



### Description

Type HH is an iron-chromium-nickel alloy containing minimum quantities of chromium and nickel in proportions to supply a useful combination of properties for elevated temperature service. Sufficient nickel is present, aided by carbon, nitrogen and manganese, to maintain austenite as the major phase; but the alloy is borderline in character and its microstructure is very sensitive to composition balance. The alloy is basically austenitic and holds considerable carbon in solid solution, but carbides, ferrite and sigma also may be present in the microstructure.

### Typical Applications

- Cast Parts
- Corrosive Environments
- Cement Industry
- Chemical Industry
- Furnace Industry
- Construction Industry
- Glass Industry
- Heat Treating Industry
- Oil Refining Industry
- Ore Refining Industry

### Corrosion Resistance

HH Type Alloy is seldom used for carburizing applications. High silicon content will fortify the alloy against carburization under mild conditions but will promote ferrite formation and possible sigma embrittlement.

### Heat Resistance

HH Alloy has a chromium range high enough to ensure good scaling resistance up to 2000°F in air or normal combustion gases.

### Heat Treatment

Castings of Type HH alloy are normally supplied in the as-cast condition. The alloy cannot be hardened by heat treatment.

### Welding

Castings can be welded by metal-arc, inert-gas arc, and oxyacetylene gas methods. Metal-arc welding is generally preferred for high temperature applications of this alloy. neither preweld or postweld heat treating is required.

Chemical Analysis		C	Mn	P	S	Si	Mo	Cr	Ni
Max values	HH	0.20-0.50	2.0	0.04	0.04	2.00	0.5	24.0-28.0	11.0-14.0

Typical Mechanical Properties-As-Cast	Yield Strength ksi	Tensile Strength ksi	Elongation % in 2"	Hardness		Impact Charpy lb/in <sup>3</sup>	Modulus of Elasticity in Tension - ksi
				R b	BHN		
	50	85	25	-	185	0.279	27000

Other Properties	Creep Strength 1% flow 1,000 hours at 1400°F -ksi	Electrical Resistivity - μΩ.m At 70°F	Coefficient of Thermal expansion: μ in./ (in.°F) 32°- 212°F	Thermal Conductivity BTU/ft. <sup>2</sup> /Hr.°F/ft.	
				At 212°F	At 932°F
	6.5	0.75-0.85	9.5	8.2	12.0