



Casting Material: Carbon Steel WCB

WCB (UNS Code 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.

WCB Casting Methods in Casting Quality Industrial:

- n Sand Casting
- n Investment Casting (Lost Wax Casting, Precision Casting)
- n Shell Casting
- n Lost Foam Casting

Reference Casting Standards:

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

WCB Casting Chemical Requirements in ASTM A216:

Carbon: 0.30max
Manganese: 1.00 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



WCB Casting Mechanical Property in ASTM A216:

Tensile Strength: 70-95ksi(485-655Mpa)
Yield Strength: 36ksi (250Mpa) min
Elongation in 2in. or 50mm: min 22.0%
Reduction of area: 35% min
Hardness: 137HB min.

WCB Casting Heat treatment process: generally, all castings need to be annealed at 890-910°C or normalization at 870-890°C.



Carbon Steel WCB Equivalent Grade:

- Ø Chinese casting standard: GB/T 12229 Grade WCB
- Ø ZG250-485
- Ø EN10213 Grade GP240GH/EN 1.0619
- Ø JIS G5151 Grade SCPH2
- Ø ASTM A105

WCB 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 WCB. It is same as Chinese casting material of ZG250-485.

APPLICATIONS: WCB can't be used over 1200°F [649°C]

Valve body, valve disc, valve bonnet.

Pump parts, impeller, housing

Pipe fittings, flanges.

WCB Casting Weldability:

WCB can be welded

Preheat Not required.

What is the difference between WCB and ASTM A105?

ASMT A105 is for Standard Specification for Carbon Steel Forgings for Piping Applications. But ASTM A216 WCB is carbon steel for casting purpose. Those two material grades are similar.

Carbon Steel Grade	ASTM A216 WCB	ASTM A105
Carbon, max	0.30	0.35
Manganese	1.00, max	0.60-1.05
Phosphorus, max	0.04	0.035
Sulfur, max	0.04	0.040
Silicon	0.60, max	0.10-0.35
Copper, max	0.30	0.40
Nickel, max	0.50	0.40
Chromium, max	0.50	0.30
Molybdenum, max	0.20	0.12
Vanadium, max	0.03	0.08
Tensile Strength, min	70-95 ksi (485-655MPa)	70 ksi (485MPa)
Yield Strength, min	36 ksi (250MPa)	36 ksi (250MPa)
Elongation in 2in or 50mm	22%	30% for walls 5/16in or over in thickness 22% for round 2in gage length or smaller 18%-30% for strip
Reduction of area, min	35%	30%
Hardness	137HB min	187HB max



How to produce WCB carbon steel castings?

Based on our professionals, investment casting and sand casting can be done for WCB castings in Casting Quality Industrial. Moreover, we can also produce some WCB castings through shell casting and Lost Foam Casting.

The following form will give you more details.

Pls be kindly noted briefly that, in general, if you order

- smaller order for small parts, green sand casting is highly recommended;
- big parts, only resin sand casting is achievable/available;
- Sand casting can produce any type metal castings, but
 - big quantities for **small** parts, we recommend Shell Casting rather than Sand Casting;
 - big quantities for **little big** parts, we recommend lost foam Casting;
- small parts with good appearance/supreme quality, investment casting will be the only choice.

Casting Methods	Sand Casting		Investment Casting		Shell Casting	Lost Foam Casting
	Green Sand	Resin Sand	Water Glass	Silica Sol		
Casting Types	All design		The casting should be easy for mold design		The casting should be easy for mold design	
Normal Size	<1m	>1m	0.5-50kgs	1g-20kgs	0.5m	0.5-1m
Max Size	<1.5m	Any	<1.0m	<0.5m	<1.0m	<5.0m
Weight Range	<200kgs	Any	<100kgs	<80kgs	<100kgs	<100kgs
Tolerance	CT10-13	CT10-14	CT7-9	CT4-6	CT7-9	CT7-9
Appearance	Standard	Excellent	Supreme	Best perfect	Good	good
Price	Cheapest	Cheap	Little expensive	Expensive	Cheap	Little cheap
Mold Cost	Average	Average	Cheapest	cheapest	Expensive	expensive
Mold Production	10 -14 days	10-30 days	7-10 days	7-10 days	20-30days	20-30days
Sample time	Slow	slow	slow	slowest	Fast	Fast
Order Quantity	Sand casting don't care the order quantity		Any quantity orders		bigger quantity preferred	

How to purchase ASTM A216 WCB castings?

Drawings should be provided for any new enquires, maybe IGS/STEP and CAD/PDF files. If no drawings, we need good pictures to show the structure and major dimensions, and also need to know the unit weight for raw material accounting. Or you can send us the physical sample for 3D scanning, we will finish the design with **FREE cost**.

What means of WCB:

“WCB” stands for "Wrought Carbon" with Grade B. Sometimes you can think “C” as casting. there are 3 kinds 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 INDUSTRIAL

- I SAND CASTING**
- I INVESTMENT CASTING**
- I SHELL CASTING**
- I PERMANENT MOLD CASTING**
- I CNC MACHINING**

As a professional casting manufacture, Qingdao Casting Quality Industrial pay much attention to the quality and technology, our products are much more casting and forging parts. We mainly supply Sand Casting, Investment Casting (Lost Wax Casting or Precision Casting) and Die Casting. Today, its products are marketed globally through many countries.

Casting Quality focus on Metal Parts industry, we provide professional service in Metal Casting field.

1. Sand Casting
2. Investment Casting
3. Shell Casting
4. CNC Machining
5. CAD Design
6. Tools/Mold Design

Many buyers from all over the world purchase products from China. But do you know the quality of products in China? Maybe you only pay the surface and price, but the inner quality is lost.

Housing Casting Design in Solidworks.

What makes Casting Quality the best?

Innovation

Our engineers are more than just designers, they're pioneers. Our team use CAD/CAM to do the simulation of casting parts. Through the advanced technology, we can know the weight and structure. We also visited so many factories to know their difference and improve our products every year.

Quality

We're obsessed with quality. Casting Quality constantly strives to exceed our customers' expectations in durability and performance. In fact, we will control the whole process from the original material to the finished parts, include the technology. Uniquely-designed Quality Control System focuses on ensuring four product goals: 1) Eligible Chemistry, 2) Hardness 3) Property and 4) Affordable Pricing. The result is the best casting products value in the industry.

Service

We're in Qingdao, China, It has convenient transportation of 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.

Fulfillment

Shipping orders complete and on-time is of paramount importance to our customers. We will count the delivery date and result before accept your order. Casting Quality consistently ranks as one of the best in speed of delivery and fill rates.



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.

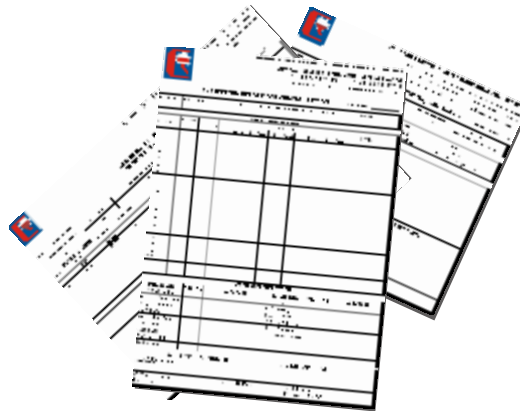




Quality Control

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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