

Technical data

Quality	Dim.	AluSIK-60 ZA 10A	AluSIK-80 GA AluSIK-80 ZA H	AluSIK-60 ZB HE	AluSIK-99 GB AluSIK-99 ZA TEH	CarSIK-70 ZA	CarSIK-90 ZA
Chem./phys. Composition		Mullite	Corundum	Sillimanite	Sintered alumina	Mullite-bonded SiC	Mullite-bonded SiC
Type acc. to DIN VDE 0335		C 610	C 530	-	C 799	-	-
Chem. composition							
AL ₂ O ₃	%	60	80	60	99.7	70 SiC *	90 SiC *
Type of body		impervious	porous	porous	impervious	porous	porous
Bulk density	g/cm ³	2.7	2.4	2.3	3.8	2.1	2.2
Open porosity	%	0	27	22	0	25	25
Limit of application	°C	1600	1500	1400	1750	1400	1450
Thermal expansion 20 – 1000 °C	10 ⁻⁶ K ⁻¹	5.5	5.8	6.5	8	5	5
Thermal conductivity 20 – 100 °C	W/mK	5	2	1.5	25	7	25
Thermal shock resistance		good	very good	good	medium-good	very good	very good
Spec. electric resistance at RT	Ω cm	10 ¹³	-	-	10 ¹⁴	-	-
600 °C		10 ⁶	10 ⁶	10 ⁶	10 ⁸	-	-
Max. production length for tubes	mm	3000	3000	3000	3000	2200	1900

* Addition of SiC to mix

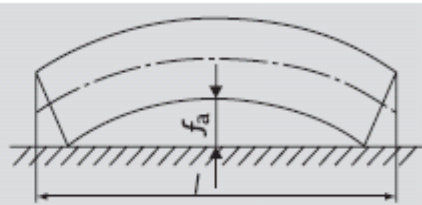
		AluSIK-90 TA	MagSIK-96 TC	ZirSIK-95 TA
Chemical analysis		AL ₂ O ₃ 90 %	MgO 96 %	ZrO ₂ 95 % CaO 4 %
Bulk density	g/cm ³	2.5	2.8	4.3
Open porosity	%	27	25	25
Limit of application	°C			
▪ oxidizing		1750	2400	2400
▪ reducing		1600	1700	2100
▪ vacuum		-	1600	2200
Thermal conductivity 20 – 100 °C	W/mK	3	13	2
Thermal expansion 20 – 1000 °C	10 ⁻⁶ K ⁻¹	7.5	-	9.6

Above values were established on test pieces and identify the characteristic data of our products.

Transfer of these values into practice depends on individual geometry and application of each part.

