



## Casting Material: Stainless Steel CF8M

CF8M is a cast austenitic material for pressure containing parts, which covered by ASTM A351 and ASTM A743 and ASTM A744 standard.

**CF8M Chemical Requirements** in those three standards as bellow, little difference:

### ASTM A351 Standard Specification for Castings, Austenitic, for Pressure-Containing Parts:

Carbon: 0.08 max

Manganese: 1.50 max

Silicon: **1.50 max**

Sulfur: 0.040 max

Phosphorus: 0.040 max

Chromium: 18.0-21.0

Nickel: **9.0-12.0**

Molybdenum: 2.0-3.0

Tensile Strength: min 70ksi(485Mpa)

Yield Strength: min 30ksi (205Mpa)

Elongation in 2in. or 50mm: min 30.0%



### ASTM 743 Standard Specification for Castings,

Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application:

**ASTM A744 Standard Specification for Castings, Iron-Chromium-Nickel, Corrosion Resistant, for Severe Service:** same as A743

**ASTM A240 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications**

**ASTM A182 Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service**

**ASTM A276 Standard Specification for Stainless Steel Bars and Shapes**

**CF8M Heat treatment process:** Heat to 1900°F [1040°C] minimum, hold for sufficient time to heat casting to temperature, quench in water or rapid cool by other means.

CF8M equal to SS316/F316 and Chinese Standard 0Cr17Ni12Mo2



## CF8M/TP316/SS316/F316 Chemical Requirements Composition and Mechanical Properties

Standard	ASTM A351	ASTM A743	ASTM A744	ASTM A376	ASTM A240	ASTM A276	ASTM A182
Grade	CF8M	CF8M	CF8M	TP316	SS316	SS316	F316
UNS	J92900	J92900	J92900	S31600	S31600	S31600	A31600
C % max	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Mn % max	1.50	1.50	1.50	2.0	2.0	2.0	2.00
Si % max	1.50	2.0	2.0	0.75	0.75	1.00	1.00
S % max	0.04	0.04	0.04	0.03	0.030	0.030	0.030
P % max	0.04	0.04	0.04	0.045	0.045	0.045	0.045
Cr %	18.0-21.0	18.0-21.0	18.0-21.0	16.0-18.0	16.0-18.0	16.8-18.0	16.0-18.0
Ni %	9.0-12.0	9.0-12.0	9.0-12.0	11.0-14.0	10.0-14.0	10.0-14.0	10.0-14.0
Mo %	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Tensile, min, Ksi(MPa)	70(485)	70(485)	70(485)	75(515)	75(515)	75(515)	75(515)
Yield, min, Ksi(MPa)	30(205)	30(205)	30(205)	30(205)	30(205)	30(205)	30(205)
Elongation Min, %	30	30	30	35 L; 25 T	40	40	30
Reduction, Min, %	-	-	-	-	50	50	-
Hardness, HB	-	-	-	-	217	-	-

CF-8M is a molybdenum bearing modification of CF8 alloy and is the cast equivalent of wrought AISI 316 Stainless steel. The presence of molybdenum increases the general corrosion resistance and the resistance to pitting by chlorides. The alloy is used in mildly acidic and alkaline conditions and for handling citric, oxalic and phosphoric acids.

### APPLICATIONS

Impellers, propellers, pump casings, valve bodies, press plates.

### WELDABILITY

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

Electrodes

Preheat None



## Is stainless steel CF8M the same as SS316, F316 and TP316?

**“Yes, mostly, it's same.”**

But they are defined in different standards, and their chemistry and property are little different too. CF8M is defined in ASMT A351, ASMT A743 and ASTM A744, which is for casting purpose only. SS316 is defined in ASTM A240 and ASTM A276, it's for plate, sheet, strip or stainless steel bars.

Another grade is named as F316, which is from ASTM A182 for Forged parts only. TP316 will be found in ATSTM A376 for pipe only.

***If you want to buy castings, Pls indicate CF8M as material, otherwise you can adopt SS316. VERY IMPORTANT!***

## What means of CF8M?

As to the designation -

C (first letter) means the service it is intended to be used in this case - corrosion resistant service , but we think sometimes it means of CASTING USAGE because you will find F316 in ASTM A 350 ( F = FORGE)

F(second letter) -The second letter indicates the approximate location of the alloy on the iron-chromium-nickel (FeCrNi) ternary diagram. For users familiar with the diagram, the second letter does provide an indication of the nominal iron, nickel, and chromium content, but most people would have to obtain alloying information from a material specification.

8M - the third and fourth digits represent the maximum permitted carbon content in units of 0.01% (e.g., CF8M has a maximum of 0.08% carbon)

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# Casting Quality





## Introduction

As professional supplier of castings in China, Qingdao Casting Quality Industrial Co., Ltd provide our clients perfect solution in metal industry. We focus on providing service and quality exceeding customer's expectation, at highly competitive prices.

The production process includes sand casting, investment casting, die casting, lost foam casting, centrifugal casting and permanent casting. Today, its products are marketed globally through many countries.

