



PRESSIONE E PORTATA

Le portate e le caratteristiche di spruzzo degli ugelli sono state ottenute sui nostri banchi prova impiegando acqua e controllando la pressione con manometri di precisione posizionati sul porta ugello.

Per calcolare le portate degli ugelli a pressioni non previste in tabella è possibile impiegare con approssimazione la formula:

$$Q_1 \text{ (l/min)} = Q_2 \text{ (l/min)} \sqrt{\frac{P_1 \text{ (bar)}}{P_2 \text{ (bar)}}}$$

Impiegando soluzioni o fluidi con densità diversa dall'acqua, i valori delle portate devono essere corretti utilizzando un fattore di conversione.

densità kg/l	0.85	0.90	0.95	1	1.10	1.20	1.30	1.40	1.50
moltiplicare per	0.92	0.95	0.97	1	1.05	1.10	1.14	1.18	1.22

PERDITE DI CARICO IN BAR PER ACQUA CHE SCORRE IN TUBI DI VARI DIAMETRI INTERNI - LUNGHEZZA 3 m

PORTATE l/min	DIAMETRI INTERNI DEI TUBI IN mm							
	6	8	10	13	19	20	25	30
1.0	0.04							
2.0	0.11	0.02						
3.0	0.24	0.04	0.02					
5.0	0.66	0.10	0.04	0.02				
8.0	1.70	0.20	0.09	0.04				
10		0.29	0.14	0.06	0.01			
20			0.56	0.21	0.03	0.02		
50				1.31	0.15	0.11	0.04	
80					0.45	0.30	0.09	0.03
100					0.80	0.47	0.15	0.05
120					1.14	0.70	0.21	0.07
150						1.10	0.33	0.12
200								0.20

DIAMETRI ESTERNI DEI TUBI									
mm	10.3	13.7	17.2	21.3	26.9	33.7	42.4	48.3	60.3
inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
DN	6	8	10	15	20	25	32	40	50

CONVERSIONE UNITÀ DI MISURA		
per ottenere	moltiplicare	per
mm	25.4	pollici
m	0.3048	pie di (ft)
km	1.609	miglia (miles)
ha	0.4047	acri (acres)
l	3.785	galloni USA (USGal)
l	4.545	galloni imperial (Imp.)
bar	0.069	psi

* Le portate consigliate per ogni tubo sono in grassetto

FORI / PORTATE

Ø mm	PORTATA l/min								
	1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	10 bar	20 bar
0.5	0.11	0.16	0.20	0.23	0.25	0.28	0.30	0.36	0.51
0.7	0.23	0.32	0.39	0.46	0.51	0.56	0.60	0.72	1.0
1.0	0.48	0.66	0.83	0.96	1.1	1.2	1.3	1.6	2.3
1.2	0.70	0.98	1.2	1.4	1.5	1.7	1.8	2.2	3.1
1.5	1.1	1.6	2.0	2.3	2.5	2.8	3.0	3.6	5.1
2.0	1.8	2.6	3.2	3.6	4.1	4.5	4.8	5.8	8.2
2.5	3.0	4.2	5.1	5.9	6.6	7.2	7.8	9.3	13.1
3.0	4.1	5.8	7.1	8.2	9.2	10	10.8	12.9	18.3
3.5	6.7	9.5	11.6	13.4	15	16.4	17.7	21.2	30
4.0	9.1	12.9	15.8	18.2	20	22	24	29	41
4.5	11.7	16.5	20.3	23.5	26.2	28.7	30.9	37	52
5.0	14	19.8	24.2	28	31.3	34.2	37	44	62.5
6.0	23	32	39	46	51	56	60	72	102
6.5	27	38	47	54	61	66	71	85	121
7.5	34	48	59	68	76	84	90	108	153
8.5	48	68	83	96	107	118	127	152	215
9.5	57	81	99	114	127	140	151	180	255
11.0	80	113	138	160	179	196	212	253	358
15.5	160	225	275	320	355	390	420	510	720
19.0	226	319	391	452	505	553	598	715	1010
20.0	262	370	454	524	586	641	693	828	1172
25.4	410	580	710	820	920	1010	1090	1300	1840
26.5	456	645	790	912	1019	1117	1206	1442	2040



PRESSURE AND CAPACITY

Flow rates and spray tips features have been obtained on our test facility with clear water checking the pressure with high precision gauges located on the tip holder.

