

Threaded unplasticized polyvinyl chloride (PVC-U) water well filter pipes and casings

Part 3: DN 250 to DN 400 pipes with trapezoidal thread

DIN
4925-3

ICS 23.040.20

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edition.

Filter- und Vollwandrohre aus weichmacherfreiem Polyvinylchlorid
(PVC-U) für Brunnen – Teil 3: DN 250 bis DN 400 mit Trapezgewinde

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.

All dimensions are in mm.

Foreword

This standard has been prepared by Technical Committee IV 11 of the *Normenausschuß Wasserwesen* (Water Practice Standards Committee).

Amendments

This standard differs from the November 1990 edition as follows:

- a) The standard has been completely revised.
- b) Provision of a type 2.1 inspection document to verify compliance with the material requirements has been specified.
- c) A further series of pipes with a larger wall thickness has been included.
- d) The range of perforation widths has been extended to include a width of 1 mm, and the range of effective lengths has been extended to include a length of 1 m.
- e) The dimensions of ring seals have been amended.

Previous editions

DIN 4925-3: 1981-09, 1987-10, 1990-11.

1 Scope

This standard specifies dimensions and requirements for DN 250 to DN 400 unplasticized polyvinyl chloride (PVC-U) filter pipes and casings with trapezoidal thread for use in well construction.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the titles of the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

DIN 103-1	ISO metric trapezoidal screw threads – Thread profiles
DIN 6164-1	DIN colour chart – System based on the 2° standard colorimetric observer
DIN EN 10204	Inspection documents for metallic products (includes Amendment A1 : 1995)
DIN EN ISO 178	Determination of the flexural properties of plastics (ISO 178 : 1993)
DIN EN ISO 179	Plastics – Determination of Charpy impact strength (ISO 179 : 1993)

Continued on pages 2 to 7.

Translation by DIN-Sprachendienst.

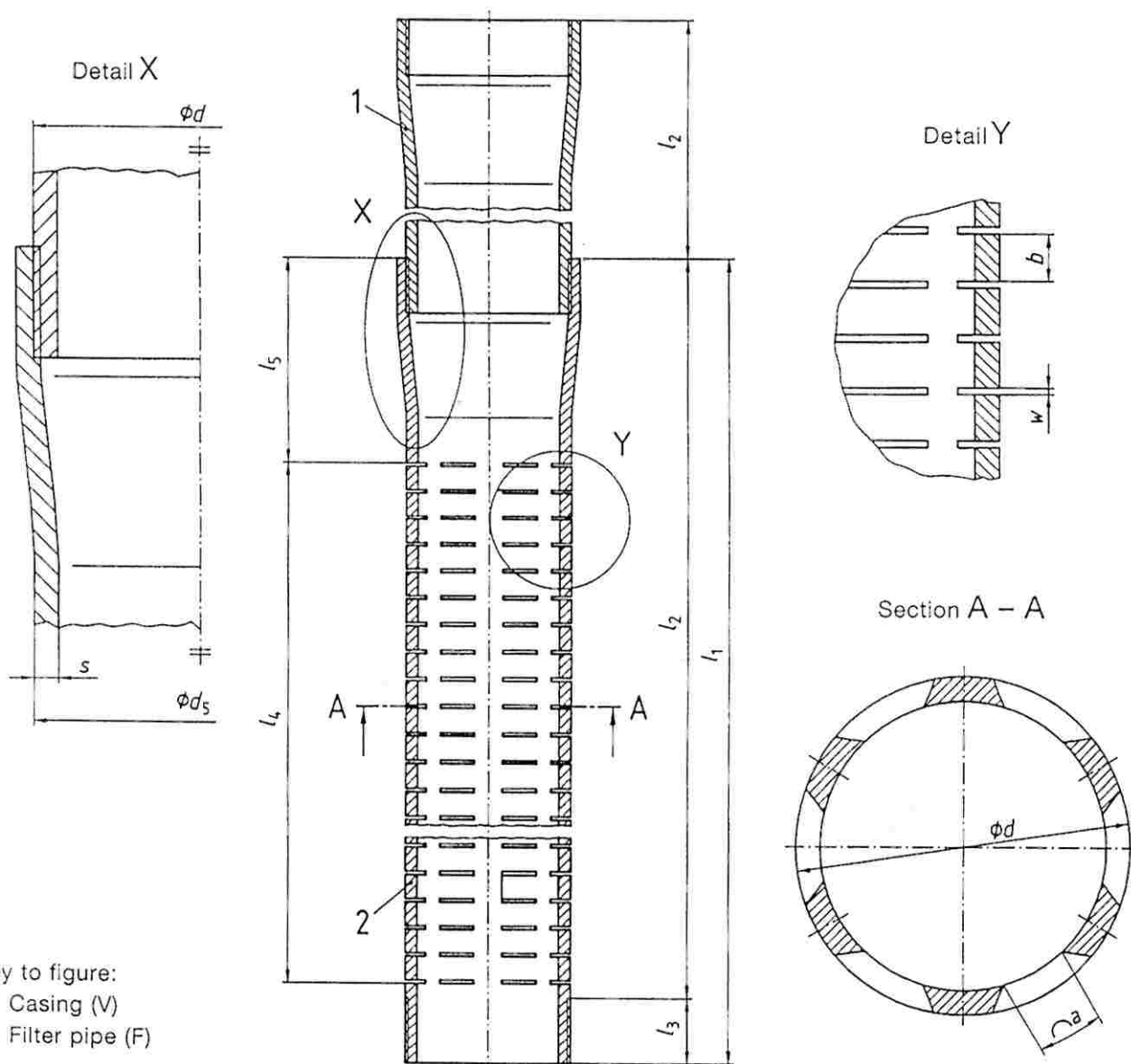
In case of doubt, the German-language original should be consulted as the authoritative text.

