

# Thermostatic Bimetal



## Kanthal Types

Our wide range of standard types of thermostatic bimetal have specific deflections ranging from  $22.7 \times 10^{-6}$  to  $5.0 \times 10^{-6}$   $1/^\circ\text{C}$  and resistivities from 1.40 to 0.033  $\text{ohm} \times \text{mm}^2/\text{m}$ . The technical specifications of our standard types are detailed in the table below.

## Thickness Tolerances

Strip thicknesses     $0.10 - (0.20) \text{ mm} = \pm 7 \mu\text{m}$   
                                $0.20 - (0.40) \text{ mm} = \pm 10 \mu\text{m}$   
                                $0.40 - (2.50) \text{ mm} = \pm 2.5\%$

## Width Tolerances

Thickness [mm]	Width [mm]				
	1.5 – (4)	4 – (20)	20 – (40)	40 – (80)	80 – (180)
0.1 – (0.40)	+ 0.10	$\pm 0.05$	$\pm 0.05$	$\pm 0.07$	$\pm 0.12$
0.4 – (0.80)	+ 0.14	$\pm 0.07$	$\pm 0.07$	$\pm 0.10$	$\pm 0.17$
0.8 – (1.60)		$\pm 0.10$	$\pm 0.12$	$\pm 0.15$	$\pm 0.20$
1.6 – (2.50)		$\pm 0.13$	$\pm 0.15$	$\pm 0.18$	$\pm 0.23$

## Details of Our Standard Types

Thermostatic Bimetal type DIN designation added	Specific deflection [10 <sup>-6</sup> K <sup>-1</sup> ]	Specific curvature [10 <sup>-6</sup> K <sup>-1</sup> ]	Linearity range [°C]	Max operating temperature [°C]	Resistivity [Ω mm <sup>2</sup> m <sup>-1</sup> ] at temperature °C						Thermal conductivity [Wm <sup>-1</sup> °C <sup>-1</sup> ]	Modulus of elasticity [103 N mm <sup>-2</sup> ]	Standard hardness [HV]		Density [g cm <sup>-3</sup> ]	
					0	20	100	200	300	400			low exp. side	high exp. side		
230		22.7	43.0	-20–+230	330	1.04	1.05	1.15	1.22	1.28		6	135	210	200	7.8
200	TB20110	20.8	39.0	-20–+175	330	1.09	1.10	1.20	1.27	1.33		6	135	210	250	7.8
155	TB1577A	15.6	28.5	-20–+250	450	0.77	0.78	0.86	0.94	1.00	1.07	13	170	210	260	8.1
145		14.8	27.7	-20–+250	450	0.78	0.79	0.85	0.93	0.99	1.06	12	170	210	240	8.1
135		13.9	25.9	-20–+200	450	0.78	0.79	0.85	0.93	0.99	1.06	12	170	210	240	8.1
130		13.2	24.8	-20–+325	450	0.72	0.74	0.82	0.89	0.95	1.02	12	170	210	240	8.1
115	TB1170	11.7	22.0	-20–+380	450	0.68	0.70	0.78	0.86	0.93	0.99	13	170	210	240	8.1
100	TB0965	10.0	18.6	-20–+425	450	0.62	0.65	0.75	0.86	0.94	1.00	15	175	210	240	8.2
94S		9.5	17.8	-0–+200	450	0.84	0.85	0.90	0.95			12	190	210	250	8.1
60		6.0	11.3	-20–+450	450	0.19	0.21	0.28	0.37	0.47	0.59	44	190	230	240	8.0
50HT		5.0	9.4	-20–+500	550	0.635	0.66	0.72	0.78	0.83		20	200	240	340	7.8

