

# INSTAFLEX (10°C)

## Pressure loss chart for INSTAFLEX PB pipes d16-d225

Pipe friction loss in relation to flow rate

### Basis of calculation

Water temperature $\vartheta_k$	= 10°C
Surface roughness $k$	= 0.007 mm
Viscosity $\eta$	= 0.00131 Pa·s
Density $\rho$	= 999.70 kg/m <sup>3</sup>

### Recommended flow velocity according SVGW guideline W3/2013

- max. 4.0 m/s for single outlet lines
- max. 3.0 m/s for apparatus lines
- max. 3.0 m/s for floor distribution lines
- max. 2.0 m/s for distribution lines

## Diagramme des pertes de charge dans les tuyaux INSTAFLEX PB d/16-d225

Perte de charge par frottement dépendant du débit volumique

### Base de calcul

Température d'eau $\vartheta_k$	= 10°C
Rugosité des parois $k$	= 0.007 mm
Viscosité $\eta$	= 0.00131 Pa·s
Densité $\rho$	= 999.70 kg/m <sup>3</sup>

### Débit recommandé pour la politique SSIGE W3/2013

- max. 4.0 m/s pour conduite d'évacuation
- max. 3.0 m/s pour groupe d'appareils
- max. 3.0 m/s pour distribution d'étage
- max. 2.0 m/s pour conduite de distribution

## Diagramma della perdita di carico per tubi sintetici INSTAFLEX PB d16-d225

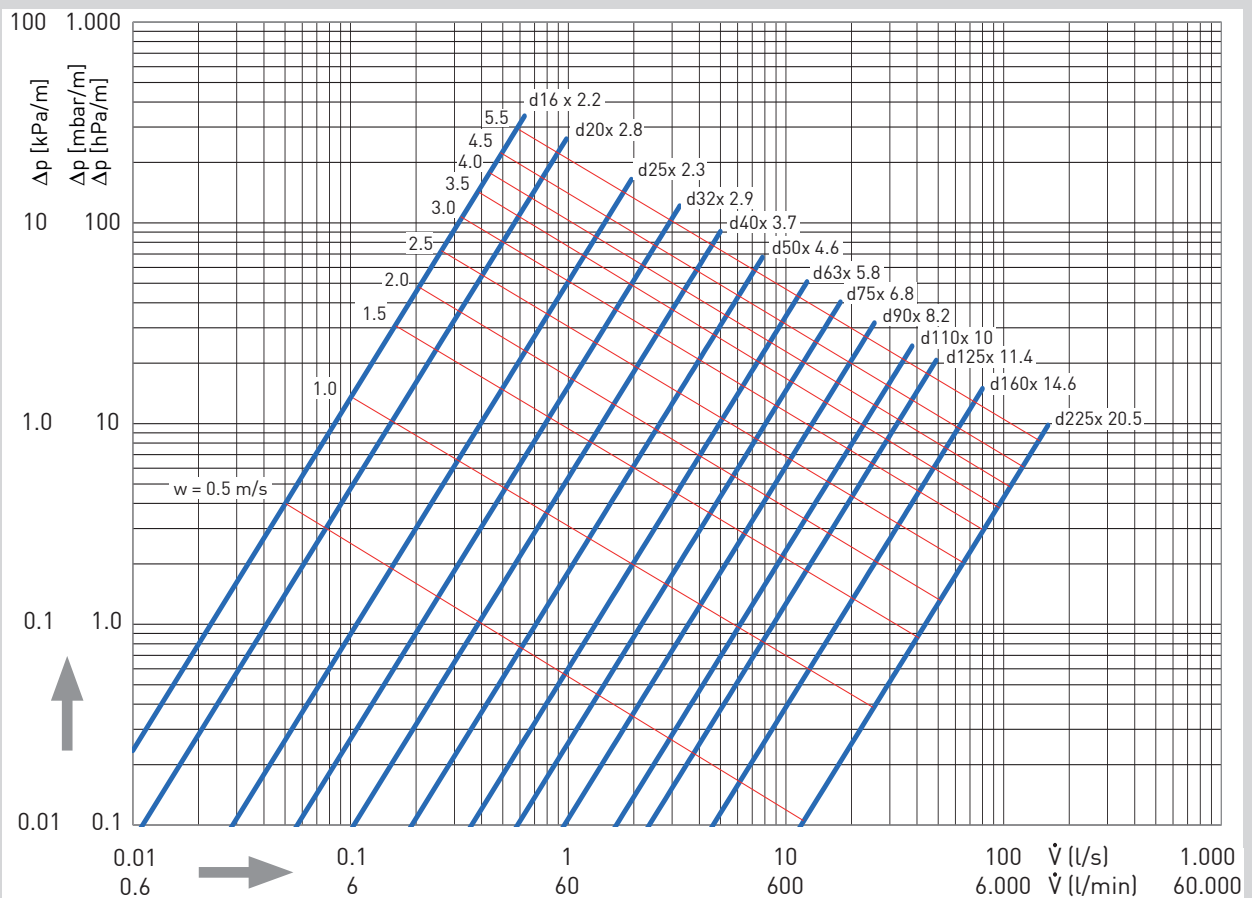
Caduta di pressione per attrito del tubo a dipendenza del flusso volumetrico

