

ALKROTHAL® 14

RESISTANCE HEATING WIRE AND RESISTANCE WIRE

DATASHEET

Alkrothal® 14 is a ferritic iron-chromium-aluminium alloy (FeCrAl alloy) with high resistivity suitable for use at temperatures up to 1100°C (2010°F).

Alkrothal® 14 is typically used for electrical resistance wire for applications such as heating cables.

CHEMICAL COMPOSITION

	C %	Si %	Mn %	Cr %	Al %	Fe %
Nominal composition					4.3	Bal.
Min	-	-	-	14.0	-	
Max	0.08	0.7	0.5	16.0	-	

MECHANICAL PROPERTIES

Wire size	Yield strength	Tensile strength	Elongation	Hardness
∅	R _{p0.2}	R _m	A	
mm	MPa	MPa	%	Hv
1.0	455	630	22	220
4.0	445	600	22	220
6.0	435	580	23	220

YOUNG'S MODULUS

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

Mechanical properties at elevated temperature

Temperature °C	900
MPa	30

Ultimate tensile strength - deformation rate 6.2×10^{-2} /min

CREEP STRENGTH - 1% ELONGATION IN 1000 H

Temperature °C	800	1000
MPa	1.2	0.5

PHYSICAL PROPERTIES

Density g/cm ³	7.28
Electrical resistivity at 20°C Ω mm ² /m	1.25
Poisson's ratio	0.30

TEMPERATURE FACTOR OF RESISTIVITY

Temperature °C	100	200	300	400	500	600	700	800	900	1000	1100
Ct	1.00	1.02	1.03	1.04	1.05	1.08	1.09	1.10	1.11	1.11	1.12

COEFFICIENT OF THERMAL EXPANSION

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

THERMAL CONDUCTIVITY

Temperature °C	20
W/m K	16

SPECIFIC HEAT CAPACITY

Temperature °C	20	200	400	600	800	1000
kJ kg ⁻¹ K ⁻¹	0.46	0.63	0.72	1.00	0.80	0.73

Melting point °C	1500
Max continuous operating temperature in air °C	1100
Magnetic properties	The material is magnetic up to approximately 600°C (Curie point).
Emissivity - fully oxidized material	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.