Diameter tolerances – deflectional tolerances

without grinding to DIN 40 680, issue 1983

Nominal dimensional range for diameter or length in mm			Degree of accuracy			Nominal dimensional range for length in mm			Degree of accuracy		
			coarse		medium				coarse		medium
			Permissible deviation in mm		Permissible deviation in mm				Permissible deflection f_a in mm		
	up to	4	± 0.4		± 0.15		up to	30	± 1.7	± 0.15	
above	4	up to 6	± 0.6		± 0.20	above	30	up to 40	± 1.8	± 0.20	
above	6	up to 8	± 0.7		± 0.25	above	40	up to 50	± 1.9	± 0.25	
above	8	up to 10	± 0.8		± 0.30	above	50	up to 60	± 2.0	± 0.30	
above	10	up to 13	± 1.0		± 0.35	above	60	up to 70	± 2.1	± 0.35	
above	13	up to 16	± 1.2		± 0.40	above	70	up to 80	± 2.1	± 0.40	
above	16	up to 20	± 1.2		± 0.45	above	80	up to 90	± 2.2	± 0.45	
above	20	up to 25	± 1.5		± 0.50	above	90	up to 100	± 2.3	± 0.50	
above	25	up to 30	± 1.5		± 0.55	above	100	up to 110	± 2.4	± 0.55	
above	30	up to 35	± 2.0		± 0.60	above	110	up to 125	± 2.5	± 0.65	
above	35	up to 40	± 2.0		± 0.65	above	125	up to 140	± 2.6	± 0.70	
above	40	up to 45	± 2.0		± 0.70	above	140	up to 155	± 2.7	± 0.80	
above	45	up to 50	± 2.5		± 0.80	above	155	up to 170	± 2.9	± 0.85	
above	50	up to 55	± 2.5		± 0.90	above	170	up to 185	± 3.0	± 0.90	
above	55	up to 60	± 2.5		± 1.00	above	185	up to 200	± 3.1	± 1.00	
above	60	up to 70	± 3.0		± 1.20	above	200	up to 250	± 3.5	± 1.25	
above	70	up to 80	± 3.5		± 1.40	above	250	up to 300	± 3.9	± 1.50	
above	80	up to 90	± 4.0		± 1.60	above	300	up to 350	± 4.3	± 1.75	
above	90	up to 100	± 4.5		± 1.80	above	350	up to 400	± 4.7	± 2.00	
above	100	up to 110	± 5.0		± 2.00	above	400	up to 450	± 5.1	± 2.25	
above	110	up to 125	± 5.5		± 2.20	above	450	up to 500	± 5.5	± 2.50	
above	125	up to 140	± 6.0		± 2.50	above	500	up to 600	± 6.3	± 3.00	
above	140	up to 155	± 6.5		± 2.80	above	600	up to 700	± 7.1	± 3.50	
above	155	up to 170	± 7.0		± 3.00	above	700	up to 800	± 7.9	± 4.00	
above	170	up to 185	± 7.5		± 3.40	above	800	up to 900	± 8.7	± 4.50	
above	185	up to 200	± 8.0		± 3.80	above	900	up to 1000	± 9.5	± 5.00	
above	200	up to 250	± 9.0		± 4.20	above	1000		± 1.5+0.8% x L	± 0.5% x L	
above	250	up to 300	± 10.0		± 4.60	Manufacturing method			Degree of accuracy		
above	300	up to 350	± 11.0		± 5.00				coarse		medium
above	350	up to 400	± 12.0		± 5.50	Cast and extruded for parts Ø 30 mm and above		application			
above	400	up to 450	± 13.0		± 6.10			customary			
above	450	up to 500	± 14.0		± 6.80	extruded for parts up to Ø 30 mm			application customary		
above	500	up to 600	± 15.0		± 7.60						
above	600	up to 700	± 16.0		± 8.30						
above	700	up to 800	± 17.5		± 9.00						
above	800	up to 900	± 19.0		± 9.50						
above	900	up to 1000	± 20.0		± 10.00						
above	1000		± 0.02 x D		± 0.01 x D						
Accuracy			coarse			medium					
DIN VDE 0335, Type			530	610	799	530	610	799			
Manufacturing method											
cast, extruded Ø 30 mm and above			•	•	•						
extruded up to Ø 30 mm						•	•	•			

Owing to a modern process control system we are able to achieve values on diameter, length and bending which are considerably better than standardized. Should you require smaller tolerances, please send us your inquiry. Those data stipulated for the "coarse" degree of accuracy do not apply for the first production, for which instead we have to come to a special agreement.

• Manufacturing method customary

Mullite tubes, AluSIK-60 ZA type C 610 “10 A”

Order No.	Diameter mm
R 001	1.5 x 0.8
R 002	2 x 1
R 003	3 x 1.5
R 004	3 x 2
R 005	4 x 2
R 006	5 x 3
R 007	6 x 4
R 008	7 x 4
R 009	8 x 5
R 010	9 x 6
R 011	10 x 7
R 012	11 x 7
R 013	12 x 8
R 014	14 x 10
R 015	15 x 11
R 016	16 x 12
R 017	17 x 13
R 018	18 x 14
R 019	19 x 13
R 020	19 x 15
R 021	20 x 15
R 022	22 x 18
R 023	22 x 15
R 024	24 x 19
R 025	26 x 20
R 026	28 x 20
R 027	28 x 23
R 028	30 x 23
R 029	30 x 25
R 030	32 x 26
R 031	33 x 28
R 032	36 x 30
R 033	38 x 30
R 034	40 x 32
R 035	43 x 37
R 036	46 x 40
R 037	48 x 40
R 038	50 x 40
R 039	50 x 42
R 040	54 x 46
R 041	60 x 50
R 042	66 x 56
R 043	70 x 60
R 044	75 x 65
R 045	80 x 70
R 046	90 x 76
R 047	95 x 80
R 048	105 x 90
R 049	115 x 100



Larger resp. other dimensions upon inquiry.

