

# Ventilation



PVC ventilation pipes  
PVC pressure pipes



# SIRCI GRESINTEX



## PVC rigid pipes for civil pipelines

### Application

The PVC pipes have been largely used for a long time in the realization of industrial plants such as:

- Ventilation
- Fluids evacuation
- Transfer of fluids under pressure

### Material

The material used for the fabrication of the pipe is the Polyvinyl Chloride (PVC) without plasticizer charges, properly formulated to keep all the physical and chemical features unchanged for the whole life of the plant.

### Chemical resistance

The material stands all the acids and all the bases having a PH included between 2,0 and 12,0, therefore excellent for the transfer of almost all fluids; in exceptional cases, occurring in particular chemical-industrial processes, you have to follow the instructions of the Norm ISO TR 7473.

### Abrasion resistance

It is well known that plastic materials excellently withstand the abrasive effect of transferred liquid. For further information, please refer to the result of the tests carried out at the Universities' Laboratories, according to the methodology adopted for all the tubular products and codified by the Norm EN 295.

### Colour

The pipes are a dark grey colour RAL 7011 and they are stabilized to minimize the effects of the ultraviolet rays.

A prolonged exposure to the sun rays might discolour the exposed parts but without altering the mechanical characteristics of the pipes.

### Ecology

The production cycle of the raw material and of the extrusion of the pipes are environmentally friendly. All scrap materials are re-utilised and the end product can be 100% recycled.

### Dimensions

The dimensions of the pipes are in compliance with the metric series defined by the Norms ISO R 161 OD Series. The pipes are offered in different thicknesses so as to meet the user's requirements with respect to the exercising pressure, to the ring rigidity and to the required security.

## Pipes norms

Pipes are produced in accordance with the norms:

- DIN8062
- DIN19532
- EN1452

## Physical and chemical characteristics

### Physical characteristics

Properties	Unit of measure (SI)	Value	Norm of reference
Volumetric mass	g/cm <sup>3</sup>	1,39 ÷ 1,45	ISO 1183
Unit yield point	MPa	≥ 48	ASTM D638
Yield extension	%	≤ 10	ASTM D638
Modulus of elasticity	MPa	3.000 ÷ 3.600	ASTM D790
Superficial electric resistance	Ohm cm	≥ 10 <sup>12</sup>	DIN 53482
Coefficient of linear thermal expansion	mm/m °C	~ 0,07	DIN 53752
Thermal conductivity	Kal/h m °C	~ 0,13	DIN 52612
Operative temperature	°C	-0 ÷ +60	-
Softening temperature (Vicat)	°C	> 80	EN 727
Flame spread	self extinguishing	B1	DIN 4102
Water absorption	mg/cm <sup>2</sup>	< 4	DIN 53495

### Chemical characteristics resistance to chemical attacks

PVC has a very good resistance to any kind of chemical attacks from both acid and alkaline.

For resistance to individual chemicals it is necessary to refer to the Norm ISO/TR 7473 nowadays totally adopted by the Standards of the greatest western European countries.


### Pressure rating

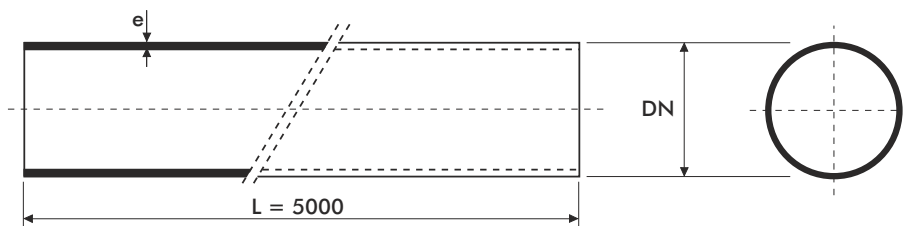
The pressure rating for pressure pipes is the maximum sustained working pressure based on water at 20°C.