### Base di calcolo

Temperatura d'acqua $\vartheta_k$	= 10°C
Rugosità del tubo $k$	= 0.007 mm
Viscosità $\eta$	= 0.00131 Pa·s
Densità $\rho$	= 999.70 kg/m <sup>3</sup>

### Portata consigliata dal SSIGA politica W3/2013

- max. 4.0 m/s per linee di getto
- max. 3.0 m/s per gruppi di apparecchiature
- max. 3.0 m/s per linee di piano
- max. 2.0 m/s per linee di distribuzione



## Correction factor values with different water temperatures / Facteurs de correction pour d'autres températures

### Fattore di correzione per varie temperature

$\vartheta_w$ (°C)	10	20	30	40	50	60	70	80	90	95
f	1.000	0.955	0.915	0.870	0.835	0.805	0.775	0.753	0.737	0.730

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d <sub>1</sub> x s	16 x 2.2		20 x 2.8		25 x 2.3		32 x 2.9		40 x 3.7		50 x 4.6		63 x 5.8	
d <sub>2</sub>	11.6		14.4		20.4		26.2		32.6		40.8		51.4	
Vs	v	R	v	R	v	R	v	R	v	R	v	R	v	R
[l/s]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]
0.01	0.1	0.2	0.1	0.1										
0.02	0.2	0.8	0.1	0.3										
0.03	0.3	1.6	0.2	0.6	0.1	0.1								
0.04	0.4	2.7	0.2	1.0	0.1	0.2								
0.05	0.5	4.0	0.3	1.4	0.2	0.3								
0.06	0.6	5.5	0.4	1.9	0.2	0.4								
0.07	0.7	7.2	0.4	2.5	0.2	0.5	0.1	0.1						
0.08	0.8	9.1	0.5	3.2	0.2	0.6	0.1	0.2						
0.09	0.9	11.2	0.6	4.0	0.3	0.7	0.2	0.2						
0.10	1.0	13.7	0.6	4.8	0.3	0.9	0.2	0.3	0.1	0.1				
0.15	1.4	27.4	0.9	9.7	0.5	1.8	0.3	0.5	0.2	0.2				
0.20	1.9	45.3	1.2	16.1	0.6	3.0	0.4	0.9	0.2	0.3	0.2	0.1		
0.25	2.4	67.1	1.5	23.8	0.8	4.5	0.5	1.3	0.3	0.5	0.2	0.2		
0.30	2.8	92.4	1.8	32.7	0.9	6.1	0.6	1.8	0.4	0.6	0.2	0.2		
0.35	3.3	121.1	2.1	42.9	1.1	8.1	0.6	2.4	0.4	0.8	0.3	0.3		
0.40	3.8	153.1	2.5	54.2	1.2	10.2	0.7	3.1	0.5	1.1	0.3	0.4		
0.45	4.3	188.3	2.8	66.7	1.4	12.5	0.8	3.8	0.5	1.3	0.3	0.4	0.2	0.1
