

Unplasticized polyvinyl chloride
(PVC-U, PVC-HI) pipes
Dimensions

DIN
8062

Rohre aus weichmacherfreiem Polyvinylchlorid (PVC-U, PVC-HI); Maße

Supersedes
February 1974 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

See Explanatory notes for connection with International Standard ISO 161/1-1978 published by the International Organization for Standardization (ISO).

Dimensions in mm

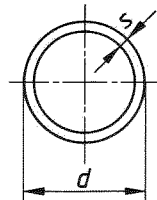
The pressures given are gauge pressures, in bar.

1 Field of application

This standard applies to pipes made of unplasticized polyvinyl chloride (PVC-U) and impact modified unplasticized polyvinyl chloride (type 1 and type 2 PVC-HI).

Pipes as specified in this standard shall meet the requirements given in DIN 8061.

2 Dimensions, designation



Designation of a pipe with an outside diameter, d , of 32 mm and a wall thickness, s , of 1,8 mm, made of PVC-U:

Pipe DIN 8062 – 32 × 1,8 – PVC-U

Designation of a pipe with an outside diameter, d , of 50 mm and a wall thickness, s , of 3,7 mm, made of type 1 PVC-HI:

Pipe DIN 8062 – 50 × 3,7 – PVC-HI 1

Continued on pages 2 to 7

Table 1. Pipe series (see tables 2 and 3 for limit deviations)

d	Series											
	1		2		3		4		5		6	
	Pressure rating											
	5)		PN 4		PN 6		PN 10		PN 16		6)	
	S ¹⁾											
62,5		25		16,667		10		6,25		4		
SDR ²⁾												
126		51		34,334		21		13,5		9		
s ³⁾	Mass 4), in kg/m ≈	s ³⁾	Mass 4), in kg/m ≈	s ³⁾	Mass 4), in kg/m ≈	s ³⁾	Mass 4), in kg/m ≈	s ³⁾	Mass 4), in kg/m ≈	s ³⁾	Mass 4), in kg/m ≈	
5	-	-	-	-	-	-	-	-	-	-	1	0,019
6	-	-	-	-	-	-	-	-	-	-	1	0,025
8	-	-	-	-	-	-	-	-	-	-	1	0,035
10	-	-	-	-	-	-	-	-	1	0,045	1,2	0,053
12	-	-	-	-	-	-	-	-	1	0,055	1,4	0,073
16	-	-	-	-	-	-	-	-	1,2	0,09	1,8	0,123
20	-	-	-	-	-	-	-	-	1,5	0,137	2,3	0,196
25	-	-	-	-	-	-	1,5	0,174	1,9	0,212	2,8	0,294
32	-	-	-	-	-	-	1,8	0,264	2,4	0,342	3,6	0,482
40	-	-	-	-	1,8	0,334	1,9	0,35	3	0,525	4,5	0,75
50	-	-	-	-	1,8	0,422	2,4	0,552	3,7	0,809	5,6	1,16
63	-	-	-	-	1,9	0,562	3	0,854	4,7	1,29	7	1,82
75	-	-	1,8	0,642	2,2	0,782	3,6	1,22	5,6	1,82	8,4	2,6
90	-	-	1,8	0,774	2,7	1,13	4,3	1,75	6,7	2,61	10	3,7
110	1,8	0,95	2,2	1,16	3,2	1,64	5,3	2,61	8,2	3,9	12,3	5,57
125	1,8	1,08	2,5	1,48	3,7	2,13	6	3,34	9,3	5,01	13,9	7,13
140	1,8	1,21	2,8	1,84	4,1	2,65	6,7	4,18	10,4	6,27	15,6	8,96
160	1,8	1,39	3,2	2,41	4,7	3,44	7,7	5,47	11,9	8,17	17,8	11,7
180	1,8	1,57	3,6	3,02	5,3	4,37	8,6	6,88	13,4	10,4	20	14,7
200	1,8	1,74	4	3,7	5,9	5,37	9,6	8,51	14,9	12,8	22,3	18,3
225	1,8	1,96	4,5	4,7	6,6	6,76	10,8	10,8	16,7	16,1	25	23
250	2	2,4	4,9	5,65	7,3	8,31	11,9	13,2	18,6	19,9	27,8	28,4
280	2,3	3,11	5,5	7,11	8,2	10,4	13,4	16,6	20,8	24,9	-	-
315	2,5	3,78	6,2	9,02	9,2	13,2	15	20,9	23,4	31,5	-	-
355	2,9	4,88	7	11,4	10,4	16,7	16,9	26,5	26,3	39,9	-	-
400	3,2	6,1	7,9	14,5	11,7	21,1	19,1	33,7	29,7	50,8	-	-
450	3,6	7,65	8,9	18,3	13,2	26,8	21,5	42,7	-	-	-	-
500	4	9,38	9,8	22,4	14,6	32,9	23,9	52,6	-	-	-	-
560	4,5	11,8	11	28,1	16,4	41,4	26,7	65,8	-	-	-	-
630	5	14,7	12,4	35,7	18,4	52,2	30	83,2	-	-	-	-
710	5,7	18,9	14	45,3	20,7	66,1	-	-	-	-	-	-
800	6,4	23,9	15,7	57,2	23,3	83,9	-	-	-	-	-	-
900	7,2	30,2	17,7	72,5	26,3	106	-	-	-	-	-	-
1000	8	37,1	19,7	89,6	29,2	131	-	-	-	-	-	-
1200	9,6	53,4	23,6	129	-	-	-	-	-	-	-	-
1400	11,2	72,7	27,5	175	-	-	-	-	-	-	-	-
1600	12,7	93,9	31,4	228	-	-	-	-	-	-	-	-