Two-bore and four-bore insulating tubes

AluSIK-60 ZA, type C 610 "10 A"

Order No.	Bores	Outer diameter mm	Inner diameter mm
R 050	2	2.2	0.5
R 051	2	3	0.8
R 052	2	3 x 2 oval	0.8
R 053*	2	4	1
R 054*	2	6	1.8
R 055*	2	7.5 x 4.5 oval	2.3
R 056*	2	8	2
R 057*	2	8.5	2.5
R 058*	2	10	2.7
R 059*	2	12	3
R 060*	2	15.5	4.5
R 061*	4	5.5	1.2
R 062*	4	8.5	1.5
R 063*	4	9	2.5
R 064*	4	11	2.5
R 065*	2	12 x 8 oval	4

**Also available with one or two slots.*



Larger resp. other dimensions upon inquiry.

Insulating tubes for thermocouples

AluSIK-60 ZA, type C 610 “10 A”

in lengths: A = 5 mm, B = 10 mm, C = 25 mm, D = 50 mm, E = 75 mm, F = 100 mm
with **one** bore

Order No.	Outer diameter mm	Inner diameter mm
R 070*	1	0.5
R 071*	1.5	0.8
R 072*	2	1
R 073	2.7	1.7
R 074	3	1.2
R 075	3.5	2.5
R 076	4	2
R 077	5	3
R 078	6	4
R 079	7	4.5

**Available only in lengths 25 and 50 mm.*



with **two and four** bores

Order No.	Bores	Outer diameter mm	Inner diameter mm
R 080*	2	2.2	0.5
R 081*	2	3	0.8
R 082	2	4	1
R 083	4	4.5	1
R 084	4	5.5	1.2
R 085	2	6	1.8
R 086*	2	8	2
R 087*	2	8.5	2.5
R 088*	4	8.5	1.5
R 089*	2	10	2.7
R 090*	2	12 x 8 oval	4
R 091*	2	3 x 2 oval	0.8
R 092*	2	5 x 3 oval	1.6
R 093*	2	7.5 x 4.5 oval	2.3
R 094*	4	9	2.5

**Available only in lengths 25 and 50 mm.*



Larger resp. other dimensions upon inquiry.

Sintered alumina tubes, AluSIK-99 ZA type C 799 “TEH”

Order No.	Diameter mm
R 200	1 x 0.5
R 201	1.5 x 0.8
R 202	2 x 1
R 203	3 x 1.5
R 204	4 x 2
R 205	5 x 3
R 206	6 x 3
R 207	7 x 4
R 208	8 x 5
R 209	10 x 6
R 210	11 x 7
R 211	12 x 8
R 212	15 x 10
R 213	17 x 12
R 214	20 x 15
R 215	24 x 18
R 216	27 x 20
R 217	30 x 23
R 218	32 x 25
R 219	35 x 27
R 220	38 x 30
R 221	42 x 34
R 222	46 x 38
R 223	50 x 40
R 224	58 x 48
R 225	65 x 55
R 226	70 x 60
R 227	75 x 65



Two-bore and four-bore insulating tubes AluSIK-99 ZA, type C 799 “TEH”

Order No.	Bores	Outer diameter mm	Inner diameter mm
R 250	2	2.2	0.5
R 251	2	3	0.8
R 252	2	3 x 2 oval	0.8
R 253*	2	4	1
R 254*	2	6	1.8
R 255*	2	8	2
R 256*	2	8.5	2.5
R 257*	2	10	2.7
R 258*	2	12	3
R 259*	2	15.5	4.5
R 260*	4	5.5	1.2
R 261*	4	8.5	1.5
R 262*	4	11	2.5
R 263*	2	12 x 8 oval	4

**Also available with one or two slots.*



Insulating tubes for thermocouples

AluSIK-99 ZA, type C 799 “TEH”

in lengths: A = 5 mm, B = 10 mm, C = 25 mm, D = 50 mm, E = 75 mm, F = 100 mm
with **one** bore

Order No.	Outer diameter mm	Inner diameter mm
R 270*	1	0.5
R 271*	1.5	0.8
R 272*	2	1
R 273	2.7	1.7
R 274	3	1.2
R 275	4	2
R 276	5	3
R 277	6	4
R 278	7	4.5

**Available only in lengths 25 and 50 mm.*



with **two and four** bores

Order No.	Bores	Outer diameter mm	Inner diameter mm
R 280*	2	3 x 2 oval	0.8
R 281*	2	3	0.8
R 282	2	4	1
R 283	4	4.5	1
R 284	4	5.5	1.2
R 285	2	6	1.8
R 286*	2	8	2
R 287*	2	8.5	2.5
R 288*	4	8.5	1.5
R 289*	2	12 x 8 oval	4

**Available only in lengths 25 and 50 mm.*



Larger resp. other dimensions upon inquiry.