To obtain the flow rates at pressures not shown on charts, please use the following formula:

$$Q_1 \text{ (USGal/min)} = Q_2 \text{ (USGal/min)} \sqrt{\frac{P_1 \text{ (psi)}}{P_2 \text{ (psi)}}}$$

Using various chemical density, data on our chart must be corrected using the appropriate conversion factor.

density kg/l	0.85	0.90	0.95	1	1.10	1.20	1.30	1.40	1.50
multiply for	0.92	0.95	0.97	1	1.05	1.10	1.14	1.18	1.22

PRESSURE DROP IN PSI FOR WATER RUNNING IN 10 FT LONG HOSES WITH VARIOUS INTERNAL DIA.

USGal/min	HOSES INTERNAL DIA. - INCHES								
	1/4	3/8	7/16	1/2	3/4	1	1 1/4	1 1/2	
0.3	0.6								
0.5	1.4	0.2							
0.8	3.3	0.5	0.2						
1.5		1.4	0.6	0.4					
2.0		2.4	1.1	0.6					
2.5			1.7	0.9					
5.0				2.9	0.4				
15					3.0	0.8	0.3		
20						1.4	0.5	0.2	
25						2.0	0.7	0.3	
30						2.8	0.9	0.4	
40							1.6	0.6	
50							2.5	0.8	

PIPES EXTERNAL DIAMETERS									
mm	10.3	13.7	17.2	21.3	26.9	33.7	42.4	48.3	60.3
inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
DN	6	8	10	15	20	25	32	40	50

CONVERSION FACTORS OF UNITS		
to obtain	multiply	by
inches	0.0394	mm
feet	3.281	m
miles	0.6214	Km
acres	2.471	ha
USGal	0.2642	l
Imp. Gal	0.22	l
psi	14.5	bar

* Recommended flow rates are in bold

PORTS / CAPACITIES

HOLE DIA. mm	CAPACITIES USGal/min								
	15 psi	30 psi	45 psi	60 psi	70 psi	90 psi	100 psi	150 psi	300 psi
0.5	0.03	0.04	0.05	0.06	0.07	0.076	0.08	0.1	0.14
0.7	0.06	0.08	0.10	0.12	0.13	0.15	0.16	0.23	0.27
1.0	0.13	0.17	0.22	0.25	0.29	0.32	0.35	0.43	0.62
1.2	0.2	0.26	0.3	0.37	0.39	0.46	0.48	0.6	0.84
1.5	0.3	0.4	0.5	0.6	0.65	0.76	0.8	0.95	1.4
2.0	0.5	0.7	0.8	0.95	1.07	1.22	1.28	1.6	2.2
2.5	0.8	1.1	1.3	1.6	1.7	1.9	2.1	2.5	3.5
3.0	1.1	1.6	1.9	2.2	2.4	2.7	2.9	3.5	4.9
3.5	1.8	2.6	3.1	3.6	3.9	4.4	4.7	5.7	8.1
4.0	2.5	3.5	4.2	4.9	5.2	5.9	6.4	7.8	11
4.5	3.1	4.4	5.4	6.3	6.8	7.7	8.2	10	14
5.0	3.8	5.3	6.5	7.5	8.1	9.2	9.8	11.9	16.9
6.0	6.2	8.6	10.5	12.4	13.3	15.1	16	19.4	27.5
6.5	7.2	10.2	12.6	14.5	15.9	17.8	19	23	32.7
7.5	9.1	12.9	15.9	18.3	19.8	22.7	24	29	41.3
8.5	13	18.3	22.3	25.8	27.8	31.9	34	41	58
9.5	15.3	21.8	26.6	30.6	33	38	40	49	69
11.0	21.5	30.4	37	43	46.5	53	56	68	96.5
15.5	43	60.5	74	86	92.3	105	112	138	194
19.0	60.7	85.7	105	121.5	131	149	159	193	273
20.0	70.4	99.4	122	141	152	173	184	224	316
25.4	110	155	191	220	239	273	290	351	497
26.5	122.5	173	212	245	265	302	321	389	550