALCULATOR

Three factors should be known before an appropriate choice of PE pipe can be made:

1. The length of the pipeline.
2. The quantity of water required.
3. Nett pressure - taking into account available head, differences in level over pipeline length and discharge pressure.

Notes:
1. Add Static Lift (elevation) to final Pump Head requirement.
2. Calculator is for open ended pipeline.
3. Operating temperature 20°C.

EXAMPLES OF USE OF PIPELINE FLOW CALCULATOR

a. A 2000m long pipeline on flat terrain requires a discharge of 50 litres per minute at its end. What pumping pressure is required to achieve this if (2) 50mm Rural Pipe is used?
   Answer: From the tables, required pumping pressure is 100 kPa (10m).

b. If the above pipeline discharges into a tank 10m high, what pumping pressure is required?
   Answer: 10m (previously calculated) + 10m tank height = 20m

c. A pump operating at 300 kPa and delivering 42 litres/minute is to be used to convey water 1000m to a dam. What size pipe is required?
   Answer: (1¼) 32mm pipe

Pump Head columns: 10/100, 40/400, 70/700

Pump Req. Head m	kPa	Rural Bore Diameter in	mm	Pipeline Length m	Flow Velocity m/sec	Discharge at Pipeline End L/min
10	100	(½)	13	100	0.9	7
				500	0.4	3
				1000	0.2	2
				2000	0.2	1
		(¾)	19	100	1.2	21
				500	0.5	8
				1000	0.3	6
				2000	0.2	4
		(1)	25	100	1.5	43
				500	0.6	17
				1000	0.4	12
				2000	0.3	8
		(1¼)	32	100	1.7	84
				500	0.7	34
				1000	0.5	23
				2000	0.3	15
		(1½)	38	100	2.0	133
				500	0.8	54
				1000	0.5	36
				2000	0.4	25
		(2)	50	100	2.4	277
				500	1.0	113
				1000	0.7	77
				2000	0.4	52
40	400	(½)	13	100	2.1	16
				500	0.8	6
				1000	0.5	4
				2000	0.4	3
		(¾)	19	100	2.6	45
				500	1.1	18
				1000	0.7	12
				2000	0.5	8
		(1)	25	100	3.2	94
				500	1.3	38
				1000	0.9	26
				2000	0.6	17
		(1¼)	32	100	3.7	181
				500	1.5	74
				1000	1.0	50
				2000	0.7	34
		(1½)	38	100	4.2	286
				500	1.7	118
				1000	1.2	80
				2000	0.8	54
		(2)	50	100	5.1	593
				500	2.1	245
				1000	1.4	167
				2000	1.0	113
70	700	(½)	13	100	2.8	22
				500	1.1	9
				1000	0.7	6
				2000	0.5	4
		(¾)	19	100	3.6	61
				500	1.5	25
				1000	1.0	17
				2000	0.7	11
		(1)	25	100	4.4	127
				500	1.8	52
				1000	1.2	35
				2000	0.8	24
		(1¼)	32	100	5.1	246
				500	2.1	101
				1000	1.4	69
				2000	1.0	47
		(1½)	38	100	5.7	388
				500	2.4	160
				1000	1.6	109
				2000	1.1	74
		(2)	50	100	6.9	804
				500	2.9	334
				1000	1.9	227
				2000	1.3	155