Corundum tubes

AluSIK-80 ZA, type C 530 “H”

Order No.	Diameter mm
R 300	16 x 10
R 301	20 x 12
R 302	22 x 15
R 303	23 x 17
R 304	26 x 18
R 305	30 x 20
R 306	30 x 22
R 307	35 x 26
R 308	35 x 28
R 309	40 x 30
R 310	40 x 32
R 311	50 x 40
R 312	60 x 50
R 313	65 x 55
R 314	70 x 60
R 315	75 x 65
R 316	80 x 70
R 317	85 x 75
R 318	95 x 80
R 319	100 x 85
R 320	110 x 90
R 321	120 x 100
R 322	130 x 110
R 323*	140 x 120
R 324*	150 x 130
R 325*	160 x 140
R 326*	170 x 150
R 327*	180 x 160
R 801*	190 x 170
R 802*	200 x 180
R 803*	210 x 190
R 804*	220 x 200
R 805*	230 x 210
R 806*	240 x 220
R 807*	250 x 230
R 808*	260 x 240
R 809**	275 x 250
R 810**	280 x 260
R 811**	300 x 280
R 812**	310 x 290
R 813**	320 x 300
R 814**	380 x 350
R 815**	425 x 400
R 816**	480 x 450
R 817**	530 x 500

Corundum threaded tubes

AluSIK-80 GA, type C 530 “H”

Order No.	Outer diameter mm	Thread pitch
R 330	15	2.0 mm
R 331	20	2.0 mm
R 332	25	2.0 mm
R 333	30	2.0 mm
R 334	35	2.5 mm
R 335	40	2.5 mm
R 336	45	2.5 mm
R 337	50	2.5 mm
R 338	60	3.0 mm
R 339	75	3.0 mm
R 340	80	3.5 mm
R 341	90	3.5 mm



Max. manufacturing length 1000 mm,
wall thickness 5–15 mm.

* Max. manufacturing length 1000 mm.

** Max. manufacturing length 600 mm.

Larger resp. other dimensions upon inquiry.

Sillimanite supporting tubes

AluSIK-60 ZB “HE”

Order No.	Diameter mm
R 350	15 x 7
R 351	18 x 12
R 352	20 x 12
R 353	22 x 16
R 354	23 x 13
R 355	25 x 12
R 356	25 x 15
R 357	25 x 18
R 358	30 x 20
R 359	35 x 25
R 360	40 x 30
R 361	45 x 35
R 362	50 x 40
R 363	55 x 45
R 364	60 x 48



Silicon-carbide-tubes

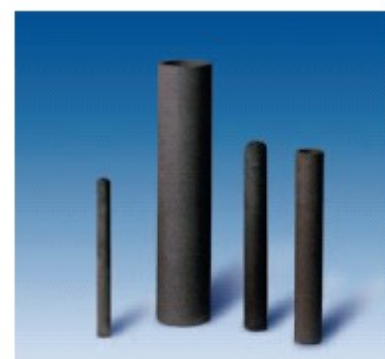
CarSIK-70 ZA

Order No.	Diameter mm
R 400	16 x 10
R 401	20 x 12
R 402	23 x 17
R 403	26 x 18
R 404	30 x 22
R 405	35 x 28
R 406	40 x 32
R 407	45 x 35
R 408	50 x 40
R 409	60 x 50
R 410	65 x 55
R 411	70 x 60
R 412	80 x 70
R 413	95 x 80
R 414	120 x 100

Silicon-carbide-tubes

CarSIK-90 ZA

Order No.	Diameter mm
R 420	15 x 9
R 421	23 x 15
R 422	26 x 18
R 423	30 x 22
R 424	35 x 26
R 425	40 x 30
R 426	45 x 35
R 427	50 x 40
R 428	55 x 45
R 429	60 x 48
R 430	70 x 56
R 431	75 x 60
R 432	80 x 66
R 433	95 x 80

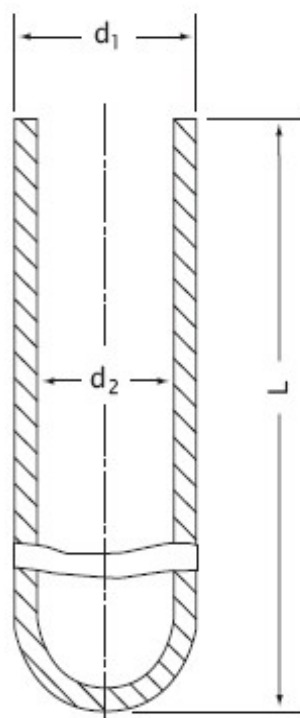


Max. length 1900 mm.