0.50	4.7	226.6	3.1	80.2	1.5	15.1	0.9	4.5	0.6	1.6	0.4	0.5	0.2	0.2
0.55	5.2	267.9	3.4	94.9	1.7	17.8	1.0	5.4	0.7	1.9	0.4	0.6	0.3	0.2
0.58	5.5	294.1	3.6	104.1	1.8	19.6	1.1	5.9	0.7	2.1	0.4	0.7	0.3	0.2
0.65			4.0	127.2	2.0	23.9	1.2	7.2	0.8	2.5	0.5	0.9	0.3	0.3
0.70			4.3	144.9	2.1	27.2	1.3	8.2	0.8	2.9	0.5	1.0	0.3	0.3
0.75			4.6	163.5	2.3	30.7	1.4	9.2	0.9	3.2	0.6	1.1	0.4	0.4
0.80			4.9	183.1	2.4	34.4	1.5	10.3	1.0	3.6	0.6	1.2	0.4	0.4
0.85			5.2	203.7	2.6	38.3	1.6	11.5	1.0	4.0	0.7	1.4	0.4	0.5
0.90			5.5	225.2	2.8	42.3	1.7	12.7	1.1	4.5	0.7	1.5	0.4	0.5
0.95					2.9	46.5	1.8	14.0	1.1	4.9	0.7	1.7	0.5	0.6
1.00					3.1	50.9	1.9	15.3	1.2	5.4	0.8	1.8	0.5	0.6
1.10					3.4	60.2	2.0	18.1	1.3	6.3	0.8	2.2	0.5	0.7
1.20					3.7	70.1	2.2	21.1	1.4	7.4	0.9	2.5	0.6	0.8
1.30					4.0	80.7	2.4	24.3	1.6	8.5	1.0	2.9	0.6	1.0
1.40					4.3	91.9	2.6	27.6	1.7	9.7	1.1	3.3	0.7	1.1
1.50					4.6	103.7	2.8	31.2	1.8	10.9	1.1	3.7	0.7	1.2
1.60					4.9	116.2	3.0	34.9	1.9	12.2	1.2	4.2	0.8	1.4
1.70					5.2	129.2	3.2	38.9	2.0	13.6	1.3	4.6	0.8	1.5
1.80					5.5	142.9	3.3	43.0	2.2	15.0	1.4	5.1	0.9	1.7
1.90							3.5	47.2	2.3	16.5	1.5	5.6	0.9	1.9
2.00							3.7	51.7	2.4	18.1	1.5	6.2	1.0	2.0
2.10							3.9	56.3	2.5	19.7	1.6	6.7	1.0	2.2
2.20							4.1	61.1	2.6	21.4	1.7	7.3	1.1	2.4
2.30							4.3	66.1	2.8	23.1	1.8	7.9	1.1	2.6
2.40							4.5	71.2	2.9	24.9	1.8	8.5	1.2	2.8
2.50							4.6	76.5	3.0	26.8	1.9	9.1	1.2	3.0
2.60							4.8	82.0	3.1	28.7	2.0	9.8	1.3	3.2
2.70							5.0	87.6	3.2	30.7	2.1	10.4	1.3	3.4
2.80							5.2	93.3	3.4	32.7	2.1	11.1	1.3	3.7
2.95							5.5	102.3	3.5	35.8	2.3	12.2	1.4	4.0
3.00									3.6	36.9	2.3	12.6	1.4	4.1
3.10									3.7	39.1	2.4	13.3	1.5	4.4
3.20									3.8	41.3	2.4	14.1	1.5	4.6