For 1) to 6), see page 3.

Table 2. Limit deviations for mean outside diameter

<i>d</i>	Limit deviations ⁷⁾	<i>d</i>	Limit deviations ⁷⁾	<i>d</i>	Limit deviations ⁷⁾	<i>d</i>	Limit deviations ⁷⁾
5 to 63	+ 0,2 0	280 to 315	+ 0,6 0	560	+ 1 0	900	+ 1,5 0
75 to 125	+ 0,3 0	355 to 400	+ 0,7 0	630	+ 1,1 0	1000	+ 1,6 0
140 to 200	+ 0,4 0	450	+ 0,8 0	710	+ 1,2 0	1200	+ 1,9 0
225 to 250	+ 0,5 0	500	+ 0,9 0	800	+ 1,3 0	1400	+ 2,2 0
						1600	+ 2,5 0

7) The values specified here have been calculated on the following basis: limit deviation = $0,0015 d + 0,1$ mm, with a minimum of + 0,2 mm, given to the nearest 0,1 mm.

The mean outside diameter is obtained by circumferential measurement, and in special cases, as the arithmetical mean of two or more pairs of outside diameter measurements taken at right angles to each other.

Footnotes to table 1.

$$1) S = \frac{\sigma_{v, zul}}{p_{e, zul}} \approx \frac{1}{2} \left(\frac{d}{s} - 1 \right)$$

$$2) \text{ Standard Dimension Ratio, } SDR = 2S + 1 \approx \frac{d}{s}$$

3) The pipe wall thickness, *s*, has been calculated (in line with the specifications given in ISO 161/1) on the basis of the equation:

$$s = \frac{p_{e, zul} \cdot d}{2\sigma_{v, zul} + p_{e, zul}}$$

where

$\sigma_{v, zul}$ is the permissible induced stress;

$p_{e, zul}$ is the permissible working pressure at 20 °C.

Numerical values have been given to the nearest 0,1 mm; values less than 0,005 mm are not to be rounded.

4) Mass has been calculated on the basis of an average density of 1,4 g/cm³, half the limit deviation for the wall thickness then being added to the nominal value. The numerical values have been given rounded to three decimal places.

5) Pipe series 1 has been established for ventilation system applications.