Tolerances for protection tubes according to DIN 43724, issue 1979

VDE 0335 type	Outer-Ø d_1	Inner-Ø d_2	Length $L \pm 2$
C 610	10	7	270, 375, 530, 740, 1030, 1430, 2030
	15	11	
	24	19	
C 799	10	6	
	15	10	
	24	18	
C 530	26	18	

All dimensions in mm.



Tolerance on the wall thickness according to DIN 40680 part 1, accuracy coarse.

Tolerance on the deflection according to DIN 40680 part 2, accuracy fine with following definition: A straight rod with a diameter of $0.8 (d_1 - 2s)$ must fit into the protection sheath down to the bottom. The bottom is round with uniform changeover to the cylindrical part of the protection sheath.

Mullite tubes, AluSIK-60 ZA **type C 610 “10 A”**

Order No.	Length mm	Diameter mm
R 500	270	10 x 7
R 501	375	10 x 7
R 502	530	10 x 7
R 503	740	10 x 7
R 504	1030	10 x 7
R 505	1430	10 x 7
R 506	2030	10 x 7
R 510	270	15 x 11
R 511	375	15 x 11
R 512	530	15 x 11
R 513	740	15 x 11
R 514	1030	15 x 11
R 515	1430	15 x 11
R 516	2030	15 x 11
R 520	270	24 x 19
R 521	375	24 x 19
R 522	530	24 x 19
R 523	740	24 x 19
R 524	1030	24 x 19
R 525	1430	24 x 19
R 526	2030	24 x 19

Sintered alumina tubes **AluSIK-99 ZA, type C 799 “TEH”**

Order No.	Length mm	Diameter mm
R 560	270	10 x 6
R 561	375	10 x 6
R 562	530	10 x 6
R 563	740	10 x 6
R 564	1030	10 x 6
R 565	1430	10 x 6
R 566	2030	10 x 6
R 570	270	15 x 10
R 571	375	15 x 10
R 572	530	15 x 10
R 573	740	15 x 10
R 574	1030	15 x 10
R 575	1430	15 x 10
R 576	2030	15 x 10
R 580	270	24 x 18
R 581	375	24 x 18
R 582	530	24 x 18
R 583	740	24 x 18
R 584	1030	24 x 18
R 585	1430	24 x 18
R 586	2030	24 x 18

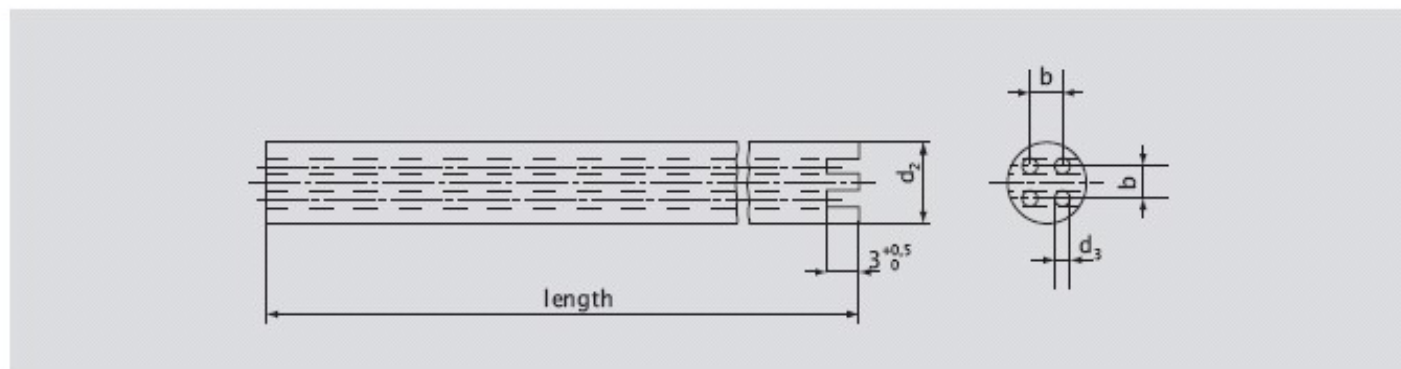
Corundum outer protection tubes **AluSIK-80 ZA, type C 530 “H”**

Order No.	Length mm	Diameter mm
600	270	26 x 18
601	375	26 x 18
602	530	26 x 18
603	740	26 x 18
604	1030	26 x 18
605	1430	26 x 18
606	2030	26 x 18

DIN-tubes are closed one end and without flange.

