High Performance
Nickel-Chromium-Iron Heat and Corrosion Resistant Alloy

Alloy 601

Alloy 601 Product Description

Nickel-chromium-iron alloy 601 is a general-purpose engineering material for applications that require resistance to heat and corrosion. The outstanding characteristic of alloy 601 is its resistance to high-temperature oxidation. The alloy also has good resistance to aqueous corrosion, has high mechanical strength, and is readily formed, machined, and welded.

The limiting chemical composition of alloy 601 is listed in Table 1. The composition is a face-centered-cubic solid solution with a high degree of metallurgical stability. The alloy's nickel base, in conjunction with a substantial chromium content, provides resistance to many corrosive media and high-temperature environments. Oxidation resistance is further enhanced by the aluminum content.

High Performance Alloys can make hot rolled, cold worked, and strain hardened high performance stainless steel bars in-house now.

Ask for our GFM Bulletin for more information about our bar processing capabilities. We have expanded to enhance product availability.

HPA also has a full line of high strength nickel based alloys.

Nominal Chemistry

	Ni	Cr	C	Mn	Si	S	Fe
Max	63.0	25.0	0.10	1.0	1.0	0.015	Bal
Min	58.0	21.0					

Typical Annealed Mechanicals

Properties	UT	0.2% YS	Elong.	Hardness
Condition	(Ksi)	(Ksi)	(%)	Rockwell
Cold Worked/Annealed				
Min	80 KSi	30 KSi	40	60
Max	115 KSi	60 KSi	70	80

Questions?? Call (800)HPALLOY

Physical Properties

Density	8.1 g/cm cube
Specific Heat	461 J/kg K
Electrical Resistivity	119 micro ohms cm
Curie Temperature	-190° C
Melting Range	1320° - 1370° C

Properties & General Data

The most important property of Alloy 601 is resistance to oxidation at very high temperatures up to 1250°C. Even under severe conditions such as, cyclical heating and cooling. This is possible due to Alloy 601 having a tightly adherent oxide layer which is resistant against spalling.

‡ Resistance to carburization is good, also resistant to carbon nitriding conditions.

‡ Due to high chromium and some aluminum content, good resistance in oxidizing sulfur bearing atmospheres at elevated temperatures is demonstrated.

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Any questions or comments can also be sent via E-Mail to:
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Specifications

Form	Standard
Metal Type	UNS N06601
Bar	ASTM B166 Din 17752
Wire	
Sheet	ASTM B168 Din 17750
Plate	ASTM B168 Din 17750
Fitting	
Forging	Din 17754
Weld Wire	FM 82
Weld Electrode	FM 617
Din	2.4851

Applications

- Trays, baskets and fixtures used in various heat treatments such as carburizing and carbon nitriding.
- Refractory anchors, strand annealing and radiant tubes, high velocity gas burners, wire mesh belts etc.
- Insulating cans in ammonia reformers and catalyst support grids used in nitric acid production.
- Thermal reactors in exhaust system of petrol engines.
- Fabricated combustion chambers.
- Tube supports and ash trays in the power generation industry.

Machining Data

Carbide tools are suggested for rates better than 50% of Type 304.

Machining Type	Suggested starting rates are:
Single Point turning :	Roughing - 0.15" depth, 0.015"/rev feed -175 SFM Finishing - 0.025" depth, 0.007"/rev feed - 200 SFM
Drilling :	1/4" Dia hole - 0.004"/rev feed - 60 SFM 1/2" Dia hole - 0.007"/rev feed - 60 SFM 3/4" Dia hole - 0.010"/rev feed - 60 SFM
Reaming :	Feed - same as drilling - 100 SFM
Side and Slot Milling :	Roughing - 0.25" depth - 0.007"/tooth feed - 125SFM Finishing - 0.050" depth - 0.009"/tooth feed - 140SFM

These rates are for carbide tools,
Type C-2 for roughing, drilling and reaming.
Type C-3 for finishing.

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