Why Choose Casting Quality As Your Partner?

### **Integrity**

We will honestly inform our clients of our capacity and quality level. All clients have the right to get the actual details including production process, quality, shipment and defects. The honesty will be benefit to both parts.

### **Innovation**

Our engineers are more than just designers. They are pioneers. Our team use CAD/CAM to make the simulation of casting parts. Through the advanced technology, we can know the weight and structure. We also visit many other factories to know the differences and to improve our products every year.

### **Quality**

We are obsessed with quality. Casting Quality constantly strives to exceed our customers' expectations in durability and performance. In fact, we will control the whole processes from the original material to the finished parts, Uniquely-designed Quality Control System focuses on ensuring four product goals: 1) Eligible Chemistry, 2) Hardness 3) Mechanical Property and 4) Affordable Pricing.

### **Service**

We are located in Qingdao, China, The transportation is convenient for both road and sea. Courteous service is part of who we are, and we do it better than anyone in the industry. With Casting Quality you can expect friendly, knowledgeable and prompt customer service. Shipping orders complete and on-time is of paramount importance to our customers. We will count the delivery date and result before accepting your order .Casting Quality consistently

# INTEGRITY

# QUALITY

# INNOVATION



## Sand Casting

Sand casting is divided into many types: GREEN SAND CASTING, RESIN SAND CASTING AND SODIUM SILICATE BONDED SAND CASTING. Green sand casting is the lowest cost method to get a product, whose surface finish is not good too. Resin sand casting will get a good surface and precision dimensions, so it is widely used in automobile industry.

Casting Quality Industrial mainly cast Gray Iron, Ductile Iron, Malleable Iron, Wear Resistant Cast Iron, Carbon Steel, Stainless Steel, Brass/Bronze and Aluminum.

Unit weight range from 100g to 20tons.

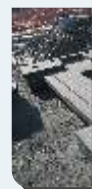


## Investment Casting

As highly versatile casting process, Investment Casting has for some time been perceived as a comparatively expensive process. But when compared to alternative processes which require extensive welding or machining, an investment cast component can often dramatically reduce overall part production costs.

Casting Quality Industrial would adapt three investment casting methods to reach our clients' quality requirement: Water Glass (Colloidal Silica-sodium), Silica Sol technology; or Colloidal Silica-sodium Silicate Compound. Water Glass technology is the worst quality but cheapest. Silica Sol technology is the best quality but most expensive. We will analyze the usage and drawings tolerance to choose an economic method.

Unit weight range from 1g to 100Kgs.





## Centrifugal Casting

Centrifugal Casting mainly produce the pipes or pipe figure products , such as ductile iron pipe , cast iron soil pipe , glass roller , Furnace Roller and radiant



## Lost Foam Casting

Lost-foam casting (LFC) is a type of evaporative-pattern casting process that is similar to investment casting except foam is used for the pattern instead of wax. This process takes advantage of the low boiling point of foam to simplify the investment casting process by removing the need to melt the wax out of the mold. Casting Quality Industrial only supply ductile iron or steel parts by lost foam casting method, such as valve body, impeller, pipe fittings, electrode and simply figure parts .



## Die Casting

Die casting is a metal casting process that is characterized by forcing molten metal under high pressure into a mold cavity. Die Casting is generally use to make aluminum and zinc alloy parts.



## Permanent Casting

permanent casting and low pressure casting, Casting Quality only used to make aluminum castings, permanent casting can get a better surface and dimensions than sand castings, low pressure casting can get a stably structure which are suitable to the endure pressure parts.

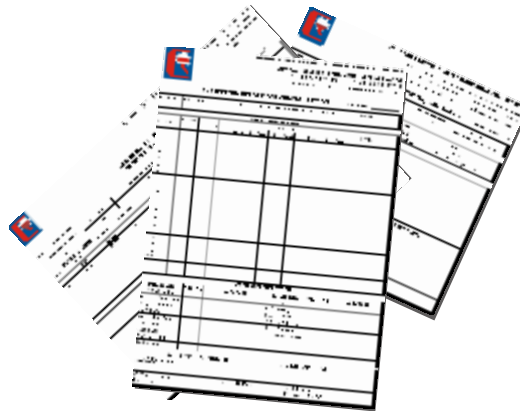




## Quality Control

Experienced inspection team of Casting Quality conducts the entire quality control procedure from raw material to finished products. All inspectors are well trained and have rich product knowledge & inspection experiences.

- \* Raw Material Control.
- \* Chemistry Spectrum Analysis
- \* Mechanical Property
- \* Metallographic Analysis
- \* Ultrasonic Testing
- \* Magnetic Testing.
- \* Radiographic Testing.
- \* Dimension Inspection.
- \* Visual Inspection
- \* Dimension Checking
- \* Chemical Analysis
- \* Penetrant Testing
- \* Leak Testing
- \* Hardness Test







**Valve & Fittings**



**Marine Fittings**



**Automobile Parts**



**Accessories**

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