TEMCo
INDUSTRIAL POWER SUPPLY

TEMCo Kanthal A-1 Flat Ribbon Wire Data Sheet

Shape:	Flat ribbon
Heat treatment:	Annealed (soft)
Alloy:	Kanthal A-1
Max. operating temp:	1400°C (2550°F)
Nominal composition:	22% Cr 5.8% Al Fe balance
Density:	7.1 g/cubic cm (0.256 lbs/cubic in.)
Thermal conductivity at 50°C (122°F):	11 W/m K (76 Btu in/ft² h°F)
Tensile strength:	680 N/mm² (98600 psi)
Yield point:	545 N/mm² (79000 psi)
Hardness:	240 Hv
Elongation at rupture:	20%
Tensile strength at 900°C (1650°F):	34 N/mm² (4900 psi)
Emissivity, full oxidized condition:	0.7

Corporate Headquarters: *TEMCo* – Tower Electric Motor Company 41484 Christy Street Fremont, CA 94538
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Temperature Factor of Resistivity

Temperature	Kanthal A-1
68°F (20°C)	1.00
212°F (100°C)	1.00
392°F (200°C)	1.01
572°F (300°C)	1.01
752°F (400°C)	1.02
932°F (500°C)	1.03
1112°F (600°C)	1.04
1292°F (700°C)	1.04
1472°F (800°C)	1.05
1652°F (900°C)	1.05
1832°F (1000°C)	1.06
2012°F (1100°C)	1.06
2192°F (1200°C)	1.06
2372°F (1300°C)	1.06

Electrical Resistance at Operating Temperature

$$R = \frac{R_t}{F} \text{ (ohms)}$$

F = Temperature factor of resistivity

R = Element resistance at 20°C / 68°F (Ohms)

R_t = Element resistance at operating temperature (Ohms)

Linear Thermal Expansion Coefficient

Temperature	
20-250°C (68-480°F)	11
20-500°C (68-930°F)	12
20-750°C (68-1380°F)	14
20-1000°C (68-1840°F)	15

Creep Strength

Temperature	
800°C (1470°F)	1.2 N/mm² (170 psi)
1000°C (1830°F)	0.5 N/mm² (70 psi)

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Kanthal A-1

Width x Thickness (mm)	Ohms/ft @20°C (Ω/m)	Resistivity @20°C (cm²/Ω*)	Weight (g/m)	Surface area (cm²/m)	Cross sectional area (mm²)
0.4 x 0.1	37.8	0.265	0.263	10	0.0368
0.5 x 0.1	30.2	0.397	0.329	12	0.046
0.6 x 0.1	25.2	0.556	0.395	14	0.0552
0.7 x 0.1	21.6	0.741	0.46	16	0.0644
0.8 x 0.1	18.9	0.953	0.526	18	0.0736
0.9 x 0.1	16.8	1.19	0.592	20	0.0828

Width x Thickness (mm)	Ohms/ft @68°F (Ω/ft)	Resistivity @68°F (in²/Ω)	Weight (lbs/ft)	Surface area (in²/ft)	Cross sectional area (in² x 1000)
0.0157 x 0.004	11.4	0.0412	0.178	5.085	0.575
0.0197 x 0.004	9.2	0.062	0.225	6.102	0.71
0.0236 x 0.004	7.68	0.086	0.271	7.119	0.86
0.0276 x 0.004	6.58	0.115	0.309	8.136	0.99
0.0315 x 0.004	5.76	0.148	0.356	9.154	1.14
0.0354 x 0.004	5.12	0.184	0.403	10.17	1.28

*cm²/**Ω** = $I^2 \times C_t / p$

I = current
C_t= temperature factor
p = surface load W/cm²)

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