DIN EN ISO 527-2 Determination of tensile properties of plastics – Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2 : 1993 + Corr 1 : 1994)

- [1] RAL-Farbbregister (RAL 840 HR Colour index)*)
- [2] KTW-Empfehlungen (KTW Recommendations) on the use of plastics in contact with drinking water, issued by the Bundesgesundheitsministerium (German Federal Ministry of Health): *Gesundheitliche Beurteilung von Kunststoffen und anderen nichtmetallischen Werkstoffen im Rahmen des Lebensmittel- und Bedarfsgegenständegesetzes für den Trinkwasserbereich* (Assessment of the standard of hygiene of plastics and other non-metallic materials according to the terms of the German Federal Foodstuffs Act as applied to drinking water), *Bundesgesundheitsblatt* (German Federal Health Gazette), 1977: 20(1), p. 10, and 20(9), p. 124.

3 Dimensions, designation, mass and pattern of perforations

l_2 is the effective pipe length after assembly, l_1 being equal to l_2 plus the thread length, l_3 .



Key to figure:
 1 Casing (V)
 2 Filter pipe (F)

Figure 1: Casing and filter pipe assembly
 (example of a pipe with a six-perforation pattern)

Designation of a DN 300 PVC-U filter pipe with trapezoidal thread (F), with a wall thickness, s , of 14,5 mm, an effective length, l_2 , of 3 000 mm and a perforation width, w , of 2 mm:

Pipe DIN 4925-3 – F 300 × 14,5 × 3 000/2

Designation of a DN 300 PVC-U casing with trapezoidal thread (V), with a wall thickness, s , of 14,5 mm and an effective length, l_2 , of 2 000 mm:

Pipe DIN 4925-3 – V 300 × 14,5 × 2 000

*) Obtainable from *Beuth Verlag GmbH*, D-10772 Berlin.