6) Pipe series 6 has been established for process engineering applications. Pipes belonging to this series shall withstand at least the pressures specified for series 5, calculation being based on an induced stress, σ , of 10 N/mm². To allow for welding and moulding, larger wall thicknesses have been specified for this series than for pipe series 5.

Table 3. Limit deviations for wall thickness

s	Limit deviations ⁸⁾	s	Limit deviations ⁸⁾
Up to 1	+ 0,3 0	Over 16 up to 17	+ 1,9 0
Over 1 up to 2	+ 0,4 0	Over 17 up to 18	+ 2 0
Over 2 up to 3	+ 0,5 0	Over 18 up to 19	+ 2,1 0
Over 3 up to 4	+ 0,6 0	Over 19 up to 20	+ 2,2 0
Over 4 up to 5	+ 0,7 0	Over 20 up to 21	+ 2,3 0
Over 5 up to 6	+ 0,8 0	Over 21 up to 22	+ 2,4 0
Over 6 up to 7	+ 0,9 0	Over 22 up to 23	+ 2,5 0
Over 7 up to 8	+ 1 0	Over 23 up to 24	+ 2,6 0
Over 8 up to 9	+ 1,1 0	Over 24 up to 25	+ 2,7 0
Over 9 up to 10	+ 1,2 0	Over 25 up to 26	+ 2,8 0
Over 10 up to 11	+ 1,3 0	Over 26 up to 27	+ 2,9 0
Over 11 up to 12	+ 1,4 0	Over 27 up to 28	+ 3 0
Over 12 up to 13	+ 1,5 0	Over 28 up to 29	+ 3,1 0
Over 13 up to 14	+ 1,6 0	Over 29 up to 30	+ 3,2 0
Over 14 up to 15	+ 1,7 0	Over 30 up to 31	+ 3,3 0
Over 15 up to 16	+ 1,8 0	Over 31 up to 32	+ 3,4 0

8) The values specified here have been calculated on the following basis: limit deviation = 0,1 s + 0,2 mm, given to the nearest 0,1 mm.
For s not greater than 10 mm, a local increase in wall thickness of up to + 0,2 s, and for s greater than 10 mm, of up to + 0,15 s is permitted. The mean from the measurements shall, however, still lie within the given limit deviations.

3 Form supplied

The pipes are to be supplied in specified lengths with limit deviations as specified in table 4.

Table 4. Limit deviations for pipe lengths

		Limit deviations ⁹⁾
Straight lengths	Up to 12 m long	± 10 mm
	Over 12 m long	By agreement.

9) At a temperature of (23 ± 2) °C.

The pipe ends shall be cut as square as possible to the pipe axis.

The permissible percentage deficiency in the mass of pipes due to variations in density and utilization of the limit deviations shall be 9 % in the case of individual pipes, and 6 % for batches of 100 pipes.

4 Marking

Pipes that comply with this standard may be marked as follows:

	Example
a) manufacturer's trademark	xyz
b) quality or inspection mark	
c) material ¹⁰⁾ (moulding material)	PVC-U ¹⁰⁾
d) DIN number	DIN 8061/DIN 8062
e) pressure rating	PN 10
f) outside diameter	32
g) wall thickness	1,8
h) date of manufacture	231088
i) machine number	7

It is recommended that the marking be applied at intervals of 1 m.

10) Symbol as specified in DIN 7728 Part 1.

Standards referred to

- DIN 7728 Part 1 Plastics; symbols for polymers and their specific properties
 DIN 8061 Unplasticized polyvinyl chloride pipes; general quality requirements and testing
 ISO 161/1—1978 Thermoplastics pipes for the transport of fluids; nominal outside diameters and nominal pressures; metric series