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d <sub>1</sub> x s	16 x 2.2		20 x 2.8		25 x 2.3		32 x 2.9		40 x 3.7		50 x 4.6		63 x 5.8	
d <sub>2</sub>	11.6		14.4		20.4		26.2		32.6		40.8		51.4	
V <sub>s</sub>	v	R	v	R	v	R	v	R	v	R	v	R	v	R
[l/s]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]
3.30									4.0	43.6	2.5	14.9	1.6	4.9
3.40									4.1	46.0	2.6	15.7	1.6	5.2
3.50									4.2	48.4	2.7	16.5	1.7	5.4
3.60									4.3	50.8	2.8	17.3	1.7	5.7
3.70									4.4	53.3	2.8	18.2	1.8	6.0
3.80									4.6	55.9	2.9	19.0	1.8	6.3
3.90									4.7	58.5	3.0	19.9	1.9	6.6
4.00									4.8	61.1	3.1	20.8	1.9	6.9
4.10									4.9	63.9	3.1	21.7	2.0	7.2
4.20									5.0	66.6	3.2	22.7	2.0	7.5
4.30									5.2	69.4	3.3	23.6	2.1	7.8
4.40									5.3	72.3	3.4	24.6	2.1	8.1
4.50									5.4	75.2	3.4	25.6	2.2	8.4
4.60									5.5	78.1	3.5	26.6	2.2	8.8
4.70											3.6	27.6	2.3	9.1
4.80											3.7	28.7	2.3	9.5
4.90											3.7	29.7	2.4	9.8
5.00											3.8	30.8	2.4	10.2
5.20											4.0	33.0	2.5	10.9
5.40											4.1	35.3	2.6	11.6
5.60											4.3	37.6	2.7	12.4
5.80											4.4	40.0	2.8	13.2
6.00											4.6	42.4	2.9	14.0
6.20											4.7	44.9	3.0	14.8
6.40											4.9	47.5	3.1	15.7
6.60											5.0	50.2	3.2	16.6
6.80											5.2	52.9	3.3	17.4
7.00													3.4	18.4
7.20													3.5	19.3
7.40													3.6	20.2
7.60													3.7	21.2
7.80													3.8	22.2
8.00													3.9	23.2
8.20													4.0	24.2
8.40													4.0	25.3
8.60													4.1	26.3
8.80													4.2	27.4
9.00													4.3	28.5
9.25													4.5	29.9
9.50													4.6	31.4
9.75													4.7	32.8
10.00													4.8	34.3
10.25													4.9	35.8
10.50													5.1	37.4
10.75													5.2	39.0
11.00													5.3	40.6
11.25													5.4	42.2
11.50													5.5	43.9

