

## Resistalloy International Fecralloy™ Electrical Resistance Steel

Category : Metal , Electronic/Magnetic Alloy , Ferrous Metal , Stainless Steel , Superalloy

### Material Notes:

Yttrium addition does not appear in nominal composition. Ferritic stainless steel with aluminum. Available as wire, bar, tube, and strip.

Used mainly for electrical elements in both industrial and domestic applications. Industrial applications vary from small laboratory kilns to heavy-duty heat-treatment furnaces under all types of atmospheres. Fecralloy\*\* an Fe-Cr-Al steel containing yttrium is a versatile alloy and is suitable for use over a wide range up to 1300°C. An yttrium addition is the key to its longer high temperature life, having greater oxidation resistance and form stability over other resistance alloys. Fecralloy is the registered trademark of the UK Atomic Energy Authority (Now AEA Technology, Harwell). Information provided by Resistalloy International Limited.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Resistalloy-International-Fecralloy-Electrical-Resistance-Steel.php](http://www.lookpolymers.com/polymer_Resistalloy-International-Fecralloy-Electrical-Resistance-Steel.php)

Physical Properties	Metric	English	Comments
Density	7.15 g/cc	0.258 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Vickers	230	230	
Tensile Strength, Ultimate	750 MPa	109000 psi	
	37.0 MPa	5370 psi	
	@Temperature 900 °C	@Temperature 1650 °F	
Tensile Strength, Yield	550 MPa	79800 psi	
Elongation at Break	16 - 20 %	16 - 20 %	50 mm (2 in)

Thermal Properties	Metric	English	Comments
CTE, linear	11.0 μm/m-°C	6.11 μin/in-°F	
	@Temperature 20.0 - 250 °C	@Temperature 68.0 - 482 °F	
	12.0 μm/m-°C	6.67 μin/in-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	
	15.0 μm/m-°C	8.33 μin/in-°F	
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.460 J/g-°C	0.110 BTU/lb-°F	
Thermal Conductivity	16.0 W/m-K	111 BTU-in/hr-ft <sup>2</sup> -°F	

Thermal Properties	Metric	English	Comments
Maximum Service Temperature, Air	1400 °C	2550 °F	

Optical Properties	Metric	English	Comments
Emissivity (0-1)	0.70	0.70	Fully Oxidized

Component Elements Properties	Metric	English	Comments
Aluminum, Al	5.3 %	5.3 %	
Chromium, Cr	22 %	22 %	
Iron, Fe	73 %	73 %	As remainder

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000139 ohm-cm	0.000139 ohm-cm	Temperature Factor is 1.05 at 800°C (1470°F). Temperature Factor is 1.06 at 1000°C (1830°F). Temperature Factor is 1.06 at 1200°C (2190°F).
Curie Temperature	600 °C	1110 °F	

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