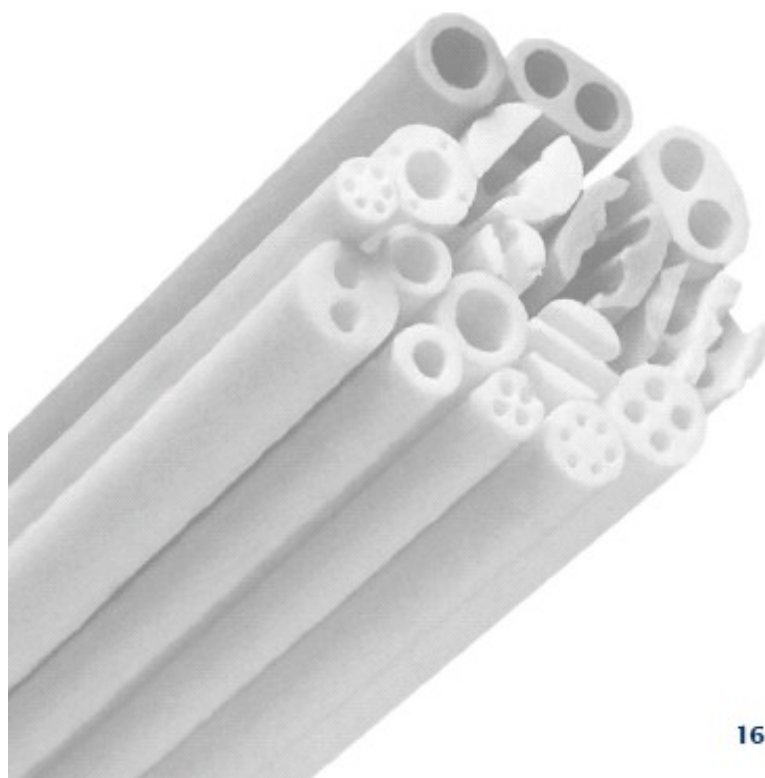
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Tolerances for insulators with four bores according to DIN 43725, issue 1990



VDE 0335 Type	outer-Ø d_2 (mm) $\pm 0,3$	distance b (mm) $\pm 0,1$	bore-Ø d_3 (mm) $\pm 0,1$	length mm ± 2	for wire-Ø (mm)
C 610, C 799	5.5 ¹⁾	2	1.2	275, 380, 560, 770, 1060, 1460, 2060	≤ 0.8
	8.5 ¹⁾	3	1.5		

- ¹⁾ A 4-bore insulating tube, $d_2=5.5$ mm must fit into a protection tube, inner dia. 6 mm and a 4-bore insulating tube, $d_2=8.5$ mm, must fit into a protection tube, inner dia. 10 mm.
A 1 mm wire has to be passed through the bores.



Mullite insulating tubes, AluSIK-60 ZA type C 610 “10 A”

Order No.	Length mm	Bores	Outer diameter mm	Inner diameter mm
R 640	275	4	5.5	1.2
R 641	380	4	5.5	1.2
R 642	560	4	5.5	1.2
R 643	770	4	5.5	1.2
R 644	1060	4	5.5	1.2
R 645	1460	4	5.5	1.2
R 646	2060	4	5.5	1.2
R 650	275	4	8.5	1.5
R 651	380	4	8.5	1.5
R 652	560	4	8.5	1.5
R 653	770	4	8.5	1.5
R 654	1060	4	8.5	1.5
R 655	1460	4	8.5	1.5
R 656	2060	4	8.5	1.5

Also available with one or two slots.

Sintered alumina insulating tubes AluSIK-99 ZA, type C 799 “TEH”

Order No.	Length mm	Bores	Outer diameter mm	Inner diameter mm
R 720	275	4	5.5	1.2
R 721	380	4	5.5	1.2
R 722	560	4	5.5	1.2
R 723	770	4	5.5	1.2
R 724	1060	4	5.5	1.2
R 725	1460	4	5.5	1.2
R 726	2060	4	5.5	1.2
R 730	275	4	8.5	1.5
R 731	380	4	8.5	1.5
R 732	560	4	8.5	1.5
R 733	770	4	8.5	1.5
R 734	1060	4	8.5	1.5
R 735	1460	4	8.5	1.5
R 736	2060	4	8.5	1.5

Also available with one or two slots.