The pressure rating decreases with regards to the temperature as shown in the table.

t °C	PN 6	PN 10	PN 16
20°	6	10	16
40°	3	5	10
60°	1	2	2,5

## Ventilation Ventilation pipes According to DIN 8062

	<b>PIPE</b>
Material	U-PVC
Colour	RAL 7011 dark grey
Dimensions	mm




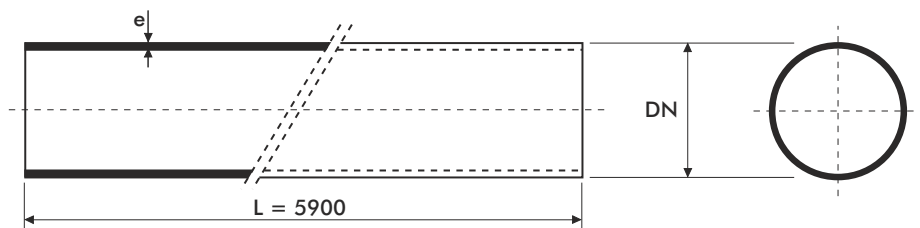
### Serie 1

DN	e	Kg./m.*
110	1,8	1,085
125	1,8	1,236
140	1,8	1,387
160	1,8	1,588
180	1,8	1,789
200	1,8	1,991
225	1,8	2,242
250	2,0	2,743
280	2,3	4,189
315	2,5	4,249
355	2,9	5,502
400	3,2	6,804
450	3,6	8,561
500	4,0	10,519
600	5,0	15,630
700	6,0	21,758
800	6,3	26,094
900**	10,0	45,948
1000**	12,0	51,118
1200**	14,0	85,284

\* Theoretical values - \*\* Factory tolerances

## Ventilation Ventilation pipes According to DIN 8062


	PIPE
Material	U-PVC
Colour	RAL 7011 dark grey
Dimensions	mm

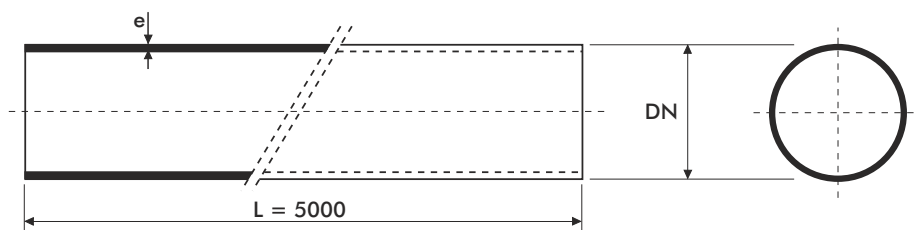


### Serie 5900

DN	e	Kg./m.*
110	2,2	1,299
160	2,5	2,523
200	2,5	3,166
225	2,5	3,568
250	2,5	3,364
315	2,5	4,249
355	2,9 <sup>•</sup>	5,502
400	3,2 <sup>•</sup>	6,804
450	3,6 <sup>•</sup>	8,561
500	4,0 <sup>•</sup>	10,519
600	5,0 <sup>•</sup>	15,630

\* Theoretical values    • On request

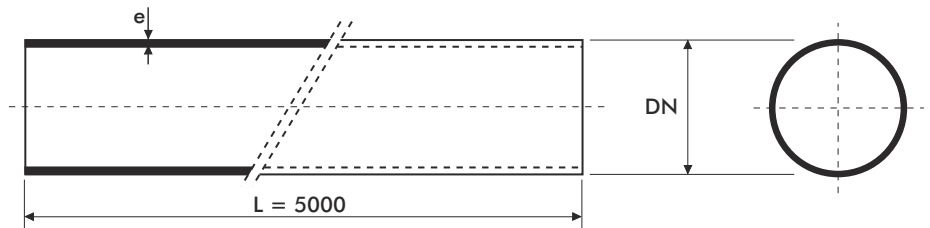
	<b>PIPE</b>
Material	U-PVC
Colour	RAL 7011 dark grey
Dimensions	mm



DN	Serie 2		Serie 3	
	e	Kg./m.*	e	Kg./m.*
50	-	-	1,8 <sup>•</sup>	0,481
63	-	-	1,8 <sup>•</sup>	0,612
75	1,8	0,733	2,2 <sup>•</sup>	0,786
90	1,8	0,884	2,7 <sup>•</sup>	1,147
110	2,2	1,299	3,2	1,825
125	2,5	1,622	3,7	2,380
160	3,2	2,683	4,7	3,833
200	4,0	4,149	5,9	5,969
250	4,9 <sup>•</sup>	6,306	7,3 <sup>•</sup>	8,420
315	6,2 <sup>•</sup>	9,979	9,2 <sup>•</sup>	14,513
400	7,9 <sup>•</sup>	14,800	-	-
500	9,8 <sup>•</sup>	22,900	-	-
630	12,4 <sup>•</sup>	36,500	-	-

