Technical Data Sheet

ATI 925™

Age-Hardenable Nickel-Iron-Chromium Alloy

(UNS N09925)

INTRODUCTION

ATI 925™ alloy (UNS N09925) is an age-hardenable nickel-iron-chromium alloy that combines good high strength properties and excellent corrosion resistance. The addition of molybdenum and copper gives the alloy resistance to reducing chemicals, and to pitting and crevice corrosion. The high chromium content provides resistance to oxidizing conditions, while the nickel protects the alloy from chloride ion stress corrosion cracking. The alloy is made age-hardenable by the addition of aluminum and titanium.

This alloy is often chosen for liquid and gaseous applications where a combination of high strength and corrosion resistance is required. ATI 925™ alloy provides excellent resistance to corrosion cracking caused by hydrogen sulfide in sour gas applications. Applications include down-hole and above ground components.

SPECIFICATIONS & CERTIFICATES

- NACE MR0175

PHYSICAL PROPERTIES

Melting Range: 2,375-2,500°F; (1,301-1,371°C)
Density: 0.29 lbs/in3; (8.03 gms/cc)

HEAT TREATMENT

Solution anneal at 1,800-1,900°F (982-1,038°C) for 1 hour. Age harden at 1,365-1,380°F (741-749°C).

HARDNESS

The hardness of ATI 925™ alloy in the annealed condition is approximately 76 Rockwell B; in the aged condition, the hardness is approximately HRC 32.

OXIDATION RESISTANCE

ATI 925™ alloy shows excellent oxidation resistance because of its high chromium content.

CORROSION RESISTANCE

The alloy has good resistance to most types of corrosion including pitting, crevice corrosion, intergranular corrosion, and stress corrosion cracking. It is particularly useful in sour gas applications.

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Data on any particular piece of material may vary from those herein.
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FORGEABILITY

Hot working can be performed in the 1,600-2,150°F range (871-1,177°C). For the best mechanical properties, final forging should take place at about 1,600-1,800°F (871-982°C).

FORMABILITY

ATI 925™ alloy is readily cold formed and cold worked using conventional processing techniques.

MACHINEABILITY

ATI 925™ alloy can be machined in the annealed and the hardened conditions, using practices for other high strength nickel-base alloys. To prevent work hardening, it is recommended that rigid tooling be used.

WELDABILITY

ATI 925™ alloy has excellent weldability. Inert gas shielded arc techniques are generally used when welding this alloy.

SPECIAL PRECAUTIONS

All lubricants, particularly those containing sulfur, should be removed prior to heat treating and pickling.

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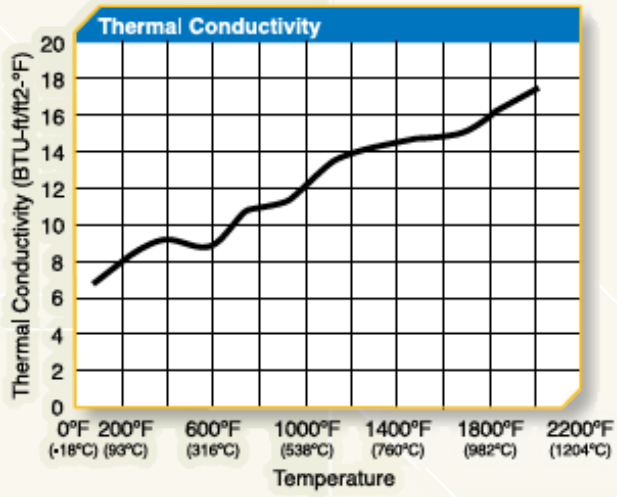
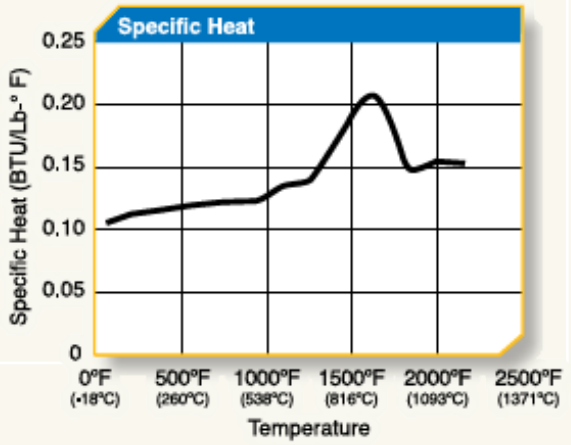
Chemical Composition

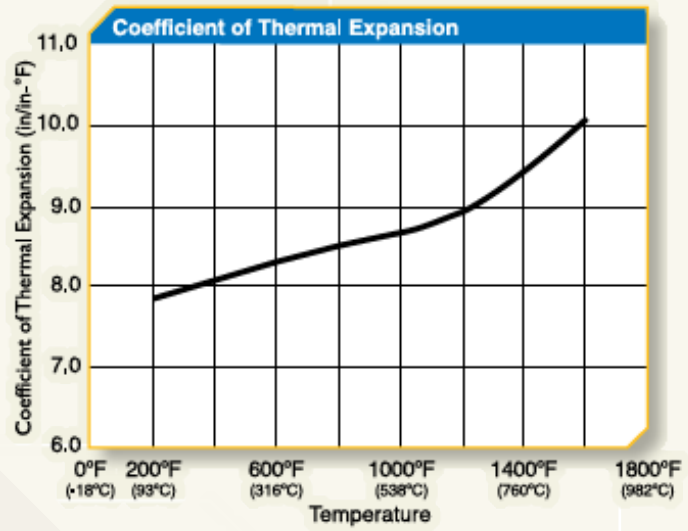
	Ni	Cr	Fe	Mo	Cu	Ti	Al	C
wt %, min.	42	19.5	Bal	2.5	1.5	1.9	0.1	-
wt %, max.	46	22.5	22.0	3.5	3.0	2.3	0.5	0.03

Mechanical Properties

	UTS, ksi	0.2% YS, ksi	EL, %	RA, %	Hardness, HRc	Charpy*, ft-lb
ST&A Condition	170	120	25	35	32	60







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