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Pipe Joints and Elements for High Density Polyethylene (HDPE) Pressure Pipelines

Types 1 and 2  
Pipe Bends of Segmental Construction for Butt-welding  
Dimensions

**DIN**  
**16 963**  
Part 1

Rohrverbindungen und Rohrleitungsteile für Druckrohrleitungen aus Polyethylen hoher Dichte (HDPE), Typ 1 und 2; in Segmentbauweise hergestellte Rohrbogen für Stumpfschweissung, Masse

Dimensions in mm

**1 Scope**

This Standard applies to pipe bends of high density polyethylene (HDPE), type 1 and type 2 which are constructed of segments from pipes in accordance with DIN 8074 Part 1 or Part 2, which are butt-welded with a heating element in accordance with DIN 1910 Part 3 or DVS 2207 to pipes of HDPE, type 1 and type 2 in accordance with DIN 8074 Part 1 or Part 2.

The pipe bends must conform to the requirements of DIN 16963 Part 5 or Part 25 \*). For technical reasons the pipe bends may only be welded to pipes of the same series in accordance with DIN 8074 Part 1 or Part 2. Deviation from this requirement is allowed if the wall thicknesses are equal in the welding zone.

*Note: Instead of the designation "Hard Polyethylene (hard PE)", the designation "High density polyethylene (HDPE)" was adopted in accordance with DIN 7728 Part 1, April 1978 edition.*

*The previously used short designation "Hard Polyethylene (hard PE)" may, however, continue to be used during the transitional period (e.g. the service life of the stamping tools for marking pipes and pipe elements).*

**2 Other relevant Standards**

- DIN 1910 Part 3 Welding; welding of plastics, methods
- DIN 8074 Part 1 Hard polyethylene (hard PE) pipes; type 1, dimensions
- DIN 8074 Part 2 High density polyethylene (HDPE) pipes; type 2, dimensions
- DIN 16963 Part 5 Pipe joints and elements of hard polyethylene (hard PE) for pressure pipelines; type 1, general quality requirements, testing
- DIN 16963 Part 25 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; type 2, general quality requirements, testing

\*) At present still in draft form

Continued on pages 2 and 3

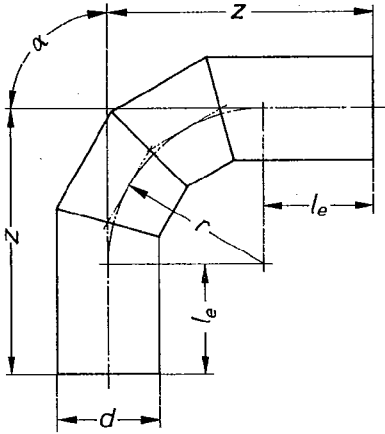
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**3 Dimensions, designation**

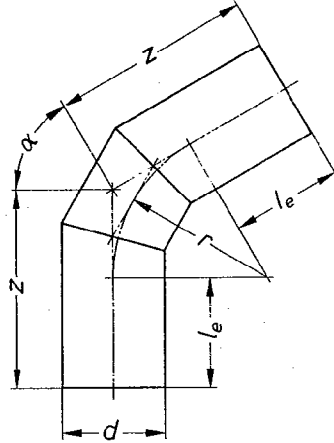
The pipe bends do not have to conform to the illustrations; only the specified dimensions must be adhered to.

**Pipe bend B1**

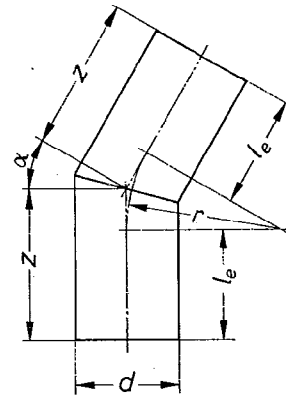
90° bend



60° + 45° bend



20° bend



Designation of a segmentally welded pipe bend B1 having an angle of 45° and external pipe diameter  $d = 140$  mm of pipes of series 3 and type 2:

Bend DIN 16963 – B1 – 45 – 140 – 3 – 2

d	le min.	r <sup>1)</sup>	$\alpha$ $\pm 2^\circ$			
			90°	60°	45°	30°
			z min.	z min.	z min.	z min.
110	150	165	315	245	218	194
125		188	338	258	228	200
140		210	360	271	237	206
160		240	390	288	249	214
180		270	420	305	262	222
200		300	450	323	274	230
225		338	488	345	290	241
250	250	375	625	466	412	350
280		420	670	492	424	362
315	300	473	773	576	498	428
355		533	833	608	520	443
400		600	900	646	548	461
450		675	975	689	580	481
500	350	750	1100	783	665	551
560		840	1190	835	698	575
630		945	1295	896	741	603
710		1065	1415	965	792	636
800		1200	1550	1043	847	672
900	400	1350	1750	1179	960	762
1000		1500	1900	1266	1022	802

<sup>1)</sup>  $r = 1,5 d$

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**Further Standards and documents**

- DIN 7728 Part 1 Plastics; symbols for homopolymers, copolymers and polymer compounds
- DIN 8075 Part 1 Hard polyethylene (hard PE) pipes; type 1, general quality requirements, testing
- DIN 8075 Part 2 High density polyethylene (HDPE) pipes; type 2, general quality requirements, testing
- DIN 16963 Part 2 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, tee pieces and branch connections of segmental construction with necked ends for butt-welding, dimensions
- DIN 16963 Part 3 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, pipe bends for butt-welding, dimensions
- DIN 16963 Part 4 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, bushes, flanges and seals for butt-welding, dimensions
- DIN 16963 Part 6 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded fittings for butt-welding, dimensions
- DIN 16963 Part 7 (Preliminary Standard) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded fittings for resistance-welding, dimensions
- DIN 16963 Part 8 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded elbows for socket-welding, dimensions
- DIN 16963 Part 9 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded tee pieces for socket-welding, dimensions
- DIN 16963 Part 10 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded sockets and caps for socket-welding, dimensions
- DIN 16963 Part 11 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, bushes, flanges and seals for socket-welding, dimensions
- DIN 16963 Part 12 (Preliminary Standard) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded reducing sockets for joining resistance-welded fittings, dimensions
- DIN 16963 Part 13 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, turned and pressed reducing sockets for butt-welding, dimensions
- DIN 16963 Part 14 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded reducing sockets and nipples for socket-welding, dimensions
- DVS 2207 Welding thermoplastic plastics, hard PE (hard polyethylene) pipes and elements for gas and water pipelines 2)

2) Obtainable from Deutscher Verlag für Schweißtechnik GmbH (German Publishing House for Welding), Postfach 2725, 4000 Düsseldorf