

# ALLOY DATA SHEET CF-8

## CORROSION RESISTANT ALLOY

REVISION: 01/90

### DESCRIPTION

CF-8 is the cast equivalent of the popular wrought 18-8, or 304 grade of stainless steel. It has good resistance to nitric acid and nitric/sulphuric acid mixtures, organic acids and salts, potassium sulphate, sodium carbonate and sulphite. Solution annealing at 1900 to 2050°F followed by rapid cooling is used to optimise corrosion resistance and should be applied to castings exposed to temperatures of 800 to 1600°F as a result of service or welding. High impact strength is retained at cryogenic temperatures, while conversely it may be used for service up to 1300°F.

The alloy normally consists of austenite and 10% ferrite. However, non-magnetic castings are required in some applications and to meet this need the compositional balance is altered to produce 100% austenite.

A modified form of the alloy known as CF-8A, has a controlled, but higher ferrite content, which raises strength above that of the normal CF-8.

### COMPOSITION

	<u>C</u>	<u>Mn</u>	<u>Si</u>	<u>Cr</u>	<u>Ni</u>	<u>P</u>	<u>S</u>
Min %				18.0	8.0		
Max %	0.08	1.50	2.0	21.0	11.0	0.04	0.04

### APPLICATIONS

Architectural hardware, food and beverage processing equipment, pumps, valves, manifolds, transfer piping, impellers, propellers, filter screens, agitators and mixers, scrubber components.

### PRODUCT FORMS

Horizontal and vertical centrifugal castings; static castings.

### PHYSICAL PROPERTIES

Density (lbs/in <sup>3</sup> )	0.280
Liquidus(°F)	2600
Thermal Conductivity (Btu/h/ft <sup>2</sup> /ft/°F)	9.2 @ 212°F 12.1 @ 1000°F
Thermal Expansion (10 <sup>-6</sup> in/in °F)	9.0 @ 70-212°F 10.0 @ 70-1000°F 10.2 @ 70-1200°F
Magnetic Permeability	1.2 to 3.0

**MECHANICAL PROPERTIES**

(Typical Values at Room Temperature - Solution Annealed at 1900-2050°F, Water Quenched.)

		CF-8	CF-8A	ASTM Specs <u>A743,A744</u>	ASTM Spec <u>A351</u>
U.T.S.	K.S.I.	77	85	<u>CF-8</u> 70 Min.	<u>CF-8A</u> 77 Min.
Y.S.	K.S.I.	37	45	30 Min.	35 Min.
Elong.	%	55	50	35 Min.	35 Min
Brinell	H B	140	156		
Charpy 'V'	ft-lbs	95			

(Typical Values at Elevated Temperatures-Solution Annealed Condition.)

		<u>400</u>	<u>600</u>	<u>800</u>	<u>1000</u>	<u>1200</u>	°F
U.T.S.	K.S.I.	63	59	56	51	39	
Y.S.	K.S.I.	23	21	20	19	16	
Elong.	%	46	46	44	44	39	

**CREEP-RUPTURE PROPERTIES**

		<u>RUPTURE-STRESS-KSI</u>		
<u>HOURS</u>		<u>1000</u>	<u>1200</u>	°F
100	AVG.	38	19	
1,000	AVG.	30	15	
10,000	AVG.	24	11	

Note: Creep-rupture stresses are subject to periodic revisions as the results from long term tests become available.

**WELDABILITY**

CF-8 may be welded by the SMAW, GTAW and GMAW processes.

Electrodes 308L.

Preheat Not required.

Post weld heat treatment 1900-2050°F, Quench.

Procedures for welding CF-8 alloy are available from Kubota Metal Corporation

**RELATED SPECIFICATIONS**

ASTM A351(CF8 and CF8A), A743(CF-8), A744(CF-8), UNS 92600

Nearest wrought grade: AISI 304.

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