kalinfo

kalenborn

The Wear Protection People

Lined Pipes for any Application ...

Kalenborn Company Standard Rd 6a (Extract, Issue 05/2010)

Hydraulic pipes

Pneumatic pipes

Design

The Kalenborn company standard Rd 6a for pipe components (straight pipes, pipe bends) is recommended for use for the reference values specified in this brochure, i.e.:

- pressure (PS):
  ⩽10 bar
  (up to 350 mm diameter),
  ⩽6 bar
  (for diameters
  above 350 mm)
- temperature:
  -10 °C up to +50 °C
  (14 °F up to 122 °F)

Kalenborn is capable of offering solutions for piping components and piping systems operating at higher pressures, higher temperatures and other specifications (incl. Pressure Equipment Directive PED 97/23/EG; AD2000 etc.).

The relevant design is based on the following parameters:

- pressure (PS)
- temperature
- material selected
  (pipe body)
- other influence / loads
- sealing and connecting
  elements

Kalenborn Company Standard Rd 6a

(Extract, Issue 05/2010)

Dimensions, designations

Designation of pipe, inside diameter (d) 60 mm, length (l) 1,000 mm as defined in Kalenborn company standard Rd 6a:

- pipe Rd 6a id 60 x 1,000

Designation of pipe, inside diameter (d) 60 mm, radius (r) 1,000 mm, angle (α) 90° as defined in Kalenborn company standard Rd 6a:

- pipe bend Rd 6a id 60; r 1,000; 90°

Dimensional tolerances

The dimensional tolerances specified in the Kalenborn company standard Rd 6a are in accordance with DIN EN 1092-1, DIN 1626, DIN ISO 13920 degree of accuracy A (but length tolerance up to 1,000 mm ± 2mm, up to 2,000 mm ± 3 mm, greater length ± 4 mm).

Materials

- pipes and flanges:
  unalloyed structural steel S235 JR; other material specifications feasible on request
- wear protection:
  taken from the Kalenborn material range – matched to the particular application

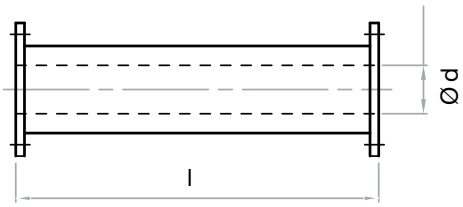
Corrosion protection (external surfaces)

- surface preparation:
  DIN EN ISO 12944-4 /
  DIN EN ISO 8501-1 – St 2 (manually cleaned)
- coating system:
  zinc phosphate primer, red brown (similar to RAL 3011) – NDFT 40 µm; suitable as transport protection

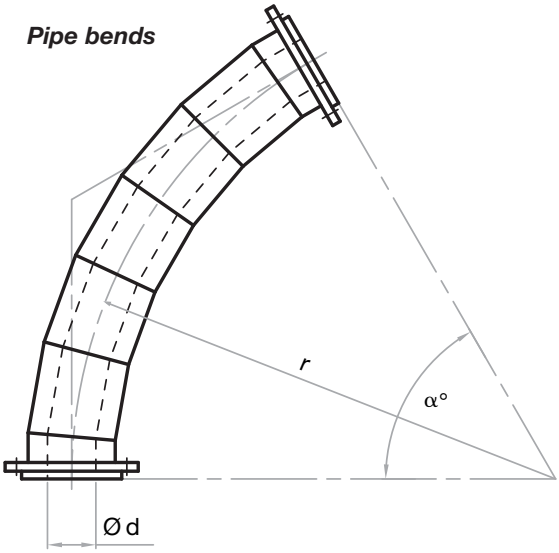
Other surface preparation methods or coating systems are feasible.

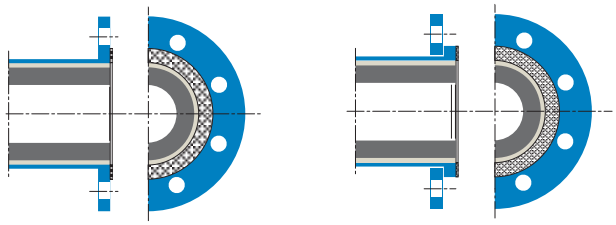
Flanges

Straight pipes are delivered with fixed flanges, pipe bends with fixed collars and turnable flanges. Other designs and other fixing systems are feasible on request.