Other relevant standards and documents

- DIN 2401 Part 1 Components subject to internal or external pressure; pressure and temperature data; terminology, pressure ratings
 DIN 8063 Part 1 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; socket bends; dimensions
 DIN 8063 Part 2 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; injection-moulded bends for bonding; dimensions
 DIN 8063 Part 3 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; pipe couplings; dimensions
 DIN 8063 Part 4 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; nipples, flanges and sealing elements; dimensions
 DIN 8063 Part 5 (at present at the stage of draft) Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; general quality requirements, testing
 DIN 8063 Part 6 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; injection-moulded elbows for bonding; dimensions
 DIN 8063 Part 7 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; injection-moulded tees and junctions for bonding; dimensions
 DIN 8063 Part 8 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; injection-moulded sockets, caps and nipples for bonding; dimensions
 DIN 8063 Part 9 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; injection-moulded reducers for bonding; dimensions
 DIN 8063 Part 10 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; wall discs; dimensions
 DIN 8063 Part 11 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; bushings with copper-zinc-alloy primary element for bonding; dimensions
 DIN 8063 Part 12 Pipe joint assemblies and fittings for unplasticized polyvinyl chloride (PVC-U) pressure pipes; dimensions for flanged and socket fittings; dimensions
 DIN 19531 Unplasticized polyvinyl chloride (PVC-U) socket pipes and fittings for drains and sewers inside buildings; dimensions, technical delivery conditions
 DIN 19532 Unplasticized polyvinyl chloride (PVC-U) pipes for drinking water supply; pipes, pipe joints, fittings (DVGW Code of practice)
 DIN 19534 Part 1 Unplasticized polyvinyl chloride (PVC-U) socket pipes and fittings for drains and sewers; dimensions
 DIN 19534 Part 2 Unplasticized polyvinyl chloride (PVC-U) socket pipes and fittings for drains and sewers; technical delivery conditions
 Supplement 1 to
 DIN 8061 Unplasticized polyvinyl chloride pipes; chemical resistance of PVC-U pipes and fittings

Previous editions

DIN 8062: 07.41x, 03.59, 07.60x, 09.66, 04.71, 02.74.

Amendments

The following amendments have been made to the February 1974 edition.

- a) The title has been amended.
- b) The range of diameters has been extended to include 1600 mm.
- c) The specifications for permissible working pressures at elevated temperature have been revised.
- d) The standard has been editorially revised.
- e) The symbols used to designate plastics material have been amended in line with DIN 7728 Part 1, and the standard designation has been changed accordingly.

Explanatory notes

This standard has been prepared by *FNK* Subcommittee 504.1 *Außendurchmesser und Betriebsüberdrücke*. In content, it is in substantial agreement with ISO 161/1 – 1978, Thermoplastics pipes for the transport of fluids; nominal outside diameters and nominal pressures; metric series.

The present standard comprises in its specifications the normal delivery programme of unplasticized polyvinyl chloride pipes for all fields of application, arranged in order of size. The diameters and other specifications for pipe series 1 and 6 have been selected with a view to achieving the desired level of interchangeability for the various applications while at the same time satisfying the

demands of trade and industry for a limitation of the size range in the interests of more efficient production and stock management.

The parameters specified in the top section of table 1 for *S* and *SDR* are intended to facilitate the use of this standard in international trade and to simplify the pipe design (cf. footnotes 1 and 2 on page 3).

The series of outside diameters is based on preferred numbers. The masses have been calculated taking the average density as 1,4 g/cm³, rounded at the last decimal place.

The permissible induced stress, $\sigma_{v,zul}$, is derived from the creep strength, relevant values for which have been estab-