Pump Head columns: 20/200, 50/500, 80/800

Pump Req. Head m	kPa	Rural Bore Diameter in	mm	Pipeline Length m	Flow Velocity m/sec	Discharge at Pipeline End L/min
20	200	(½)	13	100	1.4	11
				500	0.5	4
				1000	0.4	3
				2000	0.2	2
		(¾)	19	100	1.8	30
				500	0.7	12
				1000	0.5	8
				2000	0.3	6
		(1)	25	100	2.2	64
				500	0.9	26
				1000	0.6	17
				2000	0.4	12
		(1¼)	32	100	2.5	124
				500	1.0	50
				1000	0.7	34
				2000	0.5	23
		(1½)	38	100	2.9	195
				500	1.2	80
				1000	0.8	54
				2000	0.5	36
		(2)	50	100	3.5	406
				500	1.4	167
				1000	1.0	113
				2000	0.7	77
50	500	(½)	13	100	2.3	18
				500	0.9	7
				1000	0.6	5
				2000	0.4	3
		(¾)	19	100	3.0	51
				500	1.2	21
				1000	0.8	14
				2000	0.6	9
		(1)	25	100	3.6	106
				500	1.5	43
				1000	1.0	29
				2000	0.7	20
		(1¼)	32	100	4.2	205
				500	1.7	84
				1000	1.2	57
				2000	0.8	39
		(1½)	38	100	4.8	323
				500	2.0	133
				1000	1.3	91
				2000	0.9	61
		(2)	50	100	5.7	672
				500	2.4	277
				1000	1.6	188
				2000	1.1	128
80	800	(½)	13	100	3.0	24
				500	1.2	10
				1000	0.8	6
				2000	0.5	4
		(¾)	19	100	3.9	66
				500	1.6	27
				1000	1.1	18
				2000	0.7	12
		(1)	25	100	4.7	137
				500	1.9	56
				1000	1.3	38
				2000	0.9	26
		(1¼)	32	100	5.4	265
				500	2.2	109
				1000	1.5	74
				2000	1.0	50
		(1½)	38	100	6.1	418
				500	2.5	173
				1000	1.7	118
				2000	1.2	80
		(2)	50	100	7.4	864
				500	3.1	359
				1000	2.1	245
				2000	1.4	167

Pump Head columns: 30/300, 60/600, 90/900

Pump Req. Head m	kPa	Rural Bore Diameter in	mm	Pipeline Length m	Flow Velocity m/sec	Discharge at Pipeline End L/min
30	300	(½)	13	100	1.7	14
				500	0.7	5
				1000	0.5	4
				2000	0.3	2
		(¾)	19	100	2.3	38
				500	0.9	15
				1000	0.6	10
				2000	0.4	7
		(1)	25	100	2.7	80
				500	1.1	32
				1000	0.8	22
				2000	0.5	15
		(1¼)	32	100	3.2	154
				500	1.3	63
				1000	0.9	43
				2000	0.6	29
		(1½)	38	100	3.6	244
				500	1.5	100
				1000	1.0	68
				2000	0.7	46
		(2)	50	100	4.3	506
				500	1.8	209
				1000	1.2	142
				2000	0.8	96
60	600	(½)	13	100	2.5	20
				500	1.0	8
				1000	0.7	5
				2000	0.5	4
		(¾)	19	100	3.3	56
				500	1.3	23
				1000	0.9	15
				2000	0.6	10
		(1)	25	100	4.0	117
				500	1.6	48
				1000	1.1	32
				2000	0.8	22
		(1¼)	32	100	4.7	226
				500	1.9	93
				1000	1.3	63
				2000	0.9	43
		(1½)	38	100	5.3	357
				500	2.2	147
				1000	1.5	100
				2000	1.0	68
		(2)	50	100	6.3	738
				500	2.6	307
				1000	1.8	209
				2000	1.2	142
90	900	(½)	13	100	3.2	25
				500	1.3	10
				1000	0.9	7
				2000	0.6	5
		(¾)	19	100	4.1	70
				500	1.7	29
				1000	1.1	19
				2000	0.8	13
		(1)	25	100	5.0	146
				500	2.1	60
				1000	1.4	41
				2000	0.9	28
		(1¼)	32	100	5.8	282
				500	2.4	116
				1000	1.6	79
				2000	1.1	54
		(1½)	38	100	6.5	445
				500	2.7	184
				1000	1.8	125
				2000	1.3	85
		(2)	50	100	7.9	918
				500	3.3	383
				1000	2.2	262
				2000	1.5	178

GENERAL CONVERSION TABLE

Pressure

1 kPa	=	0.145 psi
1 atm	=	101.3 kPa
1 psi	=	2.31 ft/head (water)

Flow/Discharge

1 m³/hour	=	3.67 gal/minute
1 gal/minute	=	0.272 m³/hour
1 gal/minute	=	0.0756 L/sec
1 L/sec	=	13.2 gal/minute
1 L/minute	=	0.22 gal/minute

Volume

1 L	=	0.22 gallons
1 gallon	=	4.54 L
1 m³	=	35.31 feet³
1 m³	=	220.2 gallons

P 13 11 69 | sales@vinidex.com.au | www.vinidex.com.au

VIN059B-20190916