\* Theoretical values    • On request

PIPE	
Material	U-PVC
Colour	RAL 7011 dark grey
Dimensions	mm

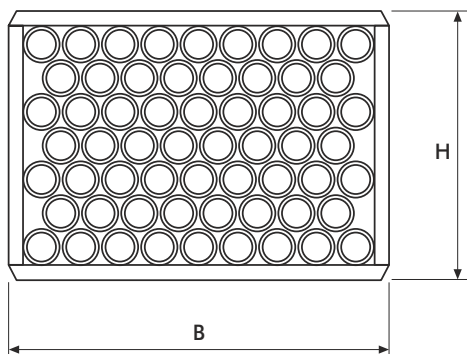


DN	Serie 4 - PN 10		Serie 5 - PN 16		Serie 6 - PN 25	
	e	Kg/m*	e	Kg/m*	e	Kg/m*
20	-	-	1,5	0,138	2,3●	0,218
25	1,5	0,175	1,9	0,215	2,8●	0,329
32	1,8	0,268	2,4	0,346	3,6●	0,535
40	1,9	0,357	3,0	0,536	4,5●	0,828
50	2,4	0,557	3,7	0,823	5,6●	1,281
63	3,0	0,872	4,7	1,310	-	-
75	3,6	1,239	5,6	1,853	-	-
90	4,3	1,769	6,7	2,655	-	-
110	5,3	2,654	8,2	3,961	-	-
125	4,8	2,770	7,4	4,140	-	-
140	5,4	3,480	8,3	5,190	-	-
160	6,2	4,550	9,5	6,780	-	-
200	7,7	7,050	11,9	10,600	-	-
225	8,6	8,850	13,4●	13,410	-	-
250	9,6	10,960	14,8●	16,460	-	-
315	12,1	17,100	18,7●	26,160	-	-
400	15,3●	27,400	-	-	-	-
500	19,1●	43,500	-	-	-	-
630	24,1●	68,500	-	-	-	-

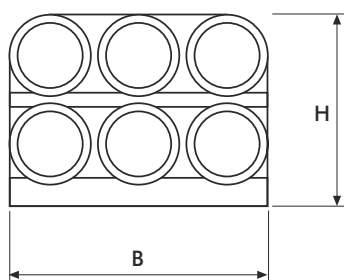
\* Theoretical values ● On request

## Packing

DN 16 ÷ 315



DN 355 ÷ 500



DN mm	N° pipes	B mm	H mm
25	445	1200	320
32	345	1200	380
40	275	1200	450
50	220	1200	540
63	170	1200	650
75	145	1200	760
90	96	1200	720
110	57	1200	680
125	43	1200	650
140	45	1200	730
160	26	1200	680
180	-	-	-
200	15	1200	910
225	18	1200	910
250	12	1200	780
280	-	-	-
315	6	1200	650
355	8	1200	720
400	6	1200	900
450	4	1000	1000
500	4	1000	1100
500	-	-	-
630	3	1820	650

From DN 700 the pipes are loose

## Basis of calculation

Determination of series S

$$S = \frac{DN - e}{2e}$$

Determination of thickness e

$$e = \frac{PN \cdot DN}{20\sigma + Pn}$$

Determination of Standard Dimension Ratio SDR

$$SDR = \frac{DN}{e} = 2S + 1$$

Determination of nominal pressure PN

$$PN = \frac{20\sigma \cdot e}{DN - e} = \frac{10\sigma}{S}$$

Determination of critical deformation pressure Pk

$$Pk = \frac{10E}{4(1 - \mu^2)} \cdot \left(\frac{e^3}{rm}\right)$$

Determination of critical deformation tension σk

$$\sigma_k = Pk \cdot \frac{rm}{e}$$

Determination of moment of inertia I

$$I = \frac{e^3}{12}$$

Determination of stiffness SN

$$SN = \frac{E \cdot I}{(2m)^3}$$

## Lessicology

- e wall thickness of pipes .....mm
- PN nominal pressure .....bar
- DN external diameter .....mm
- σ allowed circumferential stress .....N/mm<sup>2</sup>
- S series
- SDR Standard Dimension Ratio
- Pk critical maxim pressure .....bar
- E modulus of elasticity .....N/mm<sup>2</sup>
- μ constant of transversal contraction (poisson ratio) 0,4
- rm middle ray of the pipe .....mm
- σK critical tension .....N/mm<sup>2</sup>
- SN stiffness .....KN/m<sup>2</sup>
- I moment of inertia .....mm<sup>4</sup>

# Ventilation

Sirci Gresintex quality management system is certified according to UNI EN ISO 9001:2008 by:



 **SIRCI GRESINTEX**

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