



## Technical Data Sheet

### **GENERAL**

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**

- NACE MR0175

### **PHYSICAL PROPERTIES**

Melting Range: 2,375 - 2,500°F; (1,301 - 1,371°C)  
Density: 0.29 lbs/in<sup>3</sup>; (8.03 gms/cc)

### **HEAT TREATMENT**

Solution anneal at 1,800 - 1,900°F (982 - 1,038°C) for 1 to 2 hrs. 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 AND CORROSION RESISTANCE**

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

### **FORGEABILITY AND FORMABILITY**

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

### **MACHINABILITY**

ATI 925 alloy can be machined in the annealed and the hardened conditions, using practices for other high strength nickel-based 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**

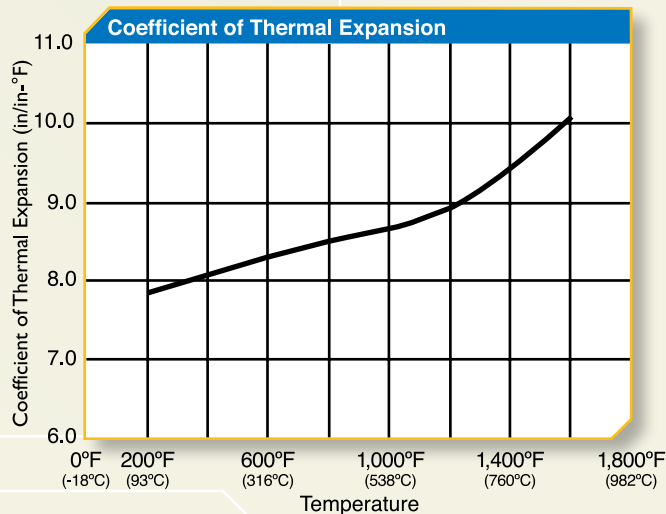
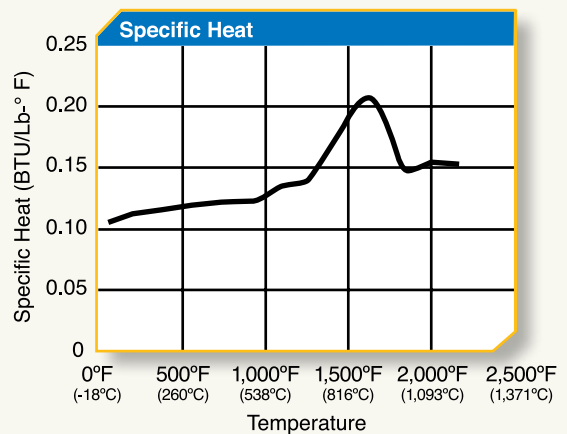
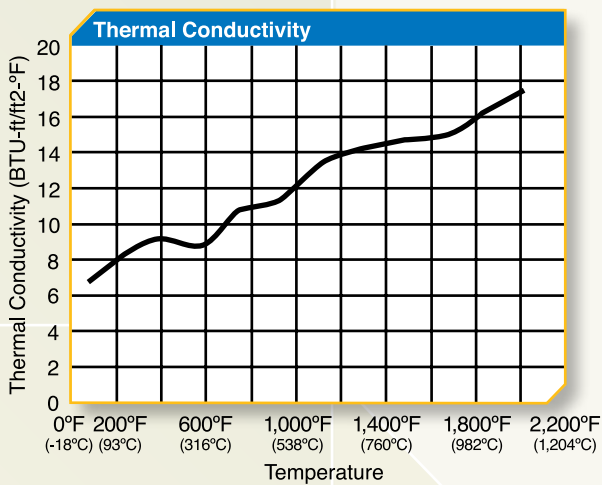
All lubricants, particularly those containing sulfur, should be removed prior to heat treating and pickling.



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Chemical Composition								
	Ni	Cr	Fe	Mo	Cu	Ti	Al	C
wt %, min.	42	19.5	22.0	2.5	1.5	1.9	0.1	-
wt %, max.	46	22.5	Bal	3.5	3.0	2.4	0.5	0.03

Mechanical Properties						
	UTS, ksi	0.2% YS, ksi	EL, %	RA, %	Hardness, HRC	Charpy, ft-lb
ST&A Condition	140	110	18	25	32	35



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**ATI Allvac**  
 2020 Ashcraft Ave., P.O. Box 5030  
 Monroe NC 28110-5030 USA  
 704-289-4511  
 www.allvac.com