### Resistance range

140R140		14.0	26.1	-20–+200	330	1.38	1.40	1.43	1.48	1.52		4	130	210	250	7.4
200R10		20.0	39.0	-20–+200	330	0.09	0.01	0.01	0.17	0.19		72	130	210	200	7.90
180R05		18.0	33.8	-20–+200	350	0.045	0.050	0.070	0.085	0.100		170	130	210	200	8.20
155R55	TB1555	15.0	28.2	-20–+200	450	0.52	0.55	0.65	0.75	0.84	0.91	16	170	210	240	8.15
145R50		14.9	27.7	-20–+200	450	0.48	0.50	0.59	0.70	0.79	0.86	16	170	210	240	8.15
145R45		14.9	27.7	-20–+200	450	0.44	0.03	0.04	0.67	0.79		16	170	210	260	8.20
145R35	TB1435	14.8	27.4	-20–+200	450	0.33	0.35	0.45	0.56	0.68	0.78	22	170	210	240	8.25
135R25	TB1425	14.0	26.1	-20–+200	450	0.23	0.25	0.33	0.44	0.55	0.65	28	170	210	240	8.3
145R19		14.9	27.9	-20–+200	400*	0.18	0.19	0.23	0.27	0.31		39	170	210	240	8.2
145R17		14.9	27.9	-20–+200	400*	0.16	0.17	0.20	0.24	0.28		43	170	210	240	8.2
145R15		14.9	27.7	-20–+200	400*	0.14	0.15	0.18	0.22	0.25		48	170	210	240	8.2
145R10	TB1511	15.0	27.8	-20–+200	400*	0.107	0.11	0.14	0.16	0.19		70	165	210	240	8.3
140R10		13.9	26.1	-20–+175	350	0.080	0.083	0.101	0.125	0.150		105	160	210	260	8.3
135R05		14.2	26.6	-20–+200	400*	0.057	0.060	0.078	0.096	0.122		114	165	210	240	8.4
130R03		13.2	24.5	-20–+200	275	0.031	0.033	0.038	0.042	0.047		224	145	210	240	8.65

### Bimetal with extra broad linearity range and good thermal conductivity

127R09		13.4	25.0	-20–+325	400*	0.085	0.090	0.11	0.12	3.21	0.16	88	170	210	240	8.2
115R09	TB1109	11.5	21.6	-20–+380	400*	0.085	0.090	0.11	0.13	3.36	0.17	88	165	210	240	8.2

\* In the case of direct heating by an electric current flowing through the bimetal, the max temp. should not exceed 275°C.



### Disc Type Material

Thin thermostatic bimetals or trimetals in the shape of discs with a spherical cup or specially shaped blades which give a snap action, are often used in thermostats and protectors. Kanthal has excellent facilities for manufacturing bimetallic material to very close tolerances which are required for this type of applications.

### Thickness Tolerances

Thickness s [mm]	Tolerances Standard	Tolerances Special
$s \leq 0.20$	$\pm 4 \mu\text{m}$	$\pm 2 \mu\text{m}$
$0.20 \leq s \leq 0.40$	$\pm 2\%$ of s	$\pm 1\%$ of s

### Width Tolerances

Thickness s [mm]	Width tolerances [mm]
$s \leq 0.20$	$\pm 0.07$
$0.20 \leq s \leq 0.40$	$\pm 0.10$

### Hardness

According to Kanthal bimetal disc standard or upon request. Hardness tolerance  $\pm 15$  HV.

