



## Casting Material: Carbon Steel WCA

WCA (UNS J03002) is covered by ASTM A216 standard, which specification covers carbon steel castings for valves, fittings, flanges and other pressure-containing parts for high temperature service and the quality required for assembly with other castings or wrought steel parts by fusion welding. These grades are all "cast" grades meaning they are made through "casting" which is a manufacturing process where a liquid material is poured into a mold and allowed to harden..

### WCA Chemical Requirements and Mechanical Property:

#### ASTM A216/a216M Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding for High Temperature Service.:

Carbon: 0.25max

Manganese: 0.70 max

Silicon: 0.60 max

Sulfur: 0.045 max

Phosphorus: 0.040 max

Copper: 0.30 max

Nickel: 0.50 max

Chromium: 0.50 max

Molybdenum: 0.20 max

Vanadium: 0.03 max

All total of those specified residual elements 1.00max

Tensile Strength: 60-85ksi(415-585Mpa)

Yield Strength: 30ksi (2050Mpa) min

Elongation in 2in. or 50mm: min 24.0%

Reduction of area: 35% min

Hardness: 137HB min.



**WCA Heat treatment process:** generally all castings need to be anneal or normalization.

Anneal at 890-910°C

Normalization at 870-890 °C

**Manufacture Process:** sand casting, precision investment casting.

WCA is also indicated In China standard of GB/T 12229 General Purpose Industrial Valve Specification of Carbon Steel Casting. The chemistry and mechanical property are same as A216 WCA. It is same as Chinese casting material of ZG205-415

### APPLICATIONS

Valve bodies/bonnet.

### WELDABILITY

WCA may be welded

Preheat not required.



## What means of WCA:

WCA stands for "Wrought Carbon" with Grade A. Sometimes you can think "C" as casting.

There are 3 kind of Grade A, B & C which define the ductility & tensile strength.

Grade B is having very good ductility & tensile strength as compare to Grade A & C.

## ***SERVICE IN QINGDAO CASTING QUALITY INDUSTIRAL***

- I SAND CASTING
- I INVESTMENT CASTING
- I SHELL CASTING
- I PERMANENT MOLD CASTING
- I CNC MACHINING
- I CAD/CAM DESIGN





# **Casting Quality**



**Qingdao Casting Quality Industrial Co., Ltd**



## 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 analysis 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



## 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.



## 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 .



## 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.



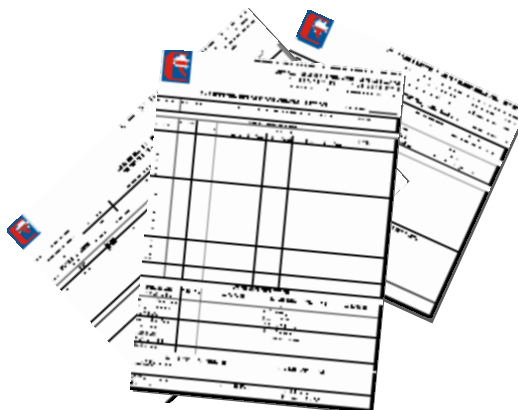




## Quality Control

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**

## Qingdao Casting Quality Industrial Co., Ltd.

Add: Room 0329, No. 51 Taiping Road, Qingdao City, Shandong Province, China (P.O.: 266002)

Tel: +86 532 82972996

Fax: +86 532 82972913

Website: [www.castingquality.com](http://www.castingquality.com)

Mail: [mark@castingquality.com](mailto:mark@castingquality.com)