

KANTHAL® AM100 ADDITIVE MANUFACTURED PRODUCTS

TECHNICAL SPECIFICATION

Kanthal AM100 is an advanced heat resistant ferritic iron-chromium-aluminium alloy (FeCrAl alloy) specially developed for additive manufacturing. This allows Kanthal to offer printed products with customized geometries that can be difficult to produce by traditional methods. Examples of products printed with Kanthal AM100 are heating elements, burner nozzles, and protective shells, fittings and manifolds, etc.

The printed Kanthal AM100 material has high strength and very good form stability at high temperatures. The material forms a highly protective aluminium oxide layer, which gives excellent protection in most demanding high temperature furnace environments, e.g. oxidizing, sulphidizing, and carburizing.

CHEMICAL COMPOSITION

	C %	Si %	Mn %	Cr %	Al %	Fe %
Nominal composition						Bal.
Min	-	-	-	19.0	4.5	
Max	0.08	0.7	0.4	23.5	5.5	

MECHANICAL PROPERTIES

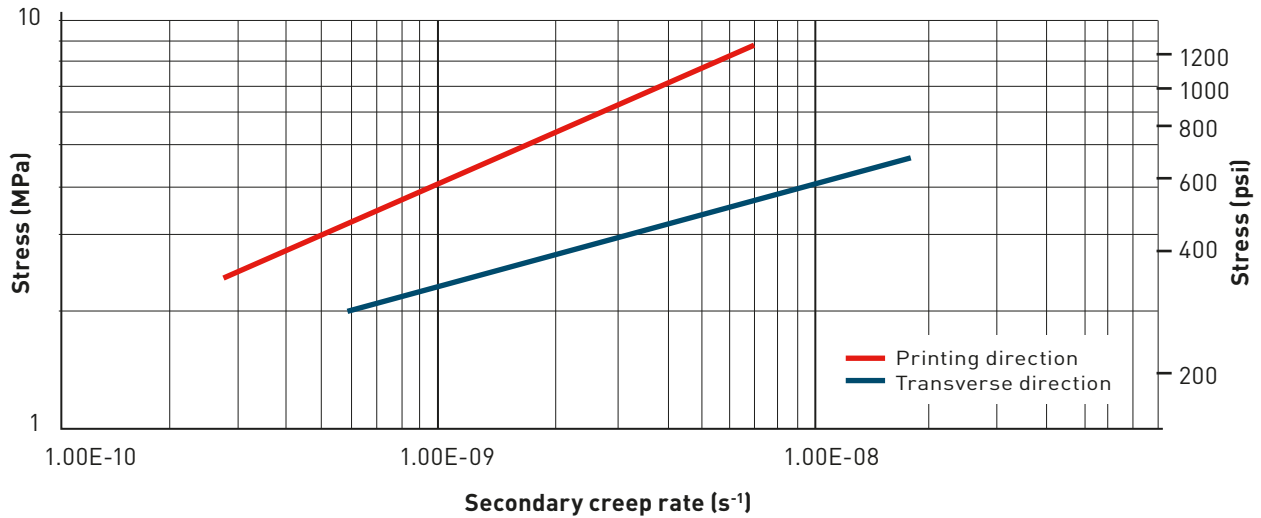
Yield strength	Tensile strength	Elongation	Hardness
$R_{p0.2}$	R_m	A_{20}	Hv
MPa (ksi)	MPa (ksi)	%	
560-610	660-710	22-28	250
[81-89]	[96-103]		

HIGH TEMPERATURE CREEP PROPERTIES

CREEP STRENGTH - 1% ELONGATION

Temperature °C (°F)	1100 (2012)
Time h	Stress MPa (psi)
100	8.9 (1290)
1000	4.6 (670)
10000	2.4 (350)
100000	1.2 (170)

Temperature 1100°C (2012 °F)



PHYSICAL PROPERTIES

Generic data from wrought material.

Density	g/cm 7.15
	lb/in 0.258
Electrical resistivity at 20°C (68°F)	Ω mm /m 1.39
	Ω circ. mil/ft 836

TEMPERATURE FACTOR OF RESISTIVITY

Temp. °C	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Temp. °F	212	392	572	752	932	1112	1292	1472	1652	1832	2012	2192	2372
Ct	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 (°F)	Thermal Expansion x 10 /K (10 /°F)
20 – 250 (68 – 482)	11 (6.1)
20 – 500 (68 – 932)	12 (6.7)
20 – 750 (68 – 1382)	14 (7.8)
20 – 1000 (68 – 1832)	15 (8.3)

THERMAL CONDUCTIVITY

Temperature °C	20	600	800	1000	1200
Temperature °F	68	1112	1472	1832	2192
W m⁻¹ K⁻¹	11	20	22	26	27
Btu h⁻¹ ft⁻¹ °F⁻¹	6.4	11.6	12.7	15.0	15.6

SPECIFIC HEAT CAPACITY

Temperature °C	20	200	400	600	800	1000	1200
Temperature °F	68	392	752	1112	1472	1832	2192
kJ kg⁻¹ K⁻¹	0.46	0.56	0.63	0.75	0.71	0.72	0.74
Btu lb⁻¹ °F⁻¹	0.11	0.13	0.15	0.18	0.17	0.17	0.18

Melting point °C (°F)	1500 (2732)
Max continuous operating temperature in air °C (°F)	1300 (2372)
Magnetic properties	The material is magnetic up to approximately 600°C (1112°F) [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 materials under the trademark Kanthal®.

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