### Cross Curvature

$$\frac{6.35 \times 10^{-5} \times b^2}{s} = \text{max. cross curvature}$$

Symbol Meaning

b = width

s = thickness

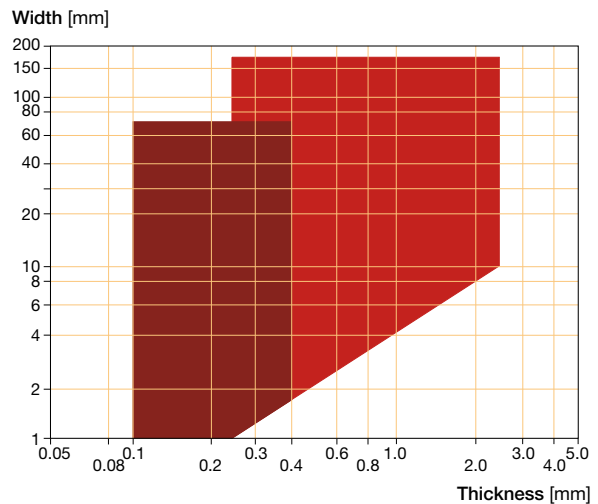
### Edge Curvature

Max. 2.5 mm/m

### Dimensions

Kanthal thermostatic bimetal strips are supplied, as shown in the graph in thicknesses from 0.10 to 2.5 mm and in widths from 1.0 to 170 mm. Kanthal disc material within the framed area. As regards some thermostatic bimetal types of the resistance series, the thickness is restricted to the range 0.10 to 1.65 mm and the width to maximum 65 mm.

### Standard Sizes

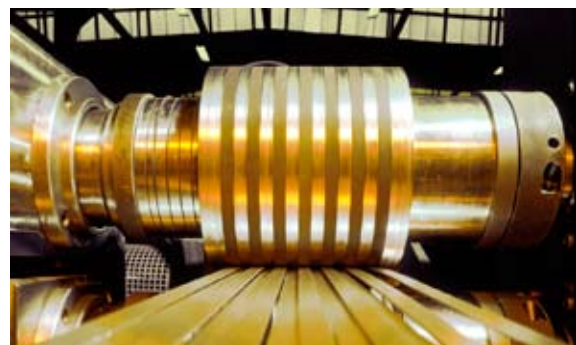


### Identification Marking

Kanthal thermostatic bimetals are usually etched on the high expansion side. The etching includes the type designation and the standard designation as per DIN 1715, or a designation derived from it. Other marking may be done upon request.

### Packing

Kanthal thermostatic bimetals supplied in flat cut lengths or coils are wrapped in plastic- or wax-treated crepe paper depending on transport needs and are subsequently carefully packed. Kanthal bimetal disc material is wound on a core with an inside diameter of 400 mm and wrapped in plastic or wax-treated paper.



## Technical Resources

Kanthal is one of Europe's leading manufacturers of thermostatic bimetals. We have up-to-date production resources in accordance with the modern cold-bonding method which safeguards the highest standard of delivery service and quality. Product quality is a key concept for us at Kanthal.

To ensure the highest possible quality of our bimetal, all melting and bonding is carried out in our own plant. Kanthal is certified according to EN ISO 9001.

## Customer Service

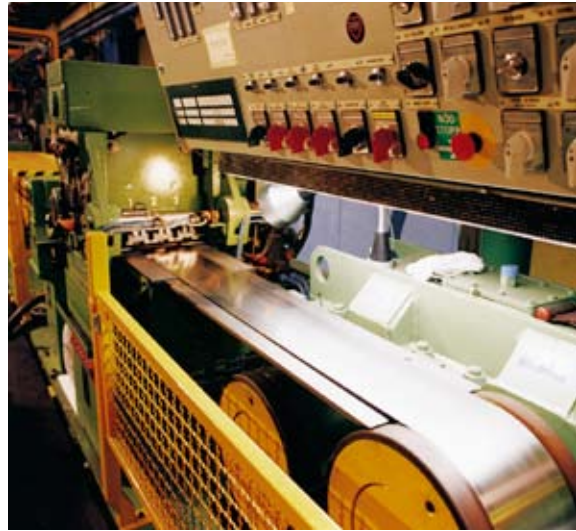
Our technical experts are always ready to assist you, in matters such as technical calculations, design or selection of suitable grades.

Our well-equipped laboratories enable us to carry out functional tests on products being developed by our customers, thus shortening the total development time of our customers products, as well as ensuring reliability and optimization of costs.

Kanthal also manufactures and markets resistance materials and furnace elements.

Kanthal has a world-wide market organisation comprising 20 subsidiaries. Most of these subsidiaries have their own production. In addition, Kanthal is represented by agents in a further 50 countries.

Wherever our customers may be, one of our representatives or subsidiaries is always available to render technical and commercial assistance and to provide fast and reliable deliveries.



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