Table 1: Dimensions and mass

Nominal size DN	Check plug diameter ¹⁾	d		d _s	s		l ₃ ²⁾	Casings and filter pipes			l ₅ +30 0	l ₄ (± 50) For a reference length, l ₂ , of				
		Nominal size	Limit deviations		Nominal size	Limit deviations		1 000	2 000	3 000		4 000	1 000	2 000	3 000	4 000
250	243	280	+0,5 0	297	12,5	+1,5 0	88,5	16,9	32,4	48,0	63,5	220	640	1 640	2 640	3 640
	236				16,0	+1,6 0		21,2	40,8	60,4	80,0					
300	290	330	+0,6 0	350	14,5	+1,7 0	88,5	23,0	44,3	65,6	86,8	220	640	1 640	2 640	3 640
	281				19,0	+2,0 0		29,7	57,1	84,5	112,0					
350	350	400	+0,7 0	425	17,5	+2,0 0	88,5	33,7	64,8	95,8	126,8	240	620	1 620	2 620	3 620
	342				21,5	+2,4 0		40,9	78,6	116,2	153,9					
400	395	450	+0,8 0	475	19,5	+2,2 0	99	42,6	81,5	120,5	159,4	240	620	1 620	2 620	3 620
	387				23,5	+2,6 0		50,3	97,2	143,6	190,0					

1) The values apply for a check plug length of 100 mm.

2) See clauses 6 and 7 for thread and ring seal details.

3) In specifying the mass, no deductions have been made for the perforations.

Table 2: Dimensions and pattern of perforations

		Perforation width, w		$0,75^{+0,2}_0$	$1,0^{+0,2}_0$	$1,5^{+0,2}_0$	$2,0^{+0,2}_0$	$3,0^{+0,3}_0$
Nominal size DN	Pipe dimensions, $d \times s$	n min.	$\sum na$ $\pm 5\%$	f , as a percentage				
250	280 × 12,5	6	450	7,6	7,9	8,1	10,2	12,5
	280 × 16,0		435					
300	330 × 14,5		530	7,6	7,9	8,1	10,2	12,5
	330 × 19,0		512					
350	400 × 17,5	8	640	—	7,9	8,1	10,2	12,5
	400 × 21,5		626					
400	450 × 19,5		720	—	7,9	8,1	10,2	12,5
	450 × 23,5		706					
Rib width, $b^1)$				5,5	6,8	9,5	9,5	11,0

1) For every metre of filter pipe length, ten ribs up to 2 mm wider are permitted.
Key to symbols:
 f Approximate total effective perforations area (with na and w in the middle of the tolerance zone)
 $\sum na$ Total length of perforations in one plane
 n Minimum number of perforations in one plane

4 Materials

Filter pipes and casings shall be made of PVC-U as specified in table 3, without fillers. The type and quantities of vinyl chloride polymers, stabilizers, lubricants and other additives (e.g. pigments) to be added to the moulding compound shall be at the manufacturer's discretion. Moulding compounds of unknown composition shall not be used.

The manufacturer shall, on request, provide a type 2.1 inspection document (certificate of compliance with the order) as specified in DIN EN 10204.

Table 3: Material requirements

Property	Unit	Required value	Testing as in
Impact strength	—	10 % max.**)	*)
Notched impact strength	kJ/m ²	3 to 5	DIN EN ISO 179
Yield point	N/mm ²	45 to 55	DIN EN ISO 527-2
Elastic modulus	N/mm ²	2 500 to 3 000	DIN EN ISO 178

*) The method used shall be based on DIN EN ISO 179.
**) Not more than 10 % of the specimens shall fracture.

5 Requirements

5.1 General

The internal and external surfaces of pipes and casings shall be smooth, free from blistering, sink marks, and any inhomogeneities likely to impair their performance. Slight irregularities such as shallow grooves are permitted provided the nominal wall thickness is not less than the specified value at any point.

Pipes and casings should be dyed blue throughout (e.g. colour DIN 6164 – 17,3 : 5,1 : 2,5, corresponding to colour RAL 5015 as in Farbregister RAL 840 HR [1]), slight deviations from this colour being permitted.

Subject to agreement, filter pipes may be given a gravel jacket which shall overlap the perforated section by at least 20 mm at either end.