Pipes





Pipe with fixed flange

Pipe with fixed collar and turnable flange

Gaskets

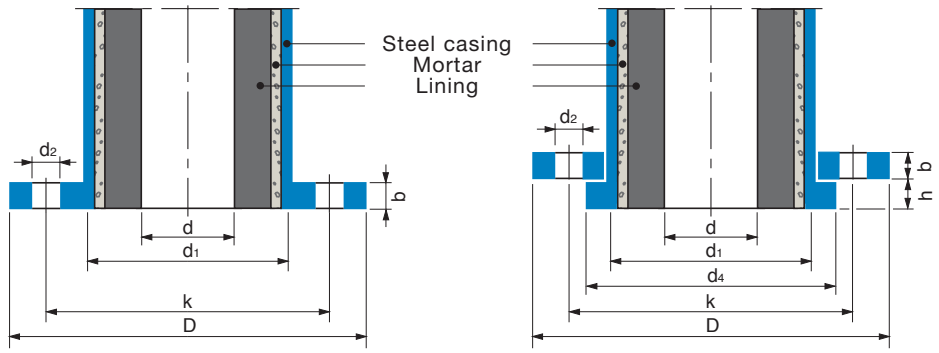
Recommended gasket geometry:

- outside diameter ≙
  outside diameter of the collar (d_4)
- inside diameter ≙
  outside diameter of the steel pipe (d_1)
- thickness ⩾ 2 mm

Connecting elements

When using soft material seals:

Element	Standard	Property class
Hexagon bolt	DIN ISO 4016	4.6
Hexagon nut	DIN ISO 4034	5



Pipes / bends with fixed flanges

Pipes / bends with fixed collars and turnable flanges

Pipes and bends		Flanges					Rings	
Lining inside Ø mm	Steel casing outside Ø * mm	Flange outside Ø mm	Bolt circle Ø mm	Number of holes	Holes Ø mm	Flange thickness mm	Ring outside Ø mm	Ring thickness mm
d	d_1	D	k		d_2	b	d_4	h
40	127	220	180	8	18	16	158	15
50	139,7	234	187	8	18	16	166	15
55	139,7	234	187	8	18	16	166	15
60	139,7	234	187	8	18	16	166	15
65	159	254	207	8	18	16	186	15
70	159	254	207	8	18	16	186	15
75	159	254	207	8	18	16	186	15
80	159	254	207	8	18	16	186	15
88	159	254	207	8	18	16	186	15
95	168,3	269	222	8	18	16	201	15
100	177,8	275	228	8	18	18	207	16
107	193,7	286	240	8	18	18	219	16
110	193,7	286	240	8	18	18	219	16
113	193,7	286	240	8	18	18	219	16
120	193,7	300	253	8	18	18	232	17
125	193,7	313	266	8	22	18	241	17
132	219,1	313	266	8	22	18	241	17
146	219,1	327	280	8	22	18	255	17
150	219,1	327	280	8	22	18	255	17
162	244,5	347	300	8	22	18	275	17
170	255	372	323	8	22	19	298	18
175	255	372	323	8	22	19	298	18
178	255	372	323	8	22	19	298	18
183	255	372	323	8	22	19	298	18
190	273	404	353	8	22	19	328	18
200	273/290	404	353	8	22	19	328	18
205	273/290	404	353	8	22	19	328	18
225	315	430	379	12	22	19	354	18
242	323,9/345	460	410	12	22	24	382	19
250	323,9/345	460	410	12	22	24	382	19
260	355,6	490	440	12	22	24	413	19
275	355,6	490	440	12	22	24	413	19
280	355,6	490	440	12	22	24	413	19
294	385	516	465	12	22	24	440	19
300	385/406,4	516	465	12	22	24	440	19
311	406,4	516	465	12	22	24	440	19
325	420	545	495	12	22	24	470	24
350	435	568	517	16	22	24	490	24
375	457	588	537	16	22	24	510	24
400	485	618	567	16	22	28	535	24
430	515	648	592	16	22	28	565	24
450	540	668	618	20	22	29	585	24
475	590	730	688	20	22	29	650	28
500	590	730	688	20	22	29	650	28
525	610	755	705	20	22	29	670	28
610	711	860	810	24	26	29	775	28

* First figure for pipes, second figure for bends.

Issue 05/2010, technical changes and errors are reserved.

kalinfo

An Optimal Solution for Every Application:

Kalenborn Lining Materials at a Glance

Lining		Material Hardness		Process Parameter				
		Mohs	Vickers HV *	Max. conveying velocity m/s	Material density g/cm^3	Max. temperature °C / °F **	Thermal shock resistance	Impact wear resistance
	**KALOCER** High alumina ceramics	9.1	(2,100)	> 30	> 3.0	350 / 662	0	+
	**KALCOR** Zirconium corundum	9	(2,000)	> 30	> 3.0	800 / 1,472	++	++
	KALCOR-S Sintered Zirconium corundum	8.5	(1,600)	> 25		800 / 1,472	+++	++
	**ABRESIST** Fused cast basalt	8	(1,140)	22	≤ 3.0	350 / 662	0	+

* The Vickers HV values are only valid for metallic materials. Only comparative values (in parenthesis) have been given for other materials.

** The specified temperatures are only valid for standard applications.
Other temperatures shall be agreed upon with the technical departments of Kalenborn.

Info Rd 6a · GB · 2000 · K/PE · 06/10 ·

Kalenborn Kalprotect
Tel. +49(0) 26 45.18-0
Fax +49(0) 26 45.18-112/180 (International)
kalenborn@kalenborn.de
www.kalenborn.de

kalenborn
The Wear Protection People