

Iron-Chromium-Aluminum FeCrAl (0Cr25Al5) alloy

Heanjia Super Metals Co., Ltd

The FeCrAl (0Cr25Al5) alloy possesses low temperature coefficient of electric resistivity. It is used to produce high magnitude of heat in the commercial heating operations. It offers excellent resistance to oxidation and corrosion at the high temperatures. It resists scaling and embrittlement of material and provides long term performance in the severe corrosive conditions at the elevated temperatures up to 1250oC.



Chemical Composition FeCrAl (0Cr25Al5) Alloy

Cr%	Al%	Fe%	Re%
23.0-26.0	4.5-6.5	Bal.	Adequate

Properties of FeCrAl (0Cr25Al5) Alloy:-

Specific Resistance (at 20°C) ($\mu\Omega$ -m)	Hardness HB	Linear Expansion Coeff. (T=20 – 1000°C) x10-6	Maximum Operating Temperature (°C)
1.45±0.07	200-260	16.0	1250

Coefficient of electric resistivity

FeCrAl(0Cr25Al5) resistance wire - Diameters and properties		
Dia (mm)	Cross section areamm2)	0Cr25Al5
		Resistivity($\mu\Omega \cdot m$ 1.42±0.07)
Resistance (20°C Ω/m)		
0.10	0.0078	180.6
0.12	0.0113	125.6
0.15	0.0177	80.4
0.17	0.0227	62.6
0.19	0.0284	50.1
0.21	0.0346	41.0

Corrosion resistance

FeCrAl (0Cr25Al5) alloy produces security alumina layer in the oxidizing conditions. This layer renovates itself as long as it has adequate magnitude of aluminum. Use of aluminum interrupts while scaling off of oxide when it is placed at thermal gradients. The rare earth metals like Yttrium or silicon enhance the life of oxide layer thus reduce the scaling rate. If concentration of aluminum is not sufficient for renovation of oxide layer,

chromium oxide layer is formed. The resistance falling rate is quicker at high temperature because chromium oxide is volatile above 1100oC.

The target of FeCrAl (0Cr25Al5) alloy is to offer improved performance and thermal shock resistance as well as non spalling oxide film. It offers high resistance to embrittlement and toughening at temperatures up to 650oF to 1300oF.

FeCrAl (0Cr25Al5) alloy offers outstanding resistance to oxidation and different high temperature corrosive conditions. Resistance to embrittlement is improved by decreasing the content of chromium lower than 15%.

Applications of FeCrAl (0Cr25Al5) alloy

1. Catalytic converters
2. Resistance heating products
3. Radiant heating elements in gas or oil stoves

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