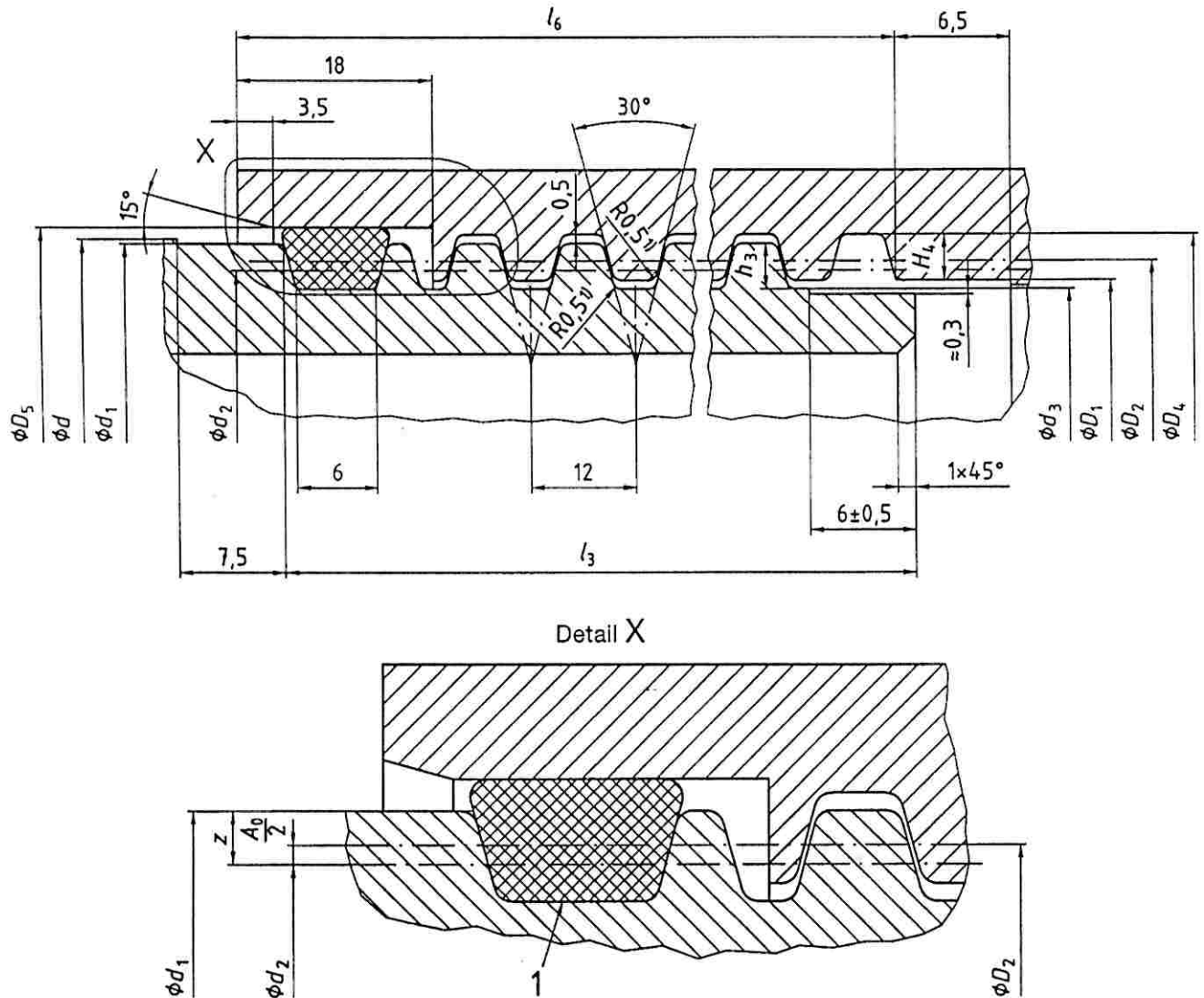
5.2 Physiological safety

Pipes, casings, fittings and jointing materials shall not release harmful substances into the drinking water in such amounts as are likely to affect the taste, odour or colour of the water. Algal or microbial growth in the water shall not be stimulated (cf. the relevant KTW-Empfehlungen [2]).

