



Description

Type HK is an iron-chromium-nickel alloy somewhat similar to a wholly austenitic type HH in general characteristics and mechanical properties. HK Alloy is stable austenitic over its entire temperature range of application. The as-cast microstructure consists of an austenite matrix containing massive carbides as scattered islands or networks. After ageing at service temperature, the alloy exhibits a dispersion of fine, granular carbides within the austenitic grains, with subsequent agglomeration if the temperature is high enough.

Typical Applications

- Cast Parts
- Corrosive Environments
- Aircraft Industry
- Cement Industry
- Fertilizer Industry
- Heat Treating Industry
- Ore Refining Industry
- Petrochemical Industry
- Petroleum Industry
- Steel Industry

Corrosion Resistance

HK Alloy has chromium content high enough to ensure good resistance to corrosion by hot gases, in both oxidizing or reducing conditions.

Heat Resistance

HK Alloy with its high nickel content helps to make HK grade one of the strongest heat resistant casting alloys at temperatures about 1900°F. Accordingly, HK type castings are widely used for stressed parts in structural applications up to 2100°F.

Heat Treatment

Castings of Type HK alloy are normally supplied in the as-cast condition.

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 Max values		C	Mn	P	S	Si	Mo	Cr	Ni
	HK	0.20-0.60	2.0	0.04	0.04	2.00	0.5	24.0-28.0	18.0-22.0

Typical Mechanical Properties- As-Cast	Yield Strength	Tensile Strength	Elongation	Hardness		Impact Charpy	Modulus of Elasticity in Tension - ksi
	ksi	ksi	% in 2"	R b	BHN		
	50	75	17	-	170	0.280	27000

Other Properties	Creep Strength 1% flow 10,000 hours at 1400°F -ksi	Electrical Resistivity - $\mu\Omega\cdot m$ At 70°F	Coefficient of Thermal expansion: μ in./ (in.°F) 32°- 212°F	Thermal Conductivity BTU/ft. ² /Hr.°F/ft.	
				At 212°F	At 932°F
	8.80	0.90	9.4	7.9	11.8