

VAPOWIRE SPEC SHEET

K a n t h a l A - 1

Vapowire is manufactured in a facility that has been approved by LloydÆs Register Quality Assurance to the following Quality, Environmental and Safety Management System Standards.

ISO 9001:2008 ISO 14001:2004 OHSAS 18001:2007



Round Wire

Gauge	Resistance Ohms/ft @ 68°F
20	0.817
22	1.31
23	1.64
24	2.07
25	2.61
26	3.31

Gauge	Resistance Ohms/ft @ 68°F
27	4.15
28	5.27
29	6.55
30	8.36
32	13.1
34	21.1

Flat Ribbon Wire

Thickness	Resistance Ohms/ft @ 68°F
0.4 x 0.1	11.4
0.5 x 0.1	9.2
0.6 x 0.1	7.68
0.7 x 0.1	6.58
0.8 x 0.1	5.79
0.9 x 0.1	5.12

Physical Properties

Max continuous operating temperature (element temperature in air)	1400°C (2550°F)
Nominal composition	Cr 22%, Al 5.8%, Fe Balance
Density ρ	7.1 g/cm ³ (0.256 lb/in ³)
Resistivity at 20°C (68°F)	1.45 Ω mm ² /m (872 Ω /cmf)
Temperature Factor of the Resistivity, Ct	
250°C (480°F)	1.00
500°C (930°F)	1.01
800°C (1470°F)	1.03
1000°C (1830°F)	1.04
1200°C (2190°F)	1.04
Linear Thermal Expansion Coefficient α, x 10⁻⁶/K	
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
Thermal Conductivity at 50°C (122°F)	11 W m K (76 Btu in/ft ² h °F)
Specific heat capacity at 20°C (at 68°F)	0.46 kJ/kg K (0.11 Btu/lb °F)
Melting Point (approx.)	1500°C (2730°F)

Mechanical Properties*

Tensile strength	680 N/mm (98600 psi)
Yield Point	545 N/mm ² (79000 psi)
Hardness	240 Hv
Elongation at Rupture	20%
Tensile Strength at 900°C (1650°F)	34 N/mm ² (4900 psi)
Creep Strength**	
800°C (1470°F)	1.2 N/mm ² (170 psi)
1000°C (1830°F)	0.5 N/mm ² (70 psi)
Magnetic Properties	1)
Emissivity (fully oxidized condition)	0.7

* The values given apply for sizes of approximately 0.039 inch diameter (1.0 mm).

** Calculated from observed elongation in a Kanthal standard furnace test. 1% elongation after 1000 hours.