Table 5. Permissible working pressures for pipes transporting water

Temperature, in °C	Design service life, in years	Series							
		2		3		4		5	
		Pressure rating							
		PN 4		PN 6		PN 10		PN 16	
Permissible working pressure ¹¹⁾									
		PVC-U PVC-HI2	PVC-HI1	PVC-U PVC-HI2	PVC-HI1	PVC-U PVC-HI2	PVC-HI1	PVC-U PVC-HI2	PVC-HI1
10	1	5,3		7,9		13,2		21,1	
	5	5		7,4		12,4		19,8	
	10	4,8		7,2		12		19,2	
	25	4,7		7,1		11,8		18,9	
	50	4,6		7		11,6		18,6	
20	1	4,8		7,2		12		19,2	
	5	4,5		6,7		11,2		17,9	
	10	4,3		6,5		10,8		17,3	
	25	4,1		6,2		10,3		16,5	
	50	4		6		10		16	
30	1	3,9		5,8		9,7		15,5	
	5	3,6		5,4		9		14,4	
	10	3,5		5,3		8,8		14,1	
	25	3,3		5		8,3		13,3	
	50	3,2		4,8		8		12,8	
40	1	3		4,6		7,6		12,2	
	5	2,7		4,1		6,8		10,9	
	10	2,6		4		6,6		10,6	
	25	2,6		3,8		6,4		10,2	
	50	2,5		3,8		6,3		10,1	
50	1	2,1	2,8	3,2	4,2	5,3	7	8,5	11,2
	5	1,9	2,5	2,9	3,7	4,8	6,2	7,7	9,9
	10	1,8	2,4	2,7	3,6	4,5	6	7,2	9,6
	25	1,7	2,2	2,5	3,4	4,3	5,7	6,8	9,1
	30	1,7	2,2	2,5	3,4	4,2	5,6	6,7	9
60	1	1,4	2,3	2,1	3,5	3,5	5,8	5,6	9,3
	5	1,2	2,1	1,8	3,2	3	5,3	4,8	8,5
	10	1,1	2	1,7	3,1	2,8	5,1	4,5	8,2
	25	1	1,9	1,5	2,9	2,6	4,8	4,1	7,7
	30	1	1,9	1,5	2,9	2,5	4,8	4	7,7

¹¹⁾ These pressures do not apply for pipes exposed to UV radiation. The effect of such radiation can be considerably reduced for up to ten years of service life by the inclusion of suitable additives (e.g. soot) in the moulding material. Pipes used in drains and sewers shall comply with the specifications of DIN 19 531 and DIN 19 534 Parts 1 and 2.

lished in long-term tests relating to a service life of fifty years. A value of 10 N/mm² has been specified for $\sigma_{v,zul}$ at 20°C for PVC-U and type 2 PVC-HI pipes (including a safety factor of 2,5) and for type 1 PVC-HI pipes (including a safety factor of 1,4) which comply with the general requirements specified in DIN 8061.

When pipes complying with this standard are to be used for a given application, the nominal diameters and working pressures generally required for that application shall be determined, and use of the corresponding pipes from this standard specified in the relevant standards or other regulations.

According to current knowledge of the long-term behaviour of unplasticized polyvinyl chloride, the pipes dealt

with in this standard will withstand the working pressures specified in table 5.

The effect of frost should be taken into account during transport and laying of pipes, since their impact resistance decreases with falling temperature.

Table 6 shall be consulted when using PVC-U pipes for the transport of fluids which may represent a special hazard if incorrectly handled. In such cases, it is recommended that further information be requested from the pipe manufacturer.

The marking specified in clause 4 shall not be applied to pipes that are dealt with in standards for special applications.

Table 6. Permissible working pressures for pipes transporting fluids to which PVC-U is resistant

Fluid transported	Temperature, in °C	Series					
		1	2	3	4	5	6
		Pressure rating					
		–	PN 4	PN 6	PN 10	PN 16	–
		Permissible working pressure					
Water and other fluids to which PVC-U is resistant 12) and which do not represent a hazard even if incorrectly handled.	≤ 20	5)	4	6	10	16	6)
Water and other fluids to which PVC-U is resistant 12) and which represent a special hazard if incorrectly handled.	≤ 20	5)	2,5	3,8	6	10	6)
Allowance shall be made in pipe applications for electrostatic charges which may occur in some circumstances. Refer to the guidelines on the prevention of hazards from electrostatic charges set out in <i>Richtlinie</i> (Code of practice) No. 4 issued by the <i>Berufsgenossenschaft der chemischen Industrie</i> (Employers' Liability Insurance Association of the Chemical Industry), Weinheim. For 5) and 6), see page 3. 12) Supplement 1 to DIN 8061 provides additional information in this respect.							

International Patent Classification

F 16 L 9/12