# INSTAFLEX (10°C)

d <sub>1</sub> x s	75 x 6.8		90 x 8.2		110 x 10		125 x 11.4		160 x 14.6		225 x 20.5	
d <sub>2</sub>	61.4		73.6		90.0		102.2		130.8		184.0	
V <sub>s</sub>	v	R	v	R	v	R	v	R	v	R	v	R
[l/s]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]	[m/s]	[hPa/m]
0.40	0.1	0.1										
0.45	0.2	0.1										
0.50	0.2	0.1										
0.55	0.2	0.1										
0.60	0.2	0.1	0.1	0.0								
0.65	0.2	0.1	0.2	0.1								
0.70	0.2	0.1	0.2	0.1								
0.75	0.3	0.2	0.2	0.1								
0.80	0.3	0.2	0.2	0.1								
0.85	0.3	0.2	0.2	0.1								
0.90	0.3	0.2	0.2	0.1								
0.95	0.3	0.2	0.2	0.1								
1.00	0.3	0.3	0.2	0.1								
1.10	0.4	0.3	0.3	0.1	0.2	0.0						
1.20	0.4	0.4	0.3	0.1	0.2	0.1						
1.30	0.4	0.4	0.3	0.2	0.2	0.1						
1.40	0.5	0.5	0.3	0.2	0.2	0.1						
1.50	0.5	0.5	0.4	0.2	0.2	0.1	0.2	0.0				
1.60	0.5	0.6	0.4	0.2	0.3	0.1	0.2	0.1				
1.70	0.6	0.7	0.4	0.3	0.3	0.1	0.2	0.1				
1.80	0.6	0.7	0.4	0.3	0.3	0.1	0.2	0.1				
1.90	0.6	0.8	0.4	0.3	0.3	0.1	0.2	0.1				
2.00	0.7	0.9	0.5	0.4	0.3	0.1	0.2	0.1				
2.20	0.7	1.0	0.5	0.4	0.3	0.2	0.3	0.1				
2.40	0.8	1.2	0.6	0.5	0.4	0.2	0.3	0.1				
2.60	0.9	1.4	0.6	0.6	0.4	0.2	0.3	0.1				
2.80	0.9	1.6	0.7	0.7	0.4	0.2	0.3	0.1				
3.00	1.0	1.8	0.7	0.7	0.5	0.3	0.4	0.2	0.2	0.0		
3.20	1.1	2.0	0.8	0.8	0.5	0.3	0.4	0.2	0.2	0.1		
3.40	1.1	2.2	0.8	0.9	0.5	0.4	0.4	0.2	0.3	0.1		
3.60	1.2	2.4	0.8	1.0	0.6	0.4	0.4	0.2	0.3	0.1		
3.80	1.3	2.7	0.9	1.1	0.6	0.4	0.5	0.2	0.3	0.1		
4.00	1.4	2.9	0.9	1.2	0.6	0.5	0.5	0.3	0.3	0.1		
4.50	1.5	3.6	1.1	1.5	0.7	0.6	0.5	0.3	0.3	0.1		
5.00	1.7	4.3	1.2	1.8	0.8	0.7	0.6	0.4	0.4	0.1		
5.50	1.9	5.1	1.3	2.1	0.9	0.8	0.7	0.4	0.4	0.1		
6.00	2.0	6.0	1.4	2.5	0.9	1.0	0.7	0.5	0.4	0.2		
6.50	2.2	6.9	1.5	2.9	1.0	1.1	0.8	0.6	0.5	0.2		
7.00	2.4	7.8	1.6	3.3	1.1	1.2	0.9	0.7	0.5	0.2		
7.50	2.5	8.8	1.8	3.7	1.2	1.4	0.9	0.8	0.6	0.2	0.3	0.0
8.00	2.7	9.9	1.9	4.1	1.3	1.6	1.0	0.9	0.6	0.3	0.3	0.1
8.50	2.9	11.0	2.0	4.6	1.3	1.8	1.0	1.0	0.6	0.3	0.3	0.1
9.00	3.0	12.2	2.1	5.1	1.4	1.9	1.1	1.1	0.7	0.3	0.3	0.1
9.50	3.2	13.4	2.2	5.6	1.5	2.1	1.2	1.2	0.7	0.4	0.4	0.1
10.0	3.4	14.6	2.4	6.1	1.6	2.3	1.2	1.3	0.7	0.4	0.4	0.1
11.0	3.7	17.3	2.6	7.2	1.7	2.8	1.3	1.5	0.8	0.5	0.4	0.1
12.0	4.1	20.1	2.8	8.4	1.9	3.2	1.5	1.7	0.9	0.5	0.5	0.1
13.0	4.4	23.2	3.1	9.7	2.0	3.7	1.6	2.0	1.0	0.6	0.5	0.1
14.0	4.7	26.4	3.3	11.1	2.2	4.2	1.7	2.3	1.0	0.7	0.5	0.1
15.0	5.1	29.8	3.5	12.5	2.4	4.8	1.8	2.6	1.1	0.8	0.6	0.2

