

## Kanthal A (Ribbon (flat wire))

Kanthal A is a ferritic iron-chromium-aluminium alloy (FeCrAl alloy) with high resistivity and good oxidation resistance for use at temperatures up to 1350°C (2460°F).

Kanthal A is typically used in industrial furnaces and home appliances. Examples of applications are elements embedded in ceramics for panel heaters, infrared heaters, warming plates, irons, ceramic pots, in cartridge heaters for liquid heating, storage heaters, in ceramic heaters for cooking plates, air guns, hobby kilns, radiators, in quartz tube heaters for space heating, toasters, toaster ovens, grills, industrial infrared dryers, coils on molded ceramic fibre for cooking plates with ceramic hobs.

### CHEMICAL COMPOSITION

	C %	Si %	Mn %	Cr %	Al %	Fe %
<b>Nominal composition</b>					5.3	Bal.
<b>Min</b>	-	-	-	20.5	-	
<b>Max</b>	0.08	0.7	0.5	23.5	-	

### MECHANICAL PROPERTIES

Thickness	Yield strength	Tensile strength	Elongation	Hardness
	R <sub>p0.2</sub>	R <sub>m</sub>	A	
mm	MPa	MPa	%	Hv
0.5	505	725	17	230

### MECHANICAL PROPERTIES AT ELEVATED TEMPERATURE

Temperature °C	900
MPa	34

Ultimate tensile strength - deformation rate  $6.2 \times 10^{-2}$ /min

### CREEP STRENGTH - 1% ELONGATION IN 1000 H

Temperature °C	800	1000
MPa	1.2	0.5

### PHYSICAL PROPERTIES

Density g/cm <sup>3</sup>	7.15
Electrical resistivity at 20°C Ω mm <sup>2</sup> /m	1.39
Poisson's ratio	0.30

### YOUNG'S MODULUS

Temperature °C	20	100	200	400	600	800	1000
GPa	220	210	205	190	170	150	130

### TEMPERATURE FACTOR OF RESISTIVITY

Temperature °C	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
C <sub>t</sub>	1.00	1.01	1.01	1.02	1.03	1.04	1.04	1.05	1.05	1.06	1.06	1.06	1.06

## COEFFICIENT OF THERMAL EXPANSION

Temperature °C	Thermal Expansion x 10 <sup>-6</sup> / K
20 - 250	11
20 - 500	12
20 - 750	14
20 - 1000	15

## THERMAL CONDUCTIVITY

Temperature °C	50	600	800	1000	1200
W m <sup>-1</sup> K <sup>-1</sup>	11	20	22	26	27

## SPECIFIC HEAT CAPACITY

Temperature °C	20	200	400	600	800	1000	1200
kJ kg <sup>-1</sup> K <sup>-1</sup>	0.46	0.56	0.63	0.75	0.71	0.72	0.74

<b>Melting point °C</b>	1500
<b>Max continuous operating temperature in air °C</b>	1350
<b>Magnetic properties</b>	The material is magnetic up to approximately 600°C (Curie point).
<b>Emissivity - fully oxidized material</b>	0.70

### DISCLAIMER:

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Kanthal materials.