6 Screw thread

The thread used shall have a profile (except for thread height and flank clearance) as specified in the April 1977 edition of DIN 103-1.

Other design details are left unspecified.



1 Ring seal groove (profile differs from thread profile)

Figure 2: Metric thread profile

Designation of a flat metric trapezoidal thread (TR) for filter pipes and casings with an outside diameter of 280 mm, with flank clearance and a 12 mm pitch:

Thread DIN 4925-3 – TR 280 × 12

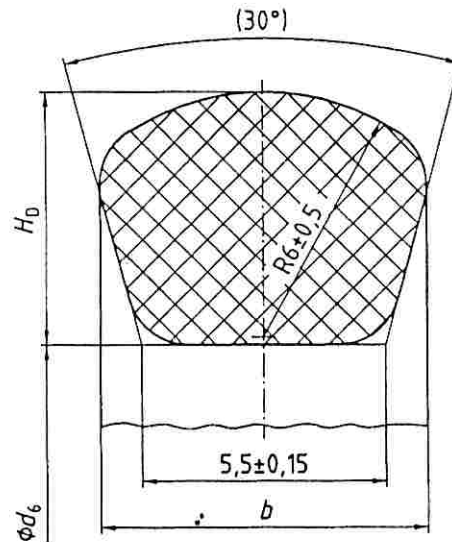
1) A 0,5 × 45° chamfer may be substituted for radius R 0,5.

Table 4: Thread dimensions

Nominal size DN	Outside diameter, d	d_1	d_2	d_3	D_1	D_2	D_4	D_5	Z	$(h_3 = H_4)$	l_3	l_6
		$\begin{matrix} 0 \\ -0,3 \end{matrix}$			$\begin{matrix} +0,3 \\ 0 \end{matrix}$			$\begin{matrix} +0,3 \\ 0 \end{matrix}$		$\begin{matrix} 0 \\ -0,1 \end{matrix}$	$\begin{matrix} 0 \\ -4 \end{matrix}$	$\begin{matrix} +4 \\ 0 \end{matrix}$
250	280	278,0	273,0	269	270,0	275,0	279	279,8	2,50	4,5	88,5	92
300	330	327,0	322,0	318	319,0	324,0	328	328,8	2,50			
350	400	397,0	392,0	388	389,0	394,0	398	398,8	2,50			
400	450	446,0	439,5	434	435,0	441,5	447	448,4	3,25	6,0	99	104

7 Ring seals

Ring seals shall be continuous and made of acrylonitrile butadiene rubber (NBR) of $(70 \pm 5)^\circ$ Shore A hardness complying with the requirements specified in the relevant KTW-Empfehlungen [2]. Fitting of seals shall be in accordance with the manufacturer's instructions.



Edges to be rounded to a radius of $0,5 \pm 0,2$.

Figure 3: Ring seal

Designation of a ring seal for a DN 300 screwed pipe:

Seal DIN 4925-3 – 300

Table 5: Ring seal dimensions

Pipe or casing nominal size DN	Ring seal		
	Nominal size	Limit deviations	height, H
250	266,5	$\pm 1,2$	$6,2 \pm 0,15$
300	314,5	$\pm 1,2$	
350	384,0	$\pm 1,5$	
400	429,0	$\pm 2,0$	$8,2 \pm 0,2$

Other relevant standards

- DIN 2000 Central drinking water supply systems – Basic water quality requirements – Design, construction and operation of systems
- DIN 4922-1 Water well steel filter pipes with slotted perforations for connection by straps
- DIN 4922-2 DN 100 to DN 500 water well threaded steel filter pipes
- DIN 4922-3 DN 500 to DN 1000 water well flanged steel filter pipes
- DIN 4925-1 Threaded unplasticized polyvinyl chloride (PVC-U) water well filter pipes and casings – DN 35 to DN 100 pipes with Whitworth pipe thread
- DIN 4925-2 Threaded unplasticized polyvinyl chloride (PVC-U) water well filter pipes and casings – DN 100 to DN 200 pipes with trapezoidal thread