

# Elgiloy Specialty Metals Material Datasheet

## HAYNES® HR-224™ Alloy

UNS: N/A  
W.Nr: N/A

**Description:** HAYNES® HR-224™ alloy is a Ni-Fe-Cr-Al alloy with excellent oxidation resistance and improved fabricability & weldability compared to HAYNES® 214® alloy. The alloy obtains its oxidation resistance via the formation of a protective alumina layer. It exhibits excellent formability characteristics with weldability comparable to nickel-iron-chromium alloys with reduced aluminum contents.

**Applications include:** Heat recuperators, Automotive catalytic converters and Heat shields, Strand annealing furnace tubes, Fuel cells, Gas separation units

**Industries supplied include:** Automotive, Industrial Heat Treating, Chemical Processing

### Nominal Composition

	C	Ni	Co	Fe	Cr	Mo	Al	Si	W	Mn	Nb (Cb)	Ti	B	Zr
min	.03	BAL		25.00	19.00		3.10	0.30		0.20		0.20		
max	.07	-	2.00	30.00	23.00	0.50	3.90	0.50	0.50	0.50	0.15	0.50	0.004	0.025

### Physical Properties

	At 70°F	At 20°C
Density	0.280 lb/in <sup>3</sup>	7.72 g/cm <sup>3</sup>
Modulus of Elasticity (E)	28.5 x 10 <sup>3</sup> ksi	197 GPa
Coefficient of Expansion	8.3 microinches/in.-°F (1200°F)	14.8 μm/m-°C (600°C)
Electrical Resistivity	48.6 μohm-in	123.5 μohm-cm
Thermal Conductivity	69 Btu-in./ft. <sup>2</sup> hr.-°F	10.0 W/m-K

### Applicable Specifications

Strip	N/A
-------	-----

### Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	2025-2075°F (1107-1135°C)	100 ksi (690 MPa)	70°F to 2000°F (20°C to 1093°C)

For further information email:  
call: (888) 843-2350

Elgiloy Specialty Metals  
1565 Fleetwood Drive  
Elgin, IL 60123

[WWW.ELGILOY.COM](http://WWW.ELGILOY.COM)

#### Limitation of Liability and Disclaimer of Warranty:

- The content in these data sheets is provided primarily by third-party melting mills and is provided for reference only. It is not intended for engineering or design.
- Applications may be discussed, however, Elgiloy Specialty Metals, a Division of Combined Metals of Chicago L.L.C., does not recommend or endorse any material for any particular end use or application.
- The data included in this data sheet are typical values and may vary.



- Elgiloy Specialty Metals, a Division of Combined Metals of Chicago L.L.C., makes no representations or warranties, express or implied, as to the accuracy, completeness, condition, suitability, performance, fitness for a particular purpose, or merchantability of any information contained in any data sheet.
- In no event will Elgiloy Specialty Metals, a Division of Combined Metals of Chicago L.L.C., be liable for any damages whatsoever arising from the